

ABSTRACT

Title of Dissertation: EXPLORATIONS IN DIAGNOSING COMPE-
TENCE AND PERFORMANCE FACTORS IN
LINGUISTIC INQUIRY

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Doctor of Philosophy, 2022

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This dissertation presents a series of case studies concerned with whether the signal in a given set of measurements that we take in the course of linguistic inquiry reflects grammatical competence or performance factors. We know that performance and competence do not always covary, yet it is not uncommon to assume that measurements that we take of linguistic performance do transparently reflect the underlying grammatical competence that is the target of inquiry. This has been a very useful and fruitful assumption in the vast majority of cases.

Nonetheless, there are certain cases where more careful consideration of the linking hypothesis between the underlying competence of interest and the measurements of linguistic behavior (*i.e.*, performance) that one takes might be warranted. This dissertation presents three case studies that try to model such consideration. How performance and competence might interact is highly dependent on the phenomenon being investigated as well as the method being used to investigate it, so there is no one-size-fits-

all approach to these kinds of considerations. The goal of this dissertation is to model such consideration and to encourage more of it.

In Chapter 2, we investigate English-acquiring children's non-adult-like productions of medial wh-phrases. On the basis of experimental data showing a correlation between an independent measure of cognitive inhibition and the production of such examples, we will argue that the best explanation of these productions is that children fail to inhibit the pronunciation of the wh-copy at the intermediate clause boundary due to an underdeveloped executive function and that children do have the target adult-like English grammar with respect to the formation of wh-dependencies (contra, *e.g.*, Thornton 1990, McDaniel, Chiu, & Maxfield 1995, de Villiers, de Villiers, & Roeper 2011).

Then, in Chapter 4, we investigate the status of island violations under sluicing (*i.e.*, TP ellipsis). Sluicing apparently improves the acceptability of island violations contained inside the ellipsis site (see, *e.g.*, Ross 1969). Whether we should understand this improved acceptability as indicative of such examples being grammatical is an open question (cf. Ross 1969, Chomsky 1972, Lasnik 2001, Fox & Lasnik 2003, Merchant 2005, 2008b, 2009, Temmerman 2013, Griffiths & Lipták 2014, Barros 2014a, Barros, Elliott, & Thoms 2014, 2015). We investigate the status of such examples with several 2×2 experiments, an experimental paradigm discussed in detail in Chapter 3. The idea of the experimental design is to use differences between acceptability ratings and subtraction logic afforded by the linking hypothesis between acceptability and grammaticality to try to more directly get at grammaticality. Our results from this chapter are ultimately somewhat inconclusive, but for potentially methodologically informative reasons.

Finally, in Chapter 5, we use the same kind of experimental paradigm to investigate the status of Bulgarian examples with multiple wh-dependencies, where one of the wh-dependencies crosses an island and the other does not. Bulgarian is a language with multiple fronting of wh-elements, and it has been observed that examples where one of the wh-dependencies spans an island but not the other are improved in acceptability (see, *e.g.*, Richards 1997, 1998, 2001). Such examples have thus been taken to be grammatical, though they do still exhibit some degree of unacceptability. We use the same sort of experimental paradigm to try to ascertain the grammaticality status of these examples. We find evidence that such ex-

amples are indeed grammatical, which reaffirms the importance of ensuring our syntactic theories can account for such examples.

EXPLORATIONS IN DIAGNOSING COMPETENCE AND PERFORMANCE
FACTORS IN LINGUISTIC INQUIRY

by

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Dissertation submitted to the Faculty of the Graduate School of the
University of Maryland, College Park in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
2022

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Preface

The work reported in this dissertation is highly collaborative. Chapter 2 reports on joint work with Elaine Grolla and Jeff Lidz. A version of this chapter was published as Liter, Grolla, & Lidz (in press). Chapter 4 reports on joint work with Jeff Lidz, and Chapter 5 reports on joint work with Roumi Pancheva and Omer Preminger. This work has also been supported by the National Science Foundation (Doctoral Dissertation Research Improvement grant #2116270 and NRT award #1449815).

Acknowledgments

Like many human activities, science is both a social and collective endeavor. Reading acknowledgments sections, particularly those in books and dissertations, has always been one of my favorite things to do, as doing so provides a unique opportunity to understand more about this side of the scientific process. For those similarly inclined, let me attempt to shed some light on the awesome and wonderfully supportive community that I've been lucky to be a part of over the course of my 12 years in linguistics. Undoubtedly, this section will fail to adequately express my gratitude and debt towards all of the people who have been a part of that community, and I can only hope that I haven't forgotten anyone. With sincere apologies to any that I may have forgotten, let me attempt to express my heartfelt thanks to everyone who has been a supportive family member, friend, mentor, colleague, collaborator, *etc.*, to me over these last 12 years.

Before coming to University of Maryland, I did a BA and an MA in linguistics at Michigan State University. I was fortunate in that I was able to get involved in research during my first year of undergraduate. I feel extremely lucky that the professors there were especially supportive of undergraduate research, that the MSU graduate students were a friendly and welcoming bunch, and that there were a number of other like-minded undergraduates in the linguistics program.

Starting with other like-minded undergraduates, I'd like to express my thanks to Bethany Dickerson, Kenneth Hanson, Chris Heffner, Tess Huelskamp, Mina Hirzel, Elliot Selkirk, Kathryn VerPlanck, and Eric Villanueva for being wonderful contemporaries and for fostering an environment conducive to appreciation for all the wonders of human language. Chris Heffner, in particular, had an amazing appetite for all things linguistic and all things research. His ability to coin ridiculous acronyms is also perhaps unparalleled. In many ways, Chris paved the way for my academic career, from MSU to UMD (and we also apparently grew up about 20 minutes apart from one another; sometimes I wonder if I'll be following

Chris around for the rest of my life). Kenneth, Mina, and Elliot were also great contemporaries, and I really enjoyed living with them for a summer at the 2013 Linguistic Institute at University of Michigan (along with some of the MSU graduate students), and with Mina again at the 2015 Linguistic Institute at University of Chicago. Mina was another person who I followed to UMD.

During my time at MSU, I also enjoyed getting to know many of the graduate students, especially as I started taking graduate-level courses and once I eventually decided to stick around to do an MA there, as well. I really appreciated their willingness to frankly discuss the ups and downs of graduate student life with me and to welcome me into the fold. Thanks to Curt Anderson, Andrew Armstrong, Danny Feldscher, Hannah Forsythe, Jessica Gamache, Adam Gobeski, Daniel Hasty, Josh Herrin, Hsin Huang, Joe Jalbert, Greg Johnson, Patrick Kelley, Taehoon Kim, Ni-La Lê, Qian Luo, Kali Morris, Monica Nesbitt, Alicia Parrish, Kay Ann Schlang, Ai Taniguchi, Drew Trotter, Adina Williams, and Chenchen Xu. Getting drinks and dinner with Curt, Ai, Kali, Greg, and Jess was always fun, as were fires at Greg and Jason's.

Rounding things out for the wonderful MSU community of linguists during my time there are the faculty. Thank you to Alan Beretta, Karthik Durvasula, Yen-Hwei Lin, Marcin Morzycki, Alan Munn, Deogratias Ngonyani, Cristina Schmitt, and Suzanne Evans Wagner for everything over the course of my time at MSU.

Marcin's undergraduate course in semantics was a thing of beauty. Watching someone get undergraduates to invent the lambda calculus using the Socratic method was positively delightful. And Marcin's sense of humor only added to the class. Speaking of acknowledgments sections being fun to read, I invite you to enjoy Marcin's sense of humor in the acknowledgments section of Morzycki (2015) if you ever have the time and inclination. Thanks to Marcin for being on my MA committee and for making semantics meetings at MSU fun and enjoyable.

Karthik has become a great friend and collaborator over the years. His generosity towards students and mentees with his time is amazing, even when it comes at the cost of progress in his own research and career. It's been fun seeing him at conferences over the years and keeping in touch now that I'm no longer at MSU. Congratulations to you and Becky, Karthik, on welcoming Maya in to your family, and thank

you for everything over the years.

It's absolutely impossible to adequately express how grateful I am to Cristina and Alan for everything they've done for me throughout my time in linguistics. It's also extremely difficult to convey how much they have done to support undergraduate research in linguistics at MSU. Cristina in particular was an amazing advocate for undergraduates and did a wonderful job as advisor to the undergraduate linguistics club, qUALMS.¹ Their willingness to go above and beyond in making the annual undergraduate research conferences that qUALMS hosted possible was remarkable. These conferences (yes, two of them, each with their own terrible/amusing acronym) made it possible to get a sense of what academic life is like and were a great experience for everyone involved. Alan helped foster my passing interest in all things computer related, including \LaTeX . I'm sure most linguists who use \LaTeX are familiar with Alan's helpful answers to questions on the \TeX - \LaTeX Stack Exchange website. In the course of writing this dissertation, I ended up writing my own \LaTeX class file to meet the university formatting requirements due to dissatisfaction with the \LaTeX template that is available on the graduate school's website. This class file is heavily based on the one that Alan has written for MSU theses and dissertations. It was a fun way to procrastinate on writing parts of this dissertation, and the interest in computers and programming that I've developed has been pretty instrumental in allowing me to transition into a tech career, out of academia. While I'm sad to be leaving academia and research behind, I'm excited about this transition for a variety of reasons, including the prospects of better work-life balance and a stable job (especially in the short term), as well as location independence thanks to being able to work remotely. So thank you, Alan, for fostering my nascent interest in these things and for all the contributions you've made over the years to help linguists better typeset their work.

And of course, were it not for Alan and Cristina, I doubt I would have ended up at UMD. They were among the first graduate students of the linguistics program at UMD; indeed, Alan was the first. They both encouraged me to follow in the footsteps of those others who went from MSU to UMD, and I'm extremely glad that I did. It has been a joy to be part of the intellectually stimulating and absolutely vibrant UMD linguistics community over these last 5 years. I'm very grateful to you both, Cristina and

¹This is one of Chris Heffner's many entertaining acronym inventions.

Alan; thank you!

As noted, my time at UMD has been a delight. It's a wonderfully energetic and vigorous community. While the COVID-19 global pandemic did significantly change what the last few years of my time in the program looked like, it's continued to be a great community to be a part of. I only regret that I haven't been able to get to know some of the first-, second-, and third-year graduate students as well as I otherwise might have. Zulfiyya Aghakishiyeva, Maša Bešlin, Imane Bou-Saboun, Jingyi Chen, Clara Cuonzo, London Dixon, Rosa Eun Kyoung Lee, Fedya Golosov, Katherine Howitt, Nika Jurov, Alex Krauska, Justin Malčić, Jessica Mendes, Polina Pleshak, Joselyn Rodriguez, Leslie Ruolan Li, Luisa Seguin, Jack Yuanfan Ying, and Xinchu Yu, even if we didn't get to interact as much in person as would have been desirable, I'm nonetheless glad that my time at UMD overlapped with yours. I wish you all the best in the years to come.

Despite the pandemic and starting a job in industry during my last semester of the program, I feel lucky that I've had the opportunity to get to know Katherine a bit. When chatting with her when she was a prospective student, we learned that we shared a lot of interests, both inside and outside of linguistics.

There are many others in the linguistics community who I have had the opportunity to interact with more in person and who have also made my time at UMD special. Thanks in particular to all of the members of the language acquisition lab at UMD over the years, including Imane Bou-Saboun, Dan Goodhue, Valentine Hacquard, Mina Hirzel, Tyler Knowlton, Hisao Kurokami, Jeff Lidz, Tara Mease, Laurel Perkins, Alexander Williams, Yu'an Yang, and Jack Yuanfan Ying. Though I did not overlap with them while they were at UMD, I feel grateful that I've also gotten to know Rachel Dudley, Julie Gerard, and Alexis Wellwood over the years. Thanks as well to all of the undergraduates involved in the lab, including, in particular, Simon Chervenak, Katie Kincaid, Bekki Kline, and Rosetta Previti.

Thanks to Mina and Laurel for always offering insightful feedback.

Tara has done an amazing job running the show, even with the pandemic. I'm glad I've gotten to know you over the years, Tara, and I'm glad I could be one of the few friends of yours you could turn to when it came to appreciating the confusion over a "PR" between you and Jon. Thank you, too, for all of the yogurt over the years. And a very special shoutout to Xander Mease for being awesome.

I'm also extremely grateful to have gotten to interact with a number of other amazing people in the community including Suyoung Bae, Lalitha Balachandran, Shohini Bhattasali, Christian Brodbeck, Jon Burnsky, Nancy Clarke, Aura Cruz Heredia, Bethany Dickerson, Anouk Dieuleveut, Aaron Doliana, Annemarie van Dooren, Lara Ehrenhoffer, Allyson Ettinger, Phoebe Gaston, Dan Goodhue, Jeff Green, Zara Harmon, Cassidy Henry, Mina Hirzel, Kasia Hitczenko, Nick Huang, Maggie Kandel, Tyler Knowlton, Hisao Kurokami, Ted Levin (both the living version and the cardboard version), Shevaun Lewis, Chia-Hsuan Liao, Paulina Lyskawa, Anton Malko, Gesoel Mendes, Hanna Muller, Masato Nakamura, Jackie Nelligan, Zoe Ovans, Max Papillon, Laurel Perkins, Rodrigo Ranero, Thomas Schatz, Zach Stone, Sigwan Thivierge, Craig Thorburn, Alayo Tripp, Jad Wehbe, Laurel Whitfield, Zach Wellstood, Yu'an Yang, and Anissa Zaitsu.

Thank you as well to the broader Language Science Center community at UMD, and thanks to Shevaun, Caitlin Eaves, Colin Phillips, and Tess Wood for all that they've done to make this community possible.

The Bias in Linguistics group has been another rewarding community to be a part of. Thanks to Bethany, Karthik, Phoebe, Dan, Mina, Kasia, Maggie, Paulina, Hanna, Jackie, Max, Alicia, and Laurel, for a lot of great (if difficult) discussion of equity and representation issues in our field and for working towards improvement in these areas. The status quo is unfortunate, to say the least, but people like this provide a lot of reason for hope.

The statistics reading group organized by Anton and Phoebe, which Hanna and I joined in our second year, was extremely useful. Thank you to all three of you for that experience. A later iteration of this reading group which also included Kathleen Oppenheimer and Ian Phillips proved to be just as useful; thanks for all of the great discussions. Another reading group that I immensely enjoyed during my time at UMD was the one that met to read Gallistel & King (2010). Thank you to Bethany, Anton, Hanna, Max, and Norbert Hornstein, for reading and discussing such a great book with me. I also really enjoyed reading Pietroski (2018) with Tyler and Hisao, and, later, Pietroski (2005a) with Dan, Tyler, Norbert, Tonia Bleam, Bill Idsardi, and Michael Israel.

On the slightly less sciencey side of things and the slightly more sandy side of things, thanks to Hanna,

Jon, and Nancy for organizing various Beachwee—not a typo, at least not on my part—trips over the years. The trip in 2018 to Cape Charles with Hanna, Jon, Nancy, Phil White, Ted, Paulina, Max, Sigwan, Bethany, Hisao, and Nima Kurokami was a lot of fun, as was the 2019 trip to Deale with Hanna, Jon, Nancy, Phil, Ted, Paulina, Max, Jackie, and Laura Bailey. Another fond memory over the years was the snowboarding/skiing trip to Snowshoe with Paulina, Ted, Tyler, Zoe, Jackie, Laura, Audrey Manicor and Tim Liu. Thanks to you all for a great time, and thanks to Audrey, Tim, and Laura for putting up with a bunch of linguists! No easy feat, I'm sure.

I'm really grateful I've had the opportunity to get to know Tyler and Zoe. I appreciate that they have been willing to share some entertaining insights about their lives over the years, some of which were shared and discussed at length during Jeff and Jared Novick's seminar on extralinguistic cognition in development taught over Zoom during the pandemic. Who knew that Tyler would eat all of the bananas after grocery shopping before Zoe could have any, that Tyler doesn't wash his mug in between a cup of coffee and a cup of tea, or that Zoe goes on cleaning benders deep in the middle of the night. Now you all know, too. If you ever meet either of them, be sure to ask about the coasters. It's been a lot of fun skiing/snowboarding with you both and playing board games with you both. Zoe's board game acumen is both amazing and devastating. Trading Zoom background gibes back and forth with Tyler during acquisition lab meetings was a lot of fun. While a slightly less accomplished memer (cf. Knowlton 2021:v), Tyler did have [one particularly good one](#).²

I couldn't have asked for a better cohort. Thank you, Hisao, Jackie, Hanna, and Yu'an, for being amazing people to share an office with in our first year and to spend time with over the subsequent years. A special shoutout to all of the significant others, as well. I'm glad I've gotten to know you all better, Nima, Aura, Jon, and Julian Schlöder. Yu'an and I will get you to read Gallistel & King (2010) yet, Julian.

Hisao, it's been great working alongside you in the acquisition lab, taking classes with you, and reading Pietroski (2018) with you. I feel lucky that I've gotten to know you and Nima both, and I'm extremely grateful for your friendship over the years. I hope we keep in touch.

Jackie, I think you've always been the most grounded one out of all of us. I feel extremely lucky to be

²[Here is an Internet Archive version of the link](#) for posterity.

able to call you a friend. I've really enjoyed skiing/snowboarding with you, and I hope we get to continue to do that together in the years to come. I'll forever cherish our walks back to lot 1B together from the department. Don't forget to have a soy latte handy for a possible particular eventuality. See you at the trampoline park.

Hanna, you're one of the most careful and perceptive thinkers I know. Being your peer has been extremely intellectually rewarding. I feel quite fortunate that we ended up in the same cohort. It's also been a lot of fun living with you, Jon, and, of course, Callie. Thanks for putting up with all of the ongoing maintenance. I hope one day that Laura and I are able to get you and Jon to go backpacking with us. Or maybe we'll yet get you both to go skiing. Thanks for everything over the years, and congratulations to you and Jon on the upcoming wedding. It's very exciting!

Yu'an, I really appreciate all the discussions we've had over the years about syntax, semantics, graduate school, and academia. It was great taking most of the same classes as you. Your questions in class were always sharp and insightful and provoked a lot of great discussion. I also really value our friendship. Laura and I really enjoy hanging out with you (and Julian, when he's been in town). I hope we continue to hang out in the years to come! Laura and I will always be down to get dinner with you. I'm sure you'll order a steak. Maybe one day, Laura, Julian, and I will get you to come around to potatoes, too.

Kim Kwok is a superhero. Thanks Kim for making everything in the department just work, for being an extremely competent and extremely proactive administrator, and for just being generally awesome. The entire department is extremely indebted to you. I don't know what any of us would have done without you.

The linguistics community at UMD would not be what it is were it not for the faculty. Thanks to Peggy Antonisse, Tonia Blear, Naomi Feldman, Valentine Hacquard, Norbert Hornstein, Bill Idsardi, Howard Lasnik, Ellen Lau, Jeff Lidz, Colin Phillips, Paul Pietroski, Masha Polinsky, Omer Preminger, Philip Resnik, Juan Uriagereka, Alexander Williams, and Andrea Zukowski.

Thank you Peggy and Tonia for being great people to TA for, for being so invested in our success as educators, and for all of the support. I'm glad to know that you have an uncle named Jim, Tonia.

Naomi is a fierce advocate for graduate students and an amazing person. The department is extremely

lucky to have her. I also feel lucky to call Naomi a collaborator. Despite not being one of her advisees, she was willing to dedicate time to work with me on turning a final paper for her computational psycholinguistics class into a conference presentation and conference proceedings paper. This was extremely generous, Naomi; thank you.

Valentine always had useful feedback in acquisition lab meetings, and her Semantics II course was a tour de force in all things intensional semantics. Thanks for everything over the years, Valentine.

Bill has been a great chair for the department, and his intellectual pursuits are incredibly wide ranging and incredibly interesting. I wish we could have interacted more, but thanks for everything you've done for graduate students as chair of the department over the years, especially amidst the difficult pandemic.

Ellen is another person that the department is extremely lucky to have. She's genuinely invested in graduate student success and graduate student well being. The department is also an intellectually more rigorous place because of her.

Paul retired and moved to Rutgers just as I came to the department. I regret that I didn't overlap with him, but I feel extremely lucky to have been in his intellectual orbit nonetheless. I really enjoyed the "Meanings on Mondays" seminar that he offered over Zoom during the pandemic. I find his take on semantics extremely refreshing. Thanks for the opportunity to participate in such a wonderful seminar and for your contributions to the field.

I regret that I didn't have as much of an opportunity to interact with Masha during my time in the department, but I really enjoyed her course on verb initial languages at the 2015 Linguistic Institute. Her work is incredibly expansive, and she makes the department better for it.

Philip's enthusiasm is contagious. He brings a lot of energy to the department, making it an exciting community to be a part of. I also really enjoyed his computational linguistics course. Thanks for everything over the years, Philip.

I had the opportunity to TA Syntax II when it was taught by Juan. It was a great experience. His intellectual interests are also quite wide ranging, and I'm grateful for the various conversations we got to have over the years.

Alexander's sardonic sense of humor makes the department a more entertaining place to be. His

Semantics I course was very thorough in raising a lot of fundamental questions about the field in a way that I really appreciated. He's an extremely meticulous thinker and a fun person. Thanks for making the department a better and more entertaining place.

I feel lucky that I've gotten to know Andrea. We've had some similar research interests over the years, and I really appreciate her thoughts and feedback on my work. Also, running the DC Ragnar Relay in 2018 with her, Alex Brassel, Tom Conners, Xinzi He, Nick, Shevaun, Colin, Jo Shoemaker, JJ Su, Yogarshi Vyas, and Michelle Yuan, with support from K. Alnajar, Tara, and Xander, was a lot of fun.

Of course, I owe many thanks as well to my committee: Yi Ting Huang, Howard Lasnik, Colin Phillips, Omer Preminger, Jeff Lidz, and Norbert Hornstein.

Yi Ting and I have also shared a variety of research interests over the years, and I regret that I did not get to interact with her more during my time here. The pandemic deprived of us several good opportunities, unfortunately. Nonetheless, I really appreciate her feedback on my dissertation and the diligence on her part that went into providing that feedback. I really enjoyed our conversation at the HSP after party at our house; thanks Yi Ting, and don't be cringey!

I feel extremely lucky that I was able to have Howard on my committee. He's worked on many of the issues discussed in this dissertation, and his feedback was extremely helpful, even if we don't ultimately agree on some of the matters. In particular, Chapter 3 is much better thanks to Howard's comments, his amazing command of the intellectual history of our field, and his unmatched ability to synthesize that history. Howard's Syntax I course was by far one of my favorite courses that I got to take during my time in the program at UMD. Thanks, Howard!

Colin's influence should be evident throughout this dissertation. He has always encouraged careful consideration of linking hypotheses in the context of psycholinguistic experiments. His two psycholinguistics courses were also among my favorite while at UMD, where he encouraged us to really think through the experiments we were reading and how (or whether) the experimental design and its results justified the inferences that the researchers made. Thanks Colin!

Omer has been a great collaborator. I really enjoyed working on the Bulgarian experiment with him and Roumi Pancheva. Omer's a careful, sharp, and quick thinker. I've also enjoyed geeking out with

Omer about random technology-related stuff over the years. Thanks as well for a great Syntax II course, Omer!

Jeff has been a wonderful advisor and collaborator over the years. Meetings with him were always useful and productive. The intellectual rigor, attention to experimental design and design of stimuli, as well as cognizance of the bigger-picture issues that Jeff brings to all of the projects that he's involved in is inspiring. He's also fun to hang out with. Traveling to BUCLD with him and other members of the UMD language acquisition lab was always a lot of fun. One other thing that I also really appreciate about Jeff is that he seems to have pretty good work-life balance (at least for an academic) and models that for his students. It's been extremely rewarding working with you, Jeff. Thanks for being a great advisor, and thanks for how supportive you've been of my transition into industry.

Norbert has been an amazing advisor. It's no exaggeration to say that Norbert is basically the reason I came to UMD. I first came across Norbert's approach to theoretical issues in linguistics when reading Hornstein (1999) for a syntax course at MSU, and then later when reading Hornstein (2009). I also had the opportunity to take his introduction to minimalist syntax course at the 2013 Linguistic Institute, which was an absolute tour de force. Reading and engaging with his blog over the years prior to coming to UMD was also a lot of fun and quite intellectually stimulating. Nobody seems to have a better grasp on what the core theoretical issues facing the field are, and I feel extremely lucky to have gotten to work with Norbert and to be one of his last students. Perhaps somewhat ironically, then, the bulk of our meetings were spent discussing current events and politics, with some occasional linguistics thrown in for good measure. I absolutely loved these meetings and will always cherish them. It was extremely validating and cathartic to discuss such things with someone who has, all things considered, pretty similar views. Moreover, Norbert was an extremely supportive advisor. Thanks for everything, Norbert!

Before turning to some non-linguists, I'd also like to thank Elaine Grolla and Roumi Pancheva for being great collaborators. Thank you both for working with me over the years!

First, among the non-linguists, thanks to all of my high school friends who have kept me grounded over the years, including Brett Beutell, Charlie Crocker, Andy Engstrom, Shannon "Shevans" Engstrom, Shannon Fletcher, Amanda Ling, Tim Liu, Audrey Manicor, Tanay Mehta, Dongwoo Suh, Quintin

Walker, and Julia Wang. Thanks in particular to Tanay Mehta for being an absolutely great friend and for helping me sort through the transition from academia to industry.

Thanks to all of my family, both immediate and extended, for always being there for me and for being incredibly supportive over the years. In particular, thanks to my dad, Jeff Liter, mom, Jackie Prokash, brother, JJ Liter, and sister-in-law, Jenny Liter.

My dad has always been an incredibly hard worker, and I feel lucky to have gotten some of his work ethic from him. I also appreciate our shared interest in winter sports. It's been great skiing and snowboarding together over these last 30 years or so.

It's basically impossible to imagine someone more caring, loving, and supporting than my mom. Thanks for everything that you've done for me and JJ over the years. You're an absolutely amazing person, mom. I always look forward to getting to visit you, and thanks for understanding that I wasn't able to text and call as much while finishing up this dissertation.

JJ is a great and supportive brother. It's comforting to know that we'll always have each other's backs. Thanks for everything over the years, including not rubbing it in when everyone always thinks you're the older brother, ha. I'm honored that I got to be your best man at your and Jenny's wedding.

I'm glad to have Jenny as a sister-in-law. It's also great to have another coffee drinker in the family. I still don't know why JJ hasn't come around to it, but I'm glad there will always be options for coffee at your house. Thanks, Jenny, not only for ensuring coffee availability, but for being a great and fun person. I'm glad that you're part of the family.

Love you all!

Finally, thanks to Laura Bailey and her family for everything over the years. The backpacking trips that we've gotten to do with her parents Ed and Marlene Bailey, as well as brother, Tucker Bailey, and sister-in-law, Nicole Bailey, have been a lot of fun. Thanks for welcoming me into the family, and thanks for understanding when I inevitably had a paper that I needed to work on.

Laura, there's so much to say, but it's so hard to put into words. Thanks for being an amazing partner. Thanks for putting up with all of the linguists and our inability to discuss non-linguistic things. Your support over the years is nothing short of astounding, especially in this last semester when I also started

working. I constantly feel incredibly lucky to be your partner, and I'm looking forward to what the future holds for us. Thank you, and I love you.

Table of Contents

Preface	ii
Acknowledgments	iii
Table of Contents	xv
List of Tables	xx
List of Figures	xxi
List of Abbreviations	xxiii
Chapter 1 Introduction	1
1.1 Grammaticality and acceptability	4
1.1.1 Grammars and grammaticality	4
1.1.2 Acceptability judgments	6
1.1.2.1 On identifying the issue in a failed parse	10
1.1.2.2 Acceptability judgments are experiments	12
1.1.2.3 Interim summary	14
1.1.2.4 Linking hypothesis between grammaticality and acceptability	15
1.2 Competence and performance considerations in acquisition work	22
1.3 Chapter summary and dissertation overview	25
Chapter 2 Children’s medial wh-phrases: Competence or performance?	31
2.1 Introduction	31
2.2 Different developmental accounts	34
2.2.1 A failure of inhibition account	34
2.2.2 Non-target grammar accounts	41
2.2.2.1 Evidence for non-target grammar accounts and its issues	42
2.2.2.2 General issues with non-target grammar accounts	44
2.3 The experiment	45
2.3.1 Predictions	46
2.3.2 Methods and materials	46
2.3.2.1 Elicited production	46
2.3.2.2 Cognitive inhibition task	47
2.3.2.3 Motor inhibition task	48
2.3.2.4 Motor ability task	50
2.3.3 Participants	50

2.3.4	Results	51
2.3.4.1	Elicited production results	51
2.3.4.2	Cognitive inhibition results	55
2.3.4.3	Motor inhibition results	56
2.3.4.4	Motor ability results	56
2.3.4.5	Inter-task correlations	57
2.3.4.6	Statistical analysis	58
2.3.5	Discussion	63
2.3.5.1	Medial wh-phrases and <i>that</i> -trace violations	63
2.3.5.2	Medial wh-phrases and disfluencies	65
2.3.5.3	General discussion	65
2.4	Conclusion	73
Chapter 3	Islands: A brief overview	75
3.1	Island violations and theories of them	75
3.1.1	A typology of islands	75
3.1.2	Syntactic theories of island effects	80
3.2	Subtraction logic for island effects	86
3.2.1	Minimal pairs	86
3.2.2	Minimal quartets	87
3.3	Island violations that are acceptable but ungrammatical	93
3.3.1	On putative variation in Romance's bounding nodes	93
3.3.2	On the putative absence of certain island effects in Norwegian	97
3.3.2.1	A brief aside on interpretations of acceptability magnitudes	100
3.3.3	On putative argument-adjunct asymmetries in Mandarin	102
Chapter 4	Sluicing away island violations: Competence or performance?	106
4.1	Island violations and sluicing	109
4.2	The experiments	115
4.2.1	Experiment 1	115
4.2.1.1	Experimental design and materials	115
4.2.1.2	Methods	118
4.2.1.3	Participants	120
4.2.1.4	Results	121
4.2.1.5	Discussion	126
4.2.2	Experiment 2	127
4.2.2.1	Experimental design and materials	127
4.2.2.2	Methods	129
4.2.2.3	Participants	130
4.2.2.4	Results	130
4.2.2.5	Discussion	133
4.2.3	Experiments 3a and 3b	135
4.2.3.1	Experimental design and materials	135
4.2.3.2	Methods	137
4.2.3.3	Participants	138

4.2.3.4	Results	139
4.2.3.5	Discussion	141
4.2.4	Experiments 4a and 4b	142
4.2.4.1	Experimental design and materials	142
4.2.4.2	Methods	144
4.2.4.3	Participants	145
4.2.4.4	Results	146
4.2.4.5	Discussion	149
4.2.5	Experiments 5a and 5b	150
4.2.5.1	Experimental design and materials	150
4.2.5.2	Methods	151
4.2.5.3	Participants	151
4.2.5.4	Results	152
4.2.5.5	Discussion	155
4.3	Summary and general discussion	155
4.4	Conclusion	159
Chapter 5	The Principle of Minimal Compliance: Competence or performance?	161
5.1	The Principle of Minimal Compliance	162
5.2	The experiment	164
5.2.1	Experimental design and materials	164
5.2.1.1	Subexperiment 1	165
5.2.1.2	Subexperiment 2	166
5.2.1.3	Subexperiment 3	169
5.2.2	Methods	171
5.2.3	Participants	173
5.2.4	Results	173
5.2.4.1	Subexperiment 1 results	173
5.2.4.2	A brief detour: Stepanov & Krapova (2021)	177
5.2.4.3	Subexperiment 1 results revisited	179
5.2.4.4	Subexperiment 2 results	183
5.2.4.5	Subexperiment 3 results	185
5.2.5	Discussion	187
5.3	Conclusion	189
Chapter 6	Conclusion	191
Appendix A	Elicited production materials for experiment in Chapter 2	195
Appendix B	English materials for all experiments in Chapter 4	200
B.1	Materials for Experiment 1	200
B.1.1	Experiment 1: All target items	200
B.1.1.1	Subject island items	200
B.1.1.2	Complex NP island items	208
B.1.2	Experiment 1: Lists with fillers in pseudorandomized order	217

	B.1.2.1	List 1	217
	B.1.2.2	List 2	228
	B.1.2.3	List 3	238
	B.1.2.4	List 4	249
B.2	Materials for Experiment 2		259
B.2.1	Experiment 2: All target items		259
	B.2.1.1	Subject island items	259
	B.2.1.2	Complex NP island items	265
B.2.2	Experiment 2: Lists with fillers in pseudorandomized order		271
	B.2.2.1	List 1	271
	B.2.2.2	List 2	279
	B.2.2.3	List 3	287
	B.2.2.4	List 4	295
B.3	Materials for Experiments 3a and 3b		303
B.3.1	Experiment 3a: All target items		303
B.3.2	Experiment 3a: Lists with fillers in pseudorandomized order		309
	B.3.2.1	List 1	309
	B.3.2.2	List 2	315
	B.3.2.3	List 3	320
	B.3.2.4	List 4	326
B.3.3	Experiment 3b: All target items		332
B.3.4	Experiment 3b: Lists with fillers in pseudorandomized order		338
	B.3.4.1	List 1	338
	B.3.4.2	List 2	344
	B.3.4.3	List 3	350
	B.3.4.4	List 4	356
B.4	Materials for Experiments 4a and 4b		362
B.4.1	Experiment 4a: All target items		362
B.4.2	Experiment 4a: Lists with fillers in pseudorandomized order		368
	B.4.2.1	List 1	368
	B.4.2.2	List 2	372
	B.4.2.3	List 3	375
	B.4.2.4	List 4	379
B.4.3	Experiment 4b: All target items		383
B.4.4	Experiment 4b: Lists with fillers in pseudorandomized order		389
	B.4.4.1	List 1	389
	B.4.4.2	List 2	393
	B.4.4.3	List 3	397
	B.4.4.4	List 4	401
B.5	Materials for Experiments 5a and 5b		404
B.5.1	Experiment 5a: All target items		404
B.5.2	Experiment 5a: Lists with fillers in pseudorandomized order		410
	B.5.2.1	List 1	410
	B.5.2.2	List 2	414
	B.5.2.3	List 3	418

B.5.2.4	List 4	422
B.5.3	Experiment 5b: All target items	425
B.5.4	Experiment 5b: Lists with fillers in pseudorandomized order	431
B.5.4.1	List 1	431
B.5.4.2	List 2	435
B.5.4.3	List 3	438
B.5.4.4	List 4	442
Appendix C	Bulgarian materials for experiment in Chapter 5	447
C.1	All target items	447
C.2	Lists with fillers in pseudorandomized order	466
C.2.1	List 1	466
C.2.2	List 2	480
C.2.3	List 3	493
C.2.4	List 4	507
Bibliography		521

List of Tables

2.1	Average number of produced questions where medial wh-phrase was possible, by question type, with standard deviations in parentheses	52
2.2	Number of different types of medial wh-phrase productions in our data set	54
2.3	Number of occurrences of each disfluency type and number of each type that occurred at a clause boundary. Percentages are given in parentheses for the proportion of these disfluencies relative to the total number of utterances and relative to the number of utterances with that disfluency type and with multiple clauses, respectively. Percentages are not given for the totals because these disfluencies were not mutually exclusive (<i>i.e.</i> , they can, and occasionally did, occur in the same utterance).	56
2.4	Pearson’s correlation coefficients for various task measures	57
2.5	The fixed effects of our 6 different logistic mixed-effects models	60
2.6	Comparing the different models	61
2.7	Details of the best fitting model	61
4.1	Details of the linear mixed-effects model for the complex NP island data from experiment 1	123
4.2	Details of the linear mixed-effects model for the subject island data from experiment 1 . .	123
4.3	Details of the linear mixed-effects model for the complex NP island data from experiment 2	132
4.4	Details of the linear mixed-effects model for the subject island data from experiment 2 . .	132
4.5	Details of the linear mixed-effects model for the data from experiment 3a	141
4.6	Details of the linear mixed-effects model for the data from experiment 3b	141
4.7	Details of the linear mixed-effects model for the data from experiment 4a	147
4.8	Details of the linear mixed-effects model for the data from experiment 4b	148
4.9	Details of the linear mixed-effects model for the data from experiment 5a	153
4.10	Details of the linear mixed-effects model for the data from experiment 5b	154
4.11	Summary of the differences-in-differences scores (DDs) and their associated <i>p</i> -values from experiments 2 through 5b, organized by manipulation (either structure × dep. length or structure × pronoun type)	156
5.1	Details of the linear mixed-effects model for subexperiment 1 results	175
5.2	Details of the linear mixed-effects model for subexperiment 2 results, for the 42 participants who allow wh-dependencies across complement clauses headed by <i>če</i>	184
5.3	Details of the linear mixed-effects model for subexperiment 3 results, for the 42 participants who allow wh-dependencies across complement clauses headed by <i>če</i>	186

List of Figures

2.1	Mixed instructions and example trials from Simon task	49
2.2	Proportions of questions with medial wh-phrases, by question type; error bars indicate one standard error of the proportion	54
2.3	Proportion of participants that erroneously named distractor, by group; error bars indicate one standard error of the proportion	57
2.4	Mean error rate, by group and by condition; error bars indicate one standard error of the mean	58
2.5	Average number of successful scales completed, by group; error bars indicate one standard error of the mean	59
2.6	Odds ratios of the best fitting model	62
3.1	Example island effect with non-parallel lines when plotting acceptability scores for form-meaning pairings in a minimal quartet	91
4.1	Predictions for island violations in the context of sluicing 2×2 experiments, with the left panel showing what we would expect if (87d) and (88d) are grammatical, and the right panel showing what we would expect if they are not	118
4.2	Results from experiment 1 for the complex NP island stimuli collapsed across lists, with mean z -score transformed acceptability ratings plotted on the y -axis; error bars indicate one standard error of the mean	122
4.3	Results from experiment 1 for the subject island stimuli collapsed across lists, with mean z -score transformed acceptability ratings plotted on the y -axis; error bars indicate one standard error of the mean	123
4.4	Results from the first two-thirds of experiment 1 for the complex NP island stimuli collapsed across lists, with mean z -score transformed acceptability ratings plotted on the y -axis; error bars indicate one standard error of the mean	124
4.5	Results from the first two-thirds of experiment 1 for the subject island stimuli collapsed across lists, with mean z -score transformed acceptability ratings plotted on the y -axis; error bars indicate one standard error of the mean	125
4.6	Results from experiment 2 for the complex NP island stimuli collapsed across lists, with mean z -score transformed acceptability ratings plotted on the y -axis; error bars indicate one standard error of the mean	131
4.7	Results from experiment 2 for the subject island stimuli collapsed across lists, with mean z -score transformed acceptability ratings plotted on the y -axis; error bars indicate one standard error of the mean	132
4.8	Results from the four target conditions from experiment 3a collapsed across lists, with mean z -score transformed acceptability ratings plotted on the y -axis; error bars indicate one standard error of the mean	139

4.9	Results from the four target conditions from experiment 3b collapsed across lists, with mean z -score transformed acceptability ratings plotted on the y -axis; error bars indicate one standard error of the mean	140
4.10	Results from the four target conditions from experiment 4a collapsed across lists, with mean z -score transformed acceptability ratings plotted on the y -axis; error bars indicate one standard error of the mean	147
4.11	Results from the four target conditions from experiment 4b collapsed across lists, with mean z -score transformed acceptability ratings plotted on the y -axis; error bars indicate one standard error of the mean	148
4.12	Results from the four target conditions from experiment 5a collapsed across lists, with mean z -score transformed acceptability ratings plotted on the y -axis; error bars indicate one standard error of the mean	153
4.13	Results from the four target conditions from experiment 5b collapsed across lists, with mean z -score transformed acceptability ratings plotted on the y -axis; error bars indicate one standard error of the mean	154
5.1	Predictions for the subexperiment 1 results	166
5.2	Predictions for the subexperiment 2 results, with the left panel showing what we would expect if (106)-type examples are grammatical, and the right panel showing what we would expect if they are not	168
5.3	Predictions for the subexperiment 3 results, with the left panel showing what we would expect if (106)-type examples are grammatical, and the right panel showing what we would expect if they are not	172
5.4	Results from subexperiment 1 collapsed across lists, with mean z -score transformed acceptability ratings plotted on the y -axis; error bars indicate one standard error of the mean	174
5.5	Results from subexperiment 1 for the 42 participants who exhibited a relative clause island effect, with mean z -score transformed acceptability ratings plotted on the y -axis; error bars indicate one standard error of the mean	182
5.6	Results from subexperiment 2 for the 42 participants who allow wh-dependencies across complement clauses headed by $\check{c}e$, with mean z -score transformed acceptability ratings plotted on the y -axis; error bars indicate one standard error of the mean	184
5.7	Results from subexperiment 3 for the 42 participants who allow wh-dependencies across complement clauses headed by $\check{c}e$, with mean z -score transformed acceptability ratings plotted on the y -axis; error bars indicate one standard error of the mean	186

List of Abbreviations

- I** first person
- 3** third person
- AIC** Akaike Information Criterion
- ASP** aspect
- AUX** auxiliary
- C** complementizer
- COMP** complementizer
- CP** complementizer phrase
- D** determiner
- DP** determiner phrase
- ECP** Empty Category Principle
- F** feminine
- LF** Logical Form
- M** masculine
- N** noun
- NEG** negative
- NP** noun phrase
- PF** Phonological Form
- PL** plural
- PMC** Principle of Minimal Compliance
- REL** relative
- SBJV** subjunctive

SG singular

T tense

TP tense phrase

V verb

∅ little *v*

VP verb phrase

*∅***P** little *v* phrase

Chapter 1 Introduction

This dissertation consists of a series of case studies which all deal with the issue of whether the signal in a set of given measurements that we take in the course of linguistic inquiry predominantly reflects underlying grammatical competence or performance factors. By competence, I mean, following Chomsky (1965:4), the (subconscious) knowledge that a person has of their language. By performance factors, I mean anything other than this competence that could obscure the underlying competence in the course of using one's linguistic knowledge to engage in linguistic activity (production, comprehension, giving acceptability judgments, *etc.*).

That people should have linguistic competence and that we should be concerned with trying to understand and explain it—as opposed to merely trying to understand and explain the various linguistic behaviors that individuals might exhibit at various points in time—should, at this point in the history of linguistic inquiry and cognitive science more broadly, hopefully be relatively uncontroversial, but it is perhaps worth briefly remarking upon nonetheless. We, as language users, have the in-principle capacity to produce and comprehend an infinite number of sentences. How could we have such a capacity? That is to say, what property could we possess which would allow us to have this in-principle ability? To the best of my knowledge, the only compelling explanation of this relatively banal fact is that we must possess some generative capacity which allows for the combination of a finite number of lexical items in an infinite number of ways (see, *e.g.*, Chomsky 1955, 1957). What exactly this generative capacity looks like is a topic that is highly debated.

As just one example (and painting in broad strokes), construction grammarians think this generative capacity is constituted by knowledge of sentence- or phrase-sized constructions that carry meaning and into which lexical items can be slotted, thereby allowing the production and comprehension of arbitrary and novel sentences (see, *e.g.*, Fillmore 1988). On the other hand, generative grammarians think this

generative capacity is constituted by knowledge of lexical items, their syntactic categories, their meanings, and syntactic operations which license the combination of these lexical items in an infinite number of ways (see, *e.g.*, Chomsky 1993).³ Even within each of these two broad approaches to explaining linguistic knowledge (*i.e.*, competence), there is much debate and disagreement about how exactly such knowledge is constituted. And there are of course other approaches, too.

What these approaches have in common is a(n at least implicit) commitment to the idea that such a generative capacity exists and is worth trying to understand and explain in its own right, as there does not seem to be any compelling alternative explanation of a person's in-principle ability to comprehend and produce an infinite number of sentences. For example, it certainly seems unlikely that this ability is explained by people having memorized an infinite number of sentences in the course of growing up and acquiring their language, particularly given that we have a finite amount of space in our brains and a finite amount of time in which to have acquired our languages. As such, the work in this dissertation proceeds on the assumption that we have such a generative capacity and that it is worth studying in its own right.⁴

However, if we accept that such a capacity exists and underlies our linguistic behaviors that we exhibit throughout the courses of our lives, then we must also accept that those linguistic behaviors that we do exhibit are not transparent reflections of the underlying generative capacity (or competence) that we possess. Why must we accept this; that is to say, why should this be so? Various types of linguistic behaviors that individuals might exhibit (*e.g.*, misspeakings, stumblings over one's words, productions that never exceed a billion words in length, failures to recall a word, inadvertent chokings in the middle of a sentence, *etc.*) would most naturally be explained not only in terms of one's linguistic knowledge but also things like

³To be clear, there's a very clear way in which the construction grammar approach of, for example, Fillmore (1988) is a generative approach, insofar as this approach also adopts the assumption that humans possess a generative capacity which explains their in-principle ability to produce and comprehend an infinite number of sentences. Nonetheless, I contrast these two approaches using the labels that are standardly applied to each ("construction grammar" and "generative grammar", respectively). But indeed, the point is to highlight this shared assumption.

The only kinds of approaches that don't obviously share this assumption are usage-based approaches to linguistics (*e.g.*, Langacker 1987, 1991, Tomasello 2003, Bybee 2009, 2010). However, to the extent that such approaches deny the existence of a generative capacity, such approaches arguably have no compelling explanation of the in-principle capacity of language users to produce and comprehend an infinite number of sentences. As such, I set these approaches aside.

⁴This is not to say that trying to understand and explain the various linguistic behaviors individuals might exhibit throughout the course of their lives might not be interesting. Instead, it is only to say that we shouldn't *merely* try to explain and understand such behaviors (otherwise, we would have no compelling explanation for how it is that humans have the in-principle ability to produce and comprehend an infinite number of sentences). And indeed, it would seem that any attempt to understand and explain various linguistic behaviors will have to make reference to this generative capacity.

one's current psychological state, one's current state of tiredness, one's limited working memory, one's relation to time, one's accidental miswallowing of a piece of food, and so forth. If we were interested in merely explaining linguistic behavior (cf. fn. 4), then a joint appeal to all of these factors would plausibly give a satisfying account of our target of explanation (the behavior). Yet we are not merely interested in explaining the linguistic behaviors we might observe. We are interested in explaining the generative capacity (*i.e.*, the linguistic competence or knowledge) that individuals have, which we granted existed, as it offers the only compelling explanation of why individuals have an in-principle ability to produce and comprehend an infinite number of sentences. And it seems unlikely that this subconscious knowledge people have would (or even could) be partly constituted by events of accidental miswallowings of food, for example.

This state of affairs puts those interested in linguistic inquiry in an interesting epistemic position. If we are interested in explaining linguistic competence, yet that competence only manifests when it is put to use (*i.e.*, used to engage in linguistic behaviors), and the usage of it need not be a transparent reflection of it, how can we go about trying to ascertain its properties? The answer to this conundrum has, for the most part, been to just assume that our subjects of study are ideal language users in which case their linguistic behaviors (*i.e.*, performance) do transparently reflect linguistic knowledge (*i.e.*, competence), despite this not generally being the case (see, *e.g.*, Chomsky 1965:3). This has arguably turned out to be an extremely useful and fruitful simplifying assumption, particularly when it comes to using acceptability judgments to inform linguistic inquiry (cf. Sprouse & Almeida 2012, 2013, Sprouse, Schütze, & Almeida 2013).

But what are acceptability judgments, and how do they relate to linguistic inquiry? What exactly is the simplifying assumption that gets us from signal in our acceptability judgment measurements to inferences about competence? I discuss these issues next in §1.1 in order to set the stage for the work reported in Chapters 4 and 5. Chapter 2 deals with analogous issues of ascertaining the status of signals in our measurements, but in the context of acquisition work, where the use of acceptability judgments as a methodology for investigation is much rarer (for good reason). To set the stage for this chapter, in §1.2, I discuss why acceptability judgments are so rarely used in acquisition work, some of the alternatives that are used instead, and what at least some of the analogous considerations might be. Finally, §1.3 concludes

this introductory chapter with a summary of these issues as well as a brief overview of each of the chapters to come in this dissertation.

1.1 Grammaticality and acceptability

1.1.1 Grammars and grammaticality

We've established (or at least granted) that individuals possess some linguistic competence which undergirds their ability to produce and comprehend sentences, but can we be any more precise about what this competence must look like or must be able to do? Evidently, it must pair forms (usually signed or spoken) with meanings. Perhaps less evidently, it must also *fail* to pair certain forms with certain meanings. For example, the form in (1) seemingly only has one meaning; it means that two plus two equals four. Notably, however, only having one meaning entails that there are endlessly many meanings that (1) fails to have. For example, (1) cannot mean that two plus two is five, that two divided by two is four, that snow is lime green, and so forth.

(1) Two plus two is four.

In addition to pairing forms like those in (1) with one meaning, it also seems that linguistic competence must allow for other forms to be paired with multiple meanings. For example, it seems that (2) can have two meanings.

(2) Every number can be divided by some number to give one.

It can mean that for every number, there is some number (itself), which will return one when dividing the original number by it. But (2) can also have the (false) meaning that there is some number which will give one when you divide any other number by it. Nonetheless, even though (2) has two meanings (one true one and one false one), it still fails to have endlessly many other meanings, just like (1). And finally, there are forms like those in (3), which apparently have no meanings. That is to say, whatever knowledge native English speakers possess, it must fail to pair (3) with any possible meaning.⁵

⁵This is not to say that an intended meaning could not be recovered from (3). For example, imagine someone who is not a native speaker of English said (3) to you. It might be relatively clear what meaning they intended to convey to you by uttering

(3) * Plus two two four is.

We can thus think of linguistic competence as consisting of four things: (i) knowledge governing the licit forms in a language, (ii) knowledge governing the licit meanings in a language, (iii) knowledge governing the licit pairings of the forms and meanings in a language, and (iv) knowledge of a lexicon (*e.g.*, a list of lexical items or, in the case of Distributed Morphology, three lists, with one for syntactic atoms, one for morphological exponents, and one for meanings) for a given language. These first three aspects of linguistic competence each constitute their own fields of inquiry and are called phonology, semantics, and syntax, respectively. Moreover, we can call all four aspects of linguistic knowledge that a given individual possesses a grammar, and we can say that when a given individual's grammar licenses a particular form-meaning pairing, that pairing is grammatical. On the other hand, when a given individual's grammar does not license a particular form-meaning pairing, we can say that that pairing is ungrammatical.⁶ To be clear, grammaticality is a property of form-meaning pairings, not of forms.⁷ This point is sometimes underappreciated, perhaps due to an informal way of speaking about grammaticality. That is, linguists might sometimes say that sentences like (3) are ungrammatical, which would make grammaticality seem to be a property of forms. But this is just an informal way of speaking; what this means is that there are (3), but it should be just as evident that (3), when paired with the meaning that two plus two is four (or when paired with any meaning, for that matter), is not a licit pairing according to the knowledge that you have. That is to say, it is not a pairing that your grammar would generate.

⁶I take grammaticality to be a binary property. Some have argued that grammaticality should be understood as admitting of degrees (see, *e.g.*, Chomsky 1965:11). The main reason that some give for positing that grammaticality is not binary is that it could potentially help explain contrasts that have been observed in the acceptability of certain ungrammatical form-meaning pairings (*i.e.*, some ungrammatical form-meaning pairings are more unacceptable than others). Given that grammaticality and acceptability are not the same, however, this fails to constitute a good argument for thinking that grammaticality is non-binary. All it does is beg the question. And, if anything, the default hypothesis should be to try to explain variance in acceptability ratings with a theory of the grammar that is binary coupled with a performance theory of the acceptability judgment task, only resorting to the view that grammaticality admits of degrees when this fails.

Furthermore, one can even make a positive argument for the view that grammaticality is a binary property, not just that this should be the default hypothesis. In a response to Lau, Clark, & Lappin (2017), Sprouse et al. (2018) show that a gradient grammar only gives marginal gains in accounting for gradient acceptability judgments while at the same time markedly decreasing the grammar's ability to account for a variety of standard contrasts in the literature.

⁷One further point to be clear about, although it's a point that won't factor much into the discussion in the rest of this chapter, is that grammaticality is a property of form-meaning pairings *with respect to a given individual's grammar*. There's no reason to necessarily expect that any two individuals will have acquired the exact same grammar, even if they happen to speak the same "language". Thus, while a given form-meaning pairing might be grammatical according to one individual's grammar, it might be ungrammatical according to another's grammar. Of course, it does nonetheless seem to be the case that there is a very high degree of overlap between the grammars of individuals who do speak the same "language" (though for some interesting exceptions, see, *e.g.*, Han, Lidz, & Musolino 2007, Han, Musolino, & Lidz 2016).

no meanings with which the form in (3) can be paired to give rise to a licit form-meaning pairing.⁸ In other words, *any* pairing of the form in (3) with a meaning is ungrammatical.

To recapitulate, we can call a given individual's linguistic competence or knowledge, a grammar. Grammars consists of phonological, semantic, syntactic, and lexical components, and what these grammars do is license certain form-meaning pairings (which we can call grammatical) but not others (which we can call ungrammatical). It is in virtue of these (generative) grammars that individuals have the in-principle ability to produce and comprehend an infinite number of sentences.

1.1.2 Acceptability judgments

Now that we've introduced some terminology and given a slightly more precise characterization of what linguistic competence for a given individual looks like (at least at a very high level), we can return to the questions that arose above at the beginning of this chapter—namely, what are acceptability judgments, what is their status in linguistic inquiry, and what simplifying assumption is made when drawing inferences from the signal that we get in acceptability judgment measurements, given that performance does not transparently reflect competence?

In the course of reading the preceding few paragraphs, you've already been introduced to the idea of acceptability judgments (sometimes erroneously called grammaticality judgments), at least implicitly. For example, you assented to the idea that the form in (1) can have the meaning that two plus two is four, but that it cannot have the meaning that two divided by two is four. Your assenting to this, in effect, constituted an implicit acceptability judgment. You judged that the form in (1) sounds acceptable when

⁸This does contrast with how some linguists have discussed the notion of “grammaticality” in the past. For example, Chomsky (1957:15) notes that the notion “grammatical” should not be conflated with a notion of meaningfulness. In this discussion, he contrasts (i) and (ii), saying that each of these sentences is equally meaningless, but that only (i) is grammatical.

- (i) Colorless green ideas sleep furiously.
- (ii) *Furiously sleep ideas green colorless.

His usage of the term “grammatical” here seems to be a more narrow usage, meaning something like ‘syntactically well-formed’ (though (i) does also arguably have a meaning, just a nonsensical one). In other words, this difference may just be a disagreement about terminology. If one grants that grammars consist of phonological, syntactic, semantic, and lexical components, then, in my view at least, a more natural use of the term “grammatical” would be for describing objects (*e.g.*, form-meaning pairings) that satisfy all aspects of the grammar, not just the syntactic component. Throughout this dissertation, I use the term “grammatical” in this manner.

paired with the meaning that two plus two is four, and you judged that the form in (1) does not sound acceptable when paired with the meaning that two divided by two is four. You similarly judged that the form in (2) sounds acceptable when paired with its two possible meanings, and unacceptable when paired with any other meaning. And finally, you judged that (3) sounds unacceptable when paired with any meaning.

But what do we mean by acceptable? Aren't form-meaning pairings supposed to be either grammatical or ungrammatical? This new term, acceptability, acknowledges the fact that performance does not transparently reflect competence. That is to say, while form-meaning pairings are indeed either grammatical or ungrammatical, individuals do not have conscious access to this knowledge. One's judgment that the form in (1) can be licitly paired with the meaning that two plus two is four does not arise in virtue of being able to directly consult one's own grammatical knowledge. This point is perhaps easier to appreciate with a form that has no licit meaning pairings, such as (3). But let's consider a slightly more esoteric example, such as the one in (4).

(4) * Who did the fact that Amy liked surprise Amara?

This example is ungrammatical in the sense that there is no meaning with which it can be paired to form a licit form-meaning pairing, just like (3). That is, even if you can recover an intended meaning from (4), it should be relatively clear that something about the example sounds wrong (cf. fn. 5). This particular form-meaning pairing is just not licit according to your grammar. However, unlike (3), it is perhaps slightly less obvious why it should have no meanings with which it can be licitly paired. (3) clearly doesn't follow standard English word order, whereas (4) does, and there is even a relatively reasonable meaning that (4) could plausibly have which you might have recognized despite it sounding wrong—namely, it could be asking for the identity of the person such that the fact that Amy liked that person surprised Amara. However, unless you're a linguist familiar with island violations, you might actually be hard pressed to say why exactly (4) cannot be paired with this meaning (or any meaning, for that matter). But what is the upshot of this? This suggests that, despite not having conscious access to one's own grammatical knowledge, one can nonetheless give a judgment about whether a particular form-meaning pairing would be licensed by one's grammar.

I'd like to explicitly discuss what it is that a person might be doing when giving an acceptability judgment given that they are not consciously consulting their grammar about whether it licenses the form-meaning pairing that they were given. However, before that, it's worth considering the ways in which the elicitation of an acceptability judgment can deviate from this idealized practice that I've just described. To recap, I've said that the idealized version of an acceptability judgment task will first involve giving the informant an intended meaning, usually by way of a scenario (or perhaps by way of a paraphrase), then giving them a form, and then eliciting some response from them as to whether that form can be used to express that meaning. However, when what is at stake is whether a given form can be licitly paired with either 0 or 1 meanings, linguists often skip the step of making the intended meaning explicit for the informant/participant before giving them the form.

This practice is quite common, and it is what gives rise to the informal shorthand discussed above in §1.1.1 of calling certain forms (and not form-meaning pairings) (un)acceptable/(un)grammatical. While this may be a convenient shorthand, it is nonetheless an imprecise way of speaking. It is form-meaning pairings that are grammatical or ungrammatical (with respect to a grammar), and it is form-meaning pairings that can be judged either acceptable or unacceptable. Notably, it is *not* forms alone that can be (un)grammatical with respect to a grammar or that can be judged to be (un)acceptable because grammars do not merely license forms; they license form-meaning pairings. At any rate, when we speak in this shorthand and call a given form unacceptable/ungrammatical, what we usually mean is that it cannot licitly be paired with any meaning. Throughout this dissertation, I do my best to avoid this practice. Instead, I do my best to call examples, which I take to be form-meaning pairings, either (un)acceptable or (un)grammatical, and I do my best to avoid calling forms alone (*e.g.*, sentences) (un)acceptable or (un)grammatical, though it is quite likely I have slipped up in some places as this practice is so ubiquitous.

At any rate, another case in which the elicitation of acceptability judgments might differ from the idealized practice described above is when what is at stake is whether a form can have multiple meanings. In cases such as these, especially if the informant/participant is another linguist, the intended meaning might be given not by a scenario or paraphrase but rather by means of some technical term that describes

the intended meaning in an abstract manner. In these cases, the informant must construct the intended meaning or scenario themselves from the technical term.

Now that we've seen a couple of ways in which the elicitation of an acceptability judgment might differ from the idealized practice described above, let's return to what it is that an informant/participant actually does when giving an acceptability judgment. If a person doesn't have conscious access to their grammatical knowledge when giving a judgment about whether their grammar licenses a particular form-meaning pairing, what exactly are they doing? This question is rarely explicitly considered by linguists, but I will devote some discussion to it here in service of trying to situate the status of acceptability judgments in linguistic inquiry. Let's imagine an acceptability judgment task where we tell a participant in our study that Amy likes someone, and the fact that Amy likes this person was pretty surprising to Amara because she didn't think that Amy and this other person would get along. Then, after providing such a scenario, we tell the participant in the study that they don't know who this person is, and we would like them to find out for us. So we ask the participant in the study whether they could use (4) to elicit this information. This makes the intended meaning clear by means of a scenario, and then we provide the form to the participant to see if it can be paired with the intended meaning. You could also imagine a version of this acceptability judgment task where the participant is not given the meaning, particularly since what is at stake is whether (4) has 0 or 1 meanings and it may be relatively clear what that 1 potential intended meaning of this form is. This would be a version of the task that deviates from the idealized acceptability judgment task in one of the ways we just discussed above.

In either case, what does the participant do? Presumably, they try to parse the form in (4). Parsing involves transducing the signal (usually sound waves from spoken forms or visual images of signed forms) into a phonological representation, which is in turn transduced into a syntactic parse, before finally being transduced into a meaning. Again, the person giving the judgment doesn't have conscious access to these transduction steps, but, it seems evident that a person can nonetheless tell when something goes wrong in one of these steps. That is to say, native speakers of English can all recognize that (4) doesn't sound right.

What about in the case of sentences like (1) or (2), which are forms that have at least one licit meaning

with which they can be paired? In cases like (1) with just one licit meaning pairing, the participant in the acceptability judgment study presumably is able to successfully parse the form and assign it its one and only one meaning. At this point, then, the judgment turns on whether this assigned meaning matches the intended meaning that was conveyed prior to giving the participant the form, assuming, of course, that the intended meaning was actually given prior to the form; if it was not, then presumably what is at stake is whether the form can have the 1 meaning that it would naturally be assumed to have given the lexical items that it consists of, and so the judgment then just turns on whether the assigned meaning that the participant arrived at after parsing the form matches this meaning.⁹

Something similar would happen with forms that have multiple possible meanings like those in (2), although there are interesting questions about whether the participant is somehow only able to consider the intended parse or whether the participant considers all possible parses (and if so, whether this happens in parallel or not). In any case, what people do when giving an acceptability judgment is try to parse a form/sentence with the phonological, syntactic, semantic, and lexical knowledge that they have of their language, and, if that parse succeeds, compare the meaning they get for that form with the intended meaning that they were given at the outset of the experiment (or compare it with the meaning that it would naturally be assumed to have were an intended meaning not given at the outset of the experiment).

There are two points that I wish to briefly expand upon here: (i) when the parsing does go wrong, it's not obvious why it went wrong (*i.e.*, it's not clear if the issue is phonological, syntactic, semantic, or something else), which means there is no real theory-neutral way to interpret data, and (ii) acceptability judgments *are* experiments.

1.1.2.1 On identifying the issue in a failed parse

If we grant the assumptions that (i) parsing involves transducing some signal (either an aural or visual signal) into a phonological representation, then transducing that phonological representation into a syntactic representation, and finally transducing that syntactic representation into a meaning; and that (ii)

⁹However, it should be noted that, if a meaning with a supporting context is not antecedently given, it's possible that the participant in the acceptability judgment study could arrive at a judgment of unacceptability due to failing to come up with a discourse context which would license the pragmatics of the meaning that the example has. Thus, such judgments may ultimately turn on more than just whether the assigned meaning matches.

we don't have conscious access to this process, then it's not clear how one would necessarily know what went wrong when something does go wrong. Determining what the issue is will often be an exercise in theory building, at least in part. For example, if one has independent reasons for thinking that the phonological component of some individual's grammar causes the plural ending to agree in voicing with the preceding segment, then one could ask a participant to give an acceptability judgment for the form in (5a) when paired with the meaning that Amy saw three cats, which could also be compared to an acceptability judgment for the form in (5b), when paired with the same meaning.

- (5) a. * Amy saw three [kætz].
b. Amy saw three [kæts].

Presumably one would find that (5b) sounds more acceptable than (5a), which would be consistent with the idea that the plural morpheme must agree in voicing with the segment that precedes it. Though one might think to just ask for judgments of the words themselves (*i.e.*, [kæts] and [kætz]), instead of full sentences, with the idea that there is no transduction to a syntactic representation and thus also no transduction from a syntactic representation to a meaning. At least in the case of phonological investigation, this might give one the ability to know that when something goes wrong, the issue that arose arose in the phonological component of the grammar. But this would not be a theory neutral assumption. For example, in Distributed Morphology theories (see, *e.g.*, Marantz 1997, 2001, Harley & Noyer 1999), even a word as small as *cats* is taken to be built up using syntactic operations. And presumably we can't help but to start building up a meaning as well, once we have a syntactic representation.

Consider another example, an Escher sentence, like the one in (6).

- (6) More people have been to Russia than I have.

Such sentences are famously often perceived as acceptable, at least initially, until one reflects further on what exactly such sentences are supposed to mean (cf. Montalbetti 1984, Wellwood et al. 2018). Evidently, such sentences are like (3) in that they cannot licitly be paired with any meaning. The phenomenological experience one has upon hearing such sentences—namely, that they initially sound relatively acceptable—might suggest that nothing goes awry in the phonological or syntactic components

of the grammar when parsing sentences like those in (6), and that the issue is with the semantic component of the grammar. But even this is not necessarily so. For example, it could be something about the syntactic representation that precludes a sensible meaning from being formed. In other words, it might very well matter what your theory of the syntax-semantics interface looks like when constructing an explanation for why sentences like (6) are ungrammatical with respect to all possible meaning pairings.

Finally, it need not even be the case that something going wrong in the course of parsing necessarily reflects something having gone wrong in the grammar. Consider a sentence like (7), which is a sentence that involves self embedding (cf. Miller & Chomsky 1963).

(7) *The rat the cat the dog scared chased escaped.

Such sentences generally sound highly unacceptable (hence the “*” as the judgment), yet these sentences are theorized to be grammatical.¹⁰ The reason that examples like these are theorized to be grammatical is because it allows us to posit a general theory of relativization in the grammar. Were such examples not grammatical, such a general theory would not necessarily be possible (cf. Miller & Chomsky 1963:468–472). Moreover, instead of something going wrong in the phonological, syntactic, or semantic component of the grammar when trying to parse such sentences, there is good reason to think that the processing of such sentences overloads one’s memory, given how parsing proceeds (see, *e.g.*, Resnik 1992, de Vries, Christiansen, & Petersson 2011, but also Bader 2018). If correct, this further underscores the fact that acceptability (performance) is not the same as grammaticality (competence); I’ll return to this more below in §1.1.2.4. This also underscores the importance of theory construction in interpreting acceptability data, given that a general theory of relativization might not be possible if such examples were genuinely ungrammatical.

1.1.2.2 Acceptability judgments are experiments

Before that, however, I’d like to underscore the fact that acceptability judgments are experiments. As just discussed, acceptability judgments will not wear their explanation on their sleeve. That is to say, it

¹⁰Note that I have fallen into the shorthand way of speaking here. The intended meaning that (7) can be grammaticality paired with is that the rat, which was chased by the cat that the dog scared, escaped. But despite having one meaning with which it can be licitly paired, the form in (7) still sounds highly unacceptable when paired with that meaning.

is up to the investigator to have a theory of the grammar which allows them to design an acceptability judgment from which a reasonable inference can then be made about some aspect of their theory. One important upshot of this, is that designing such experiments has allowed linguists to probe not only what is possible in a given individual's grammar, but also what is *not* possible. All of the sentences we've seen so far have endlessly many meanings with which they cannot be licitly paired. While most of these failed pairings are uninteresting for the purposes of theory building, there are certain cases which end up being highly informative for the purposes of theory building. For example, consider a sentence like (8), which has three possible syntactic parses and thus three possible meanings.

(8) Amy saw a person walking to the store.

First, *walking to the store* can be parsed as an adjunct to the VP *saw a person*, which has the meaning that Amy saw a person while Amy was walking to the store. Second, *walking to the store* can be parsed as a reduced relative clause that modifies *person*, which has the meaning that Amy saw a person while that person was walking to the store. Finally, *walking to the store* can be parsed as the predicate in a gerundive small clause that is the complement to *see*, which has the meaning that Amy saw the event of a person walking to the store.¹¹ However, when (8) is turned into a question about the store, as in (9), then the first two parses are no longer possible (see, *e.g.*, Chomsky 1964a, Dillon & Hornstein 2013).

(9) Which store did Amy see a person walking to?

That is to say, the form in (9) fails to have the first two parses/meanings that its declarative counterpart has. These failed pairings (and not necessarily the endlessly many other meanings that (9) also fails to have) turn out to be highly informative for the purposes of theory building.

Indeed, it is failed pairings like these, as well as the fact that sentences like (4) and (6) fail to have any meanings with which they can be licitly paired that have made acceptability judgment experiments such a useful tool for linguistic inquiry. Most cases of linguistic behavior that one might readily think of (*e.g.*,

¹¹Even though the second and third parses are syntactically distinct, one might wonder whether the meanings are really distinct, since there don't seem to be any situations where these second and third meanings would have distinct truth values. This presupposes that meanings are, in some sense, made up of truth conditions, an idea which is arguably untenable (Pietroski 2005a,b, 2017, 2018). Indeed, if meanings are instructions to assemble concepts (*e.g.*, Pietroski 2018), then the second and third meanings are different in virtue of giving rise to distinct sets of instructions, even if those distinct sets of instructions lead to the assembly of a similar (or even identical) concept.

production and comprehension) generally involve only doing (*i.e.*, producing/comprehending) what *is* possible according to one's grammar. However, being able to probe what is *not* possible according to one's grammar has proven to be a very fruitful method for pushing linguistic inquiry forward.

1.1.2.3 Interim summary

So far, we've discussed what acceptability judgments are, as well as their status in linguistic inquiry. To recap, acceptability judgments are experiments that probe whether certain form-meaning pairings are possible in a given individual's grammar. In the course of giving an acceptability judgment, a person will try to parse a form that they are given to see if they can arrive at a meaning which matches the intended meaning that they were given prior to being given the form (or that matches the meaning that is evident from the nature of the lexical items that the form consists of). If the parsing procedure fails, a participant in an acceptability judgment study can generally recognize this and report this failure, even if they cannot say why the parsing procedure failed. If the parsing procedure succeeded, then they compare the meaning they arrived at to the intended meaning that they were given and report the pairing as acceptable if the meanings match, and unacceptable if they do not. Such judgments have proven to be very useful in advancing linguistic inquiry because they allow us to probe both what is and is not possible in a given grammar. Moreover, we can design the acceptability judgment experiments so that they probe something of theoretical interest with respect to a particular theory or hypothesis about how a grammar works.

What we haven't yet discussed as much is the simplifying assumption that is made when conducting acceptability judgment experiments in order to license an inference from the signal in the measurement from the acceptability judgment about something of theoretical interest in the grammar. We've remarked upon the fact that, in many cases, linguists assume that acceptability transparently reflects grammaticality, even though we know that these two things do not always covary. Indeed, we've already seen two cases where acceptability and grammaticality come apart. The sentence with self embedding above in (7) was noted to be highly unacceptable but is nonetheless taken to be grammatical. Conversely, the Escher sentence above in (6) is generally reported as relatively acceptable, at least at first, but it is taken to be ungrammatical.

Given that acceptability and grammaticality do not necessarily covary, I'd like to turn now to an extended discussion about the relationship between acceptability and grammaticality in order to set the stage for Chapters 4 and 5 of this dissertation. In this discussion below, we will consider the logic of minimal-pair-type experiments, which is a methodology that linguists use when they don't want to have to assume that acceptability transparently reflects grammaticality.

1.1.2.4 Linking hypothesis between grammaticality and acceptability

Given that grammaticality and acceptability do not necessarily covary, how might they be related? Most (generative) linguists, either implicitly or explicitly, assume a linking theory between grammaticality and acceptability like the one in (10), where acceptability is understood to be a function of grammaticality as well as things like parsing, memory, psychological state, task effects, and so on.

$$(10) \quad \text{acceptability} = \text{grammaticality} + \text{parsing} + \text{memory} + \text{psychological state} + \text{tiredness} + \dots + \text{noise}$$

As noted above, it is relatively common practice, however, to simply assume that acceptability transparently reflects grammaticality. This is tantamount to the assumption that grammaticality predominates over things like parsing, memory, psychological state, *etc.*, in (10). Thus, when a sentence (with respect to an interpretation) is judged to be acceptable, we can infer that that form-meaning pairing is grammatical, and when a sentence (with respect to an interpretation) is judged to be unacceptable, we can infer that that form-meaning pairing is not grammatical.

Interestingly enough, there is large-scale experimental evidence which suggests that this assumption is, in the majority of cases, likely to be a safe assumption (*e.g.*, Sprouse & Almeida 2012, 2013, Sprouse, Schütze, & Almeida 2013). Specifically, in light of recurrent criticism that acceptability judgment experiments are too informal of a method of data collection and are thus likely to be unreliable (see, *e.g.*, Hill 1961, Edelman & Christiansen 2003, Ferreira 2005, Wasow & Arnold 2005, Gibson & Fedorenko 2010, 2013), Sprouse & Almeida (2012) conducted a large-scale, formal acceptability judgment experiment with 200 participants, looking at 250 different data points from a common syntax textbook, Adger

(2003).¹² They found that 247 of these 250 data points replicated, under both frequentist and Bayesian statistical analyses. Moreover, 2 of the 3 data points that did not replicate were marginally significant in the predicted direction. These results suggest that, contra worries to the contrary, the results from acceptability judgments are highly reliable and generally replicate quite straightforwardly. Minimally, the false positive rate is highly unlikely to be greater than the standardly accepted false positive rate of 5% in psychology experiments more broadly (see also Phillips 2009).

Now, the high reliability of acceptability judgments does not mean in and of itself that the assumption that acceptability transparently reflects grammaticality is necessarily a safe assumption. All it means is that most acceptability judgments (at least the ones that make it into textbooks that Sprouse & Almeida (2012) looked at) are highly stable. However, one consequence of this is that the things in the linking theory above in (10) that we would not expect to be constant across time (*e.g.*, psychological state, tiredness, random noise, *etc.*) must play a very limited role in determining acceptability. Concomitantly, the things that we would expect to be relatively stable across time (such as one's grammar), must predominate in determining the acceptability of a given form-meaning pairing. Of course, one's grammar is not the only thing we expect to be stable across time from (10) above. We would also expect one's parsing ability and one's memory to be relatively stable across time, too. But this state of affairs is no different than what we discussed above in §1.1.2.1; that is to say, identifying the reason for a particular acceptability judgment being what it is will always be, in part, a matter of theory building.

As a consequence, evaluating the usefulness of this methodological assumption that acceptability transparently reflects grammaticality becomes an exercise in evaluating the success of the theories that have been built on top of this assumption. In my estimation (though some will of course disagree), our theories have been quite successful, and we've also been able to successfully identify situations in which acceptability and grammaticality don't covary. This can be most readily done in cases where we have an unexpected or unpredicted result, as well as a ready (and convincing) alternative explanation for the

¹²They also conducted an experiment with 240 participants using the magnitude estimation task, in which the results were much the same as in the experiment using the acceptability judgment task. Since the main experimental methodology used in Chapters 4 and 5 of this dissertation is that of acceptability judgments, I focus on that here. For their results from the large-scale magnitude estimation task, see Sprouse & Almeida (2012:617–622), and for more discussion of the magnitude estimation task in general, see Sprouse (2011).

phenomenon. To illustrate this, let's consider one more example where acceptability and grammaticality are known to not covary: garden path sentences, such as the one in (11) (see, *e.g.*, Bever 1970).

(11) *The horse raced past the barn fell.

Most people find that the sentence in (11) sounds highly unacceptable when paired with the meaning that the horse that was raced past the barn fell (or when paired with any meaning for that matter). However, it would be surprising if this sentence were ungrammatical, as there are very similar sentences, such as the one in (12), that are identical in structure and are apparently quite acceptable.

(12) The horse ridden past the barn fell.

Both (11) and (12) are sentences with a subject and an intransitive main verb, where the subject is itself the head of a subject relative clause containing a passive. In the case of the verb *race*, both its passive form and its past tense form are identical (*raced*). This, combined with the fact that it is possible to omit *that was* from a relative clause in English, leads people to misparse (11) in such a way that they think *raced* is the main verb in the sentence, rather than the passive verb inside the subject relative clause. Such a misparse is not possible in (12), however, because the passive participle and past tense form of *ride* (at least in some dialects of English, including my own) are different.

Of course, one might worry that there are data points that we have failed to identify as cases in which grammaticality and acceptability don't covary, and so we are being misled in our theory building. So, one might reasonably ask whether there is anything we can do to more directly get at grammaticality, even though what we are measuring is just acceptability. One possibility for trying to get at grammaticality more directly involves constructing (near) minimal pairs, and then eliciting acceptability judgments for these (near) minimal pairs, and comparing them. This method relies on the nature of the linking hypothesis that we've been assuming ((10) from above). The idea is that we construct two form-meaning pairings, holding as much constant as possible. For example, we might hold the meaning constant, and only change the form slightly from one example to the next. Then, we elicit acceptability judgments for each example pairing and take their difference. Because we've held as much constant as possible, most factors that contribute to the form-meaning pairings' overall acceptability should cancel out when we

take their difference, other than any difference in grammaticality status that the two pairings might have.

To make this more concrete by way of an example, imagine that we took an acceptability measurement of (13a) and subtracted the acceptability measurement of (13b) from it. In this minimal pair, we hold the intended meaning constant—namely, the meaning that Amy is awesome. We only change the form of the verb from (13a) to (13b).

- (13) a. Amy is awesome.
 b. * Amy are awesome.

In order to be able to take a difference between the two acceptability judgments for these form-meaning pairings, we can elicit responses along a Likert scale (usually a scale from 1, for highly unacceptable, to 5 or 7, for highly acceptable) when collecting our acceptability judgment data, instead of just asking for binary responses (acceptable or not acceptable).¹³ Let's say that the rating we got for (13a) was 7, and the rating we got for (13b) was 1. The difference that we get when we subtract the one Likert scale judgment from the other—in this case, 6—should reflect the differential grammaticality status of (13b) compared to (13a), if any such difference in status exists. This is because the other factors that contribute to acceptability, according to our linking hypothesis, (10), will cancel out (assuming we've done a good job constructing the minimal pair).

To make this reasoning explicit, consider the subtraction logic in (14).

$$\begin{array}{r}
 (14) \quad \text{grammaticality}_{(13a)} + \text{parsing}_{(13a)} + \text{memory}_{(13a)} + \dots_{(13a)} + \text{noise}_{(13a)} \\
 - \text{grammaticality}_{(13b)} + \text{parsing}_{(13b)} + \text{memory}_{(13b)} + \dots_{(13b)} + \text{noise}_{(13b)} \\
 \hline
 (\text{grammaticality}_{(13a)} - \text{grammaticality}_{(13b)}) + (\text{parsing}_{(13a)} - \text{parsing}_{(13b)})
 \end{array}$$

If we subtract the acceptability of (13b) from (13a), most factors other than the (hypothesized difference in) grammaticality status between the two examples should cancel out, since the sentences are nearly identical. The one exception would be whatever parsing differences arise from having to parse *is* in-

¹³That being said, it is quite possible to do a version of this kind of a minimal pair experiment with binary judgments, instead of Likert scale judgments. Such a task is generally called a two-alternative forced-choice task. For discussion of this task, its influence on statistical power, as well as discussion of other similar tasks (including the Likert scale version of an acceptability judgment) and their respective influences on statistical power, see Sprouse & Almeida (2017).

stead of *are*. However, since both *is* and *are* are frequent words, the overall contribution of the term ‘(parsing_(13a) – parsing_(13b))’ in the result should be near 0; that is to say, it should be equally easy to parse both words. As such, the difference that we got, 6, should be approximately equal to the term ‘(grammaticality_(13a) – grammaticality_(13b))’ in (14); in other words, the value of 6 is our approximate quantification of whatever difference in grammaticality status (13a) and (13b) might have. If this value differs significantly from 0, then we can conclude that (13a) and (13b) *do* differ in their grammaticality statuses. If this value does not differ significantly from 0, then we can conclude that (13a) and (13b) *do not* differ in their grammaticality statuses (modulo the normal concerns about null results). Let’s say that this value of 6 that we got in this case does differ significantly from 0. We can then conclude that (13a) and (13b) have different grammaticality statuses. And, if we assume that ungrammatical form-meaning pairings are generally less acceptable than grammatical ones, we can further conclude that (13a) is the grammatical one.¹⁴

Such a minimal pair experiment allows us to more directly get at grammaticality, even though we are just measuring the acceptability of form-meaning pairings. But it should be noted that this method is also not foolproof. Consider, for example, the minimal pair in (15).

- (15) a. * The horse raced past the barn fell.
 b. * The horse race past the barn fell.

Presumably both of these sentences would be rated as quite unacceptable in a Likert scale judgment task. If this presumption is correct, then this means that, if we took the difference of their two ratings, it would be approximately 0. Following the subtraction logic laid out immediately above, we would thus conclude that both of these sentences have the same grammaticality status. But this is incorrect; (15a) is grammatical, and (15b) is ungrammatical.¹⁵

¹⁴Note that this reasoning relies on grammaticality being a binary property. If grammaticality is not binary, then this subtraction logic would not work out in the way described here. I do not think there is a good reason to think grammaticality is a non-binary property, but it should be noted that others have entertained non-binary views of grammaticality (cf. fn. 6).

It is worth noting, though, that should grammaticality turn out to be non-binary, a version of this subtraction logic would still hold. It’s just that we wouldn’t necessarily want to ask whether the difference is significantly different from 0. We’d instead have to ask whether the difference is significantly different from x , where x would have to be independently determined for each minimal pair on the basis of the theory of the grammar.

¹⁵Note that I’m speaking in the shorthand manner here. More precisely, the form in (15a) is grammatical when paired

So what has gone wrong here? The issue is that there is an interaction effect between some of the factors that contribute to the overall acceptability of a form-meaning pairing for the sentence in (15a) that is not present for the sentence in (15b). In (15a), as discussed above, the phonological form of *raced* encourages a misparse where *raced* is the main verb of the sentence, instead of the passive verb in the subject relative clause. This is an interaction effect between the parsing system and the identical phonological realization of two different syntactic constructions for the verb *race* in English. However, this interaction is not present in (15b), since *race* is neither the past tense form of *race* nor its passive participle form. Because of this, not all terms other than the grammaticality statuses cancel out (or are near 0) when subtracting the acceptability of the one form-meaning pairing from the other. The difference we get from this subtraction is a combination of two things: (i) any difference there might be in the respective form-meaning pairings' grammaticality statuses, and (ii) the difference between the interaction effect of parsing and overlapping phonological forms in (15a) and its absence in (15b). As such, it's not possible to draw a conclusion about the grammaticality statuses of the form-meaning pairings (unless one could independently quantify the effect of the interaction effect).

We can also imagine minimal pair experiments where we might draw the wrong conclusion in the opposite direction. For example, consider another poorly constructed minimal pair like the one in (16).

- (16) a. More people have been to Russia than I have.
b. * More people has been to Russia than I have.

If we elicited acceptability judgments for the pair in (16), we might find that the difference between the two is significantly different from 0 (at least if we are collecting first pass judgments, since sentences like (16a) are usually judged to be unacceptable upon further reflection as we discussed above). From this, following the logic outlined above, we would conclude that (16a) and (16b) have different grammaticality statuses; however, this is not the case. Both of them are ungrammatical with respect to any interpretation. They have the same status. Again, the issue is the presence of an interaction effect between some of the factors that contribute to a form-meaning pairing's overall acceptability for the sentence in (16a) but not with the meaning that the horse that was raced past the barn fell, whereas the form in (15b) is ungrammatical when paired with this same meaning.

the one in (16b).¹⁶ Because of this, not all factors cancel out in the subtraction logic, and so we are not warranted in making the same inference for (16) that we made above for (13).

To recap what we've just discussed, the (known-to-be-false) simplifying assumption that acceptability transparently reflects grammaticality is tantamount to the assumption that grammaticality predominates over the other factors that contribute to acceptability in a standard linking hypothesis between the two such as the one above in (10). Moreover, while we know this assumption is false (*i.e.*, we know that grammaticality and acceptability do not necessarily covary), it is arguably a pretty safe and robust assumption in the vast majority of cases (cf. Sprouse & Almeida 2012, 2013, Sprouse, Schütze, & Almeida 2013). Nonetheless, if we want to attempt to get at grammaticality more directly, we can try to do so via the careful construction of minimal pairs and the use of the subtraction logic outlined above in (14). Though, as we saw, this also does not guarantee that we'll be able to make ironclad inferences about the grammaticality statuses of the relevant form-meaning pairings. It is always possible that there is a confounding interaction effect present between the factors that contribute to the overall acceptability of one of the form-meaning pairings in the minimal pair but not the other, in which case the subtraction logic would not work out as outlined above in (14).

Even so, recent experimental syntax techniques based on this idea of a minimal-pair-type experiment have provided novel evidence that some form-meaning pairings which the field previously thought were grammatical (in virtue of being judged acceptable) may in fact be ungrammatical. These findings have occurred in the empirical domain of island effects; specifically, a variety of island-violating sentences in languages such as Brazilian Portuguese, Italian, Norwegian, and Mandarin, which were previously thought to be grammatical because of being reported as acceptable, are plausibly ungrammatical (cf. Almeida 2014, Sprouse et al. 2016, Kush, Lohndal, & Sprouse 2018, Lu, Thompson, & Yoshida 2020). Such a conclusion is reached on the basis of an interaction effect that emerges in virtue of subtraction logic similar to what we've just discussed, despite the relevant examples being judged as acceptable in isolation. It is these series of findings that are the basis for the work reported in Chapters 4 and 5. These findings will be discussed in more detail in their own chapter, Chapter 3, which also contains a brief overview of the em-

¹⁶For more on what exactly this interaction effect might be, see Wellwood et al. (2018).

pirical and theoretical landscape of island effects. For now, I'd like to turn to a brief discussion of some of the analogous concerns about competence and performance in the context of language acquisition work in order to set the stage for Chapter 2.

1.2 Competence and performance considerations in acquisition work

While acceptability judgment experiments are very useful because they allow us to probe what is not possible in a given grammar, they are rarely used when probing children's grammars. This is because it can be relatively difficult to get a child to understand the nature of the task, especially at young ages (see, *e.g.*, Brown, Fraser, & Bellugi 1964, Shipley, Smith, & Gleitman 1969). This is not to say that the task has not been used in acquisition studies, however. McDaniel & Cairns (1990, 1996) provide suggestions for how best to use this method with children, and they note how de Villiers & de Villiers (1974) used the task with four-year-old children and how Schlisselberg (1988) used the task with three-and-a-half-year-old children. Nonetheless, giving acceptability judgments is a metalinguistic task, given that you have to compare a meaning that you arrived at via parsing the form you were given to an intended meaning that you were given prior to being given the form. One can imagine that this might be hard for children to do, particularly while other cognitive skills are still developing (*cf.* Hakes 1980, Van Kleeck 1982). If one does decide to use an acceptability judgment task when investigating children's grammars, one must at the very least be prepared to deal with noisier data. Because the data that we get from children is more likely to include random noise and because other cognitive faculties could still be developing (*e.g.*, memory, parsing abilities, *etc.*), we must be prepared to accept the fact that the assumption that acceptability transparently reflects grammaticality is not as safe of an assumption with children as it is with adults.

As a result of the difficulties of using acceptability judgment tasks with young children (not to mention infants), acquisition researchers often use other methods. For a survey of some of the methods used to investigate the grammars of young children, see McDaniel, McKee, & Cairns (1996). Here, I'd like to

discuss the elicited production task, which is what is used in Chapter 2 of this dissertation (cf. Thornton 1996). The idea of the elicited production task is relatively straightforward. The goal is to get the participant to utter a particular sentence without giving that exact sentence to the child to imitate (in contrast to elicited imitation tasks; cf. Lust, Flynn, & Foley 1996). The assumption about the relation between competence and performance being made in this case is that what children produce (their performance) should consist of only things that accord with their grammar (their competence). In other words, if a child produces a particular syntactic construction or sentence type in the context of trying to produce a particular intended meaning, we can then assume that their grammar licenses that type of form-meaning pairing.

Given that grammars license form-meaning pairings, not just forms, part of the job of the experimenter in an elicited production task is to get the child to understand the intended meaning and to lead the child to an intended form that they want the child to use when producing a sentence with that meaning. This is generally done via a combination of two things: (i) a story or scenario that makes the intended meaning both clear and felicitous, and (ii) a so-called lead-in sentence, or prompt, uttered by the experimenter. When trying to elicit questions, the prompt is generally an invitation to ask a puppet a question about the story.¹⁷ The story and prompt should be designed in such a way that they jointly bias the child to use the intended form when producing the sentence with the intended meaning, all without actually giving the child the exact form to use. In (17), I've reproduced the example discussed in Thornton (1996:77).

(17) Story: In this story, there are two zebras and a crane. One of the zebras is being tickled by a crane, using one of his own feathers!

 Prompt: In this story, the crane is tickling *one* of the zebras. Ask the puppet which one.

 Intended response: Which zebra is getting tickled by the crane?

In this example, the story is set up to encourage the use of a passive structure. This set up is accomplished

¹⁷If questions aren't the domain of empirical interest, per se, one can still try to elicit a question that contains the phenomenon of interest. For example, the stimulus in (17) is designed to elicit a passive structure inside of the question that the child is intended to ask the puppet.

by a confluence of factors: (i) there are two zebras in the story; (ii) the way that the two zebras are distinguished is in virtue of what is being done to one of them; and (iii) the child is encouraged to ask about a zebra (not the crane, for example). When given the prompt, the child should hopefully utter something like the intended response above in (17) to the puppet. This method is not guaranteed to elicit such a response, of course. There are other questions the child could ask that would satisfy the conditions of the story and the prompt, but the idea is to design the story and prompt in such a way so as to minimize the likelihood of a non-intended response.

To recap the discussion so far, we've seen that acceptability judgments aren't often used in language acquisition research because it can be difficult to get the child to understand the task, especially at young ages. If acceptability judgments are used, one should expect (i) that the data will be noisier than adult data and (ii) that, relatedly, acceptability might not be as transparent of a reflection of grammaticality as it can be with adult data (cf. McDaniel & Cairns 1996:248–249). We then discussed the elicited production task as one of many alternatives that can be used to probe children's grammars. Here, the assumption is that what children produce should accord with their grammars. But one should also ask whether this assumption is necessarily warranted. In service of asking this question, let's explicitly consider what the linking hypothesis between a given production and an inference about the grammaticality status of the form-meaning pair that was produced is. A given production will be a function of the grammaticality status of the form-meaning pairing that was produced, but also things like one's planning ability, one's ability to control and direct one's attention and responses (*i.e.*, inhibition control), memory, *etc.*, as shown in (18).

$$(18) \quad \text{production} = \text{grammaticality} + \text{planning ability} + \text{inhibition control} + \text{memory} + \text{psychological state} + \text{tiredness} + \dots + \text{noise}$$

We already briefly discussed in passing some cases where we know adult productions do not necessarily accord with the grammar of the adult that produced them (*e.g.*, misspeakings, stumbling over words, failure to recall words, *etc.*), and things are no different with children. While productions that don't accord with one's own grammar could be relatively rare with adults, it's an open question of how frequent such events are with children (again, see, *e.g.*, Shipley, Smith, & Gleitman 1969). Given that certain cognitive

abilities and functions (*e.g.*, memory, inhibition control, *etc.*) are recruited in the course of production and given that these cognitive abilities/functions may still be developing in children, we should at minimum expect that such events will be somewhat more frequent with children. So while at first blush it might seem that the assumption that what an individual produces accords with their grammar is a safe assumption, it's not clear that this is the case, particularly when the individual is a young child. Indeed, Chapter 2 of this dissertation presents evidence that certain non-adult-like productions from English-acquiring children should not be understood as a reflection of their grammars but instead as a reflection of their non-adult-like inhibition control. The results of this chapter will be previewed in more detail immediately below after a summary of this chapter's discussions.

1.3 Chapter summary and dissertation overview

In this chapter, we've discussed an approach to linguistic inquiry which assumes that individuals possess generative grammars in order to account for the in-principle ability that each person has to produce and comprehend an infinite number of sentences in the language that they've acquired. As such, one target of explanation for linguistic theorizing is the grammar that a given individual has. In order to probe these grammars, linguists often make use of acceptability judgments. In doing so, linguists often assume that acceptability (*i.e.*, a measurement derived from a kind of linguistic performance) transparently reflects grammaticality (*i.e.*, competence). This assumption seems to be a safe one in the vast majority of cases, but we also saw some cases where these two things are known to not covary. In light of worries about acceptability and grammaticality not necessarily covarying, we discussed the idea of a minimal-pair-type experiment. Such an experiment allows one to, in principle, get at grammaticality more directly via the subtraction logic that we discussed, even though we're only measuring acceptability. However, even this is not foolproof, as there is always the possibility of unaccounted for confounds in one of the sentences in the minimal pair design but not the other.

Then, we discussed analogous concerns about competence and performance in the context of acquisition research. When it comes to probing children's grammars, it seems less likely that performance will

be a transparent reflection of competence, no matter what task is used. We discussed in some detail the elicited production task, which we use in Chapter 2. But indeed, even in a relatively straightforward task like this, it is not necessarily safe to assume that a given production from a child will transparently reflect their grammar. At this point, one might be wondering whether there is anything an investigator can do to ensure that what they measure in their experiments allows them to draw direct inferences about their target of investigation. One might be disappointed to learn that the answer is no.

However, in my estimation, this is just par for the course in scientific inquiry. The thing that one is investigating is always somewhat removed from the thing that one has access to and can measure when conducting experiments, be they in physics, chemistry, linguistics, or whatever field you like. There is invariably a linking hypothesis that the investigator assumes, either implicitly or explicitly, between the thing they are measuring and the thing they are trying to give a theory of. We saw two such linking hypotheses above, (10) and (18). Such linking hypotheses will link the thing that one is measuring to the thing that one is trying to give a theory of, but they will also consist of additional components above and beyond the one of theoretical interest. And each of these additional components is likely to be a subject worth theorizing in its own right. Take what might seem like a cut and dry case: measuring the amount of time it takes an object to hit the ground when dropped from some point above the ground in order to estimate the gravity of Earth, g . Imagine that one has arrived at the linking hypothesis in (19).

$$(19) \quad \text{seconds to reach ground} = \sqrt{\frac{2 \times \text{initial height}}{g}} + \text{drag force} + \dots + \text{noise}$$

Now imagine that we took two measurements, one where the object was a small rock and one where the object was a piece of paper, both dropped from the same height. We'll observe that the number of seconds it takes for the piece of paper to fall to the ground is greater than the number of seconds it takes for the rock to fall to the ground, even though they were dropped from the same height. If we did something similar to what we had been doing above for acceptability and grammaticality above—namely, ignoring the other factors in the linking hypothesis that we weren't actively trying to provide a theory of—we would then solve for g and conclude that Earth has different values of gravity for different objects. We know this to be false. The issue in this reasoning may seem relatively evident given that we now have an understanding of how gravity, drag force, and air resistance work and of how free-falling objects behave. The issue is that

there will be a greater amount of drag force exerted on the piece of paper due to its greater cross-sectional area. Just like our poorly designed minimal pairs above, (15) and (16), there are confound interaction effects between the other factors in the linking hypothesis that have gone unaccounted for here. While this might seem obvious to us now, given our collective knowledge state about the physics of gravity, the point is that there was a point in time when this wasn't obvious. And at this point in time, there was no foolproof way to circumvent the issue. The way forward involved independent theory building and further experimentation to test aspects of new hypotheses about air resistance and drag force, just like the way forward for understanding the surprising unacceptability of a self embedding sentence like the one above in (7), for example, was independent theory building about how syntactic structures are parsed.

So while there is no one-size-fits-all approach to ensuring ironclad inferences from measurements to targets of explanation that are of theoretical interest, it is nonetheless my hope that this dissertation will encourage more explicit consideration of these concerns in linguistics, particularly in acquisition and syntax work. Explicitly spelling out a linking hypothesis can minimally encourage consideration of alternative explanations for theoretically surprising results, and theoretically surprising results should be subjected to such scrutiny. That is to say, theory and prediction should drive inquiry forward just as much as novel and interesting data should. In this chapter, I've explicitly spelled out the linking hypotheses that will be relevant in the coming chapters, as this dissertation is constituted by a series of case studies that attempt to ascertain whether our measurements in a particular corner of linguistic inquiry reflect competence or performance factors. In addition to encouraging explicit consideration of these issues, it is also my hope that this dissertation will contribute to advancing the state of inquiry in each of these areas. Let me now briefly preview these case studies.

In Chapter 2, we will discuss productions from English-acquiring children that involve the use of a medial wh-phrase. (20) provides an example of such a production, where there is an extra copy of the wh-phrase at the embedded clause boundary.

(20) Who do you think **who** kissed the boy?

In line with the simplifying assumption that what one produces should accord with what is licensed by one's grammar, some researchers have taken productions like these as evidence that English-acquiring

children have temporarily landed on a non-target grammar (see, *e.g.*, Thornton 1990, McDaniel, Chiu, & Maxfield 1995, de Villiers, de Villiers, & Roeper 2011). Notably, such structures with a *wh*-phrase in medial position are observed in some of the world’s languages, and so these researchers hypothesize that these English-acquiring children have temporarily landed on a grammar like the grammar of someone who speaks one of these other languages. The next chapter of this dissertation argues that such productions should instead be understood as arising from underdeveloped cognitive inhibition. The children in these studies do have the target English grammar with respect to *wh*-movement, and they merely fail to suppress the pronunciation of the syntactically active copy of the *wh*-phrase at the embedded clause edge boundary in the course of production due to their underdeveloped cognitive inhibition. In support of this alternative explanation, we show in Chapter 2 that an independent measure of cognitive inhibition predicts medial *wh*-phrase production. The upshot of this is that the theory of how non-adult-like linguistic behavior like that in (20) arises in an English-acquiring child reduces to a theory of how cognitive inhibition develops throughout childhood.

Chapter 3 provides an overview of island effects, (syntactic) theories of them, and an experimental method for investigating their grammaticality status similar to the subtraction logic afforded by the construction of minimal pairs that we discussed above in §1.1.2.4. This chapter also reviews some recent studies that make use of this particular experimental method (Almeida 2014, Sprouse et al. 2016, Kush, Lohndal, & Sprouse 2018, Lu, Thompson, & Yoshida 2020). The main point of this chapter is to set the stage for the next two case studies of the dissertation. Both of these case studies involve probing island effects in adult syntax.

In Chapter 4, we will discuss island violations in the context of sluicing. Ross (1969) famously observed that examples containing island violations inside of an elided TP (*i.e.*, sluicing) seem to have a higher degree of acceptability than one might expect. A relevant contrasting pair of examples is given in (21).

- (21) a. * Amara believes the claim that Andi saw someone, and Alyssa wonders who_{*t*} Amara believes the claim that Andi saw *t*_{*i*}.
- b. ? Amara believes the claim that Andi saw someone, and Alyssa wonders who_{*t*} Amara

believes the claim that Andi saw t_i .

Both examples in (21) involve a complex NP island. The example in (21b) with TP ellipsis, however, seems to be more acceptable than its counterpart in (21a). Some have taken this to mean that sluicing repairs island violations (*e.g.*, Ross 1969, Chomsky 1972, Lasnik 2001, Fox & Lasnik 2003, Merchant 2005, 2008b, 2009, Temmerman 2013, Griffiths & Lipták 2014), while others argue that the island repair is only apparent and actually arises because of certain evasion strategies afforded by the nature of the antecedent and ellipsis site (*e.g.*, Barros 2014a, Barros, Elliott, & Thoms 2014, 2015). We attempt to use the experimental method discussed in Chapter 3 in order to more directly probe the grammaticality status of the relevant examples. Our results are ultimately somewhat inconclusive because, if there is an effect of grammaticality, it is decidedly small in these sorts of contexts. This raises some interesting methodological questions about the utility of this experimental paradigm that we used in cases where grammaticality effects are known or expected to be small.

Finally, in Chapter 5, we investigate island effects in Bulgarian with multiple wh-movement as the last case study of this dissertation. Richards (1997, 1998, 2001) proposed a syntactic principle called the Principle of Minimal Compliance (PMC). Simplifying a bit, this principle allows for a syntactic dependency to violate a syntactic constraint of the grammar just in case there is another similar dependency that satisfies this constraint and the offending syntactic dependency is along the path of the well-formed syntactic dependency (see §5.1 for more details). This syntactic principle was motivated in part by examples involving island violations and multiple wh-movement in Bulgarian. Similar to the case of sluicing just discussed, these examples are more acceptable than one might expect given that they contain an island violation. For example, while Bulgarian (a language with multiple wh-fronting) does exhibit complex NP island effects as (22a) shows, (22b) is relatively acceptable when a second non-island-violating wh-dependency is introduced.

- (22) a. * [Koja kniga]_i razprostranjavaše žurnalistât mâlvata če senatorât iska da zabrani
which book spread journalist rumor that senator wanted to ban
 t_i ?

‘Which book did the journalist spread the rumor that the senator wanted to ban?’

(Richards 1998:607, ex. (18a))

- b. ? [Koj žurnalist]_j [koja knjiga]_i t_j razprostranjavaše málvata če senatorát iska
which journalist which book spread rumor that senator wanted
da zabrani t_i?
to ban
‘Which journalist spread the rumor that the senator wanted to ban which book?’

(Richards 1998:607, ex. (18b))

Nonetheless, examples like those in (22b) are not perfectly acceptable, and we know that acceptability does not necessarily transparently reflect grammaticality as we’ve just discussed in §1.1. As such, we set out to try to ascertain the grammaticality status of examples like those in (22b) more directly by using the experimental paradigm discussed in Chapter 3 and that we used in Chapter 4 to investigate island effects in the context of sluicing.

Unlike in Chapter 4, we do see more clear cut results from this experimental paradigm in Chapter 5. In particular, our results suggest that examples like those in (22b) are grammatical. This reaffirms the importance of incorporating a principle like the PMC or some equivalent into our syntactic theories in order to account for these kinds of examples.

Chapter 2 Children’s medial wh-phrases: Competence or performance?

In this chapter,¹⁸ we explore competence and performance considerations in the context of English-acquiring children’s production of medial wh-phrases.

2.1 Introduction

Children often exhibit non-adult-like linguistic behavior. When children do behave differently from adults in some linguistic domain, there are generally three types of explanations that are offered to account for such differences. One type of explanation accounts for their non-adult-like linguistic behavior as the result of an immature knowledge state, with representations that are fundamentally different in kind from those of adults (see, among others, Roeper & Matthei 1975, Rizzi 1993, Tomasello 2000). A second type of explanation accounts for children’s non-adult-like linguistic behavior as the result of an interaction of target grammatical knowledge and their extragrammatical performance systems (see, among others, Hamburger & Crain 1982, Bloom 1990, Mazuka, Jincho, & Oishi 2009, Choe & Deen 2016). A third type of explanation accounts for children’s non-adult-like linguistic behavior as the result of grammatical knowledge that traffics in the same sorts of representations that adults have, but this knowledge happens to be appropriate for some other language that is not the target language of acquisition; *i.e.*, the behavior reflects non-target grammatical knowledge that is possible in the world’s languages (see, among others, Hyams 1983, 1986, Pierce 1992, Guasti, Thornton, & Wexler 1995).

This third kind of analysis is potentially highly informative, as it may indicate that the learning system is such that endogenous factors can drive the learner’s selection of grammatical features. If such an

¹⁸A version of this chapter was published as Liter, Grolla, & Lidz (in press).

account does indicate this, it is important to hold the account to careful scrutiny.

One highly prominent case where such an analysis has been offered is in the case of children's production of medial wh-phrases. For example, English-acquiring children are known to sometimes produce questions with medial wh-phrases in elicited production tasks (*e.g.*, Thornton 1990).¹⁹ Examples of such questions are given in (23).²⁰

- (23) a. [CP Who do you think [CP **who** Grover wants to hug?]] (Tiffany 4;9)
(Thornton 1990:87)
- b. [CP What do you think [CP **who** ate this?]] (Kelly 3;11)
(Thornton 1990:232)

This finding has been noteworthy for at least two reasons. First, questions such as (23) are not adult-like in the target language of acquisition; that is, they are ungrammatical in adult English. Second, such productions look very much like structures that are grammatical in other adult languages.

For example, some German dialects (among other languages) exemplify wh-copying, where the same wh-phrase occurs at the edge of the matrix clause and at the edge of the embedded clause, such as in (24).

- (24) Wen glaubst du [CP wen sie getroffen hat]?
who think you who she met has
'Who do you think she met?'
(Felser 2004:544)

This grammatical (in adult German) question looks remarkably similar to the non-adult-like question of the English-acquiring child in (23a).

In a similar vein, languages such as Bangla (Bayer 1996), Romani and German (McDaniel 1986, 1989), Afrikaans (du Plessis 1977), Iraqi Arabic (Wahba 1991), and Hungarian (Horvath 1997) exhibit

¹⁹Similar findings are reported for Dutch learners (van Kampen 1997, Jakubowicz & Strik 2008), Spanish learners (Gutiérrez Mangado 2006), and French learners (Oiry 2006, Demirdache & Oiry 2008, Jakubowicz & Strik 2008). In this chapter, we focus on English-acquiring children, but we expect that our account of English-acquiring children's production of medial wh-phrases would apply to children acquiring other languages where these questions are also ungrammatical in the target language of acquisition.

²⁰Thornton (1990:ii) described only the productions like (23a), with the same wh-word in both positions, as "medial-Wh questions"; she described productions like (23b) as partial movement questions. Throughout this chapter, we refer to both types of questions, at least as produced by English-acquiring children, as medial wh-questions. While this conflicts with the terminology originally put forward by Thornton (1990), it more accurately reflects our account of these non-target productions, which holds that they arise via the same mechanism.

scope marking (sometimes also called partial wh-movement), where the wh-phrase in the embedded clause takes matrix scope, and the wh-phrase in the matrix clause just serves to mark the position from which the intermediate wh-phrase takes scope. An example from Bangla is given in (25).

- (25) Tumi ki bhebe-cho [_{CP} ke baRi kore-che]?
you what think who house make
'Who do you think has built a house?'
(Bayer 1996:293)

Again, this grammatical (in adult Bangla) question looks remarkably similar to the non-adult-like question of the English-acquiring child in (23b).²¹

Given that these structures are possible in the world's languages (*i.e.*, given that they are allowed by Universal Grammar) and given the similarities between these structures and the utterances of some English-acquiring children, such as those in (23), some researchers have proposed that English-acquiring children have temporarily adopted a non-target (but adult-like) grammar (*e.g.*, Thornton 1990, Thornton & Crain 1994, McDaniel, Chiu, & Maxfield 1995, Roeper & de Villiers 2011, de Villiers, de Villiers, & Roeper 2011). We will call such accounts non-target grammar accounts. Again, such accounts can make strong commitments to certain types of endogenous factors that guide language acquisition and so should be critically evaluated against alternative accounts.

Indeed, we contrast such non-target grammar accounts of these medial wh-phrase productions with an account that exemplifies the second kind of analysis mentioned at the outset—namely, we offer an analysis where the medial wh-phrase productions of English-acquiring children arise as an interaction of target grammatical knowledge and an immature extragrammatical performance system. The idea of our account, a version of which was originally proposed in work by my collaborators for the work reported in this chapter, Grolla & Lidz (2018), is that English-acquiring children produce sentences like those in (23) because they may have trouble inhibiting the pronunciation of the syntactically active wh-phrase at the edge of the embedded clause. Because wh-movement is successive cyclic (see, among others, Chomsky

²¹It should be noted, however, that the languages that do exhibit a surface pattern like the one in (25) are not necessarily monolithic (*i.e.*, these types of examples don't necessarily have the same syntactic analysis across languages) (see, *e.g.*, Dayal 2000). This is arguably a problem for non-target grammar accounts insofar as most of these accounts make no syntactic distinctions between different types of scope marking languages (or even between partial scope marking and wh-copying); see also §2.2.2.2 below.

1973, McCloskey 1979, Torrego 1983), there is a copy of the wh-phrase in that position, which the child may accidentally pronounce, especially if they have underdeveloped inhibition control, despite having a grammar which forbids its pronunciation.²² This account will be discussed in more detail below.

In this chapter, we report experimental evidence that favors the failure of inhibition account over the non-target grammar accounts. Non-target grammar accounts have taken children’s non-target productions of medial wh-phrases as evidence of two things: (i) that there is an innately specified and restricted hypothesis space, and (ii) that the learning mechanism the child employs to move around in this hypothesis space can be driven by endogenous factors that are not present in the input (since there is no evidence for either wh-copying or scope marking questions in adult English). While both of these points very well may be true (for the first point, see, for example Berwick et al. 2011, for the second point, see, for example Han, Musolino, & Lidz 2016), our results suggest that English-acquiring children’s medial wh-questions do not constitute evidence in favor of either of these points. The rest of this chapter proceeds as follows. In §2.2, we discuss our failure of inhibition account and non-target grammar accounts in more detail. In §2.3, we discuss the experiment that we conducted to tease apart non-target grammar accounts and our inhibition account. In §2.4, we conclude.

2.2 Different developmental accounts

In this section, we contrast our own failure of inhibition account (§2.2.1) with the various non-target grammar accounts that have been proposed in the literature (§2.2.2).

2.2.1 A failure of inhibition account

We propose a failure of inhibition account of English-acquiring child productions like those in (23). Inhibition is one of a variety of different executive functions. Executive functions are functions that allow

²²For the sake of expository convenience, we will talk in terms of copies of wh-phrases throughout this chapter. However, our account does not depend on the copy theory of movement being true. In fact, all that matters for our purposes is that some form of the wh-phrase is reactivated in the mind of the producer at places in the structure where copies are posited to be, due to the successive cyclic nature of wh-movement. There is a good amount of psycholinguistic evidence that supports this view, which we will discuss in §2.2.1 below. As long as one believes the psycholinguistic findings, our account goes through, and it doesn’t particularly matter which syntactic theory underpins these psycholinguistic facts.

an individual to guide and direct their thoughts and actions (*e.g.*, Lezak 1995:42); these functions are thought to be associated with the prefrontal cortex (*cf.* Miller & Cohen 2001), which undergoes development well into adolescence (*cf.* Huttenlocher & Dabholkar 1997).

A variety of different executive functions have been proposed in the literature including, for example, shifting (the executive function that coordinates moving from one task to another or one mental set to another), updating (the executive function that coordinates the updating and monitoring of working memory), and inhibition (the executive function that suppresses responses that may be prepotent but inappropriate) (*cf.* Miyake et al. 2000:54–58). An area of active research in cognitive psychology investigates the extent to which different proposed executive functions truly constitute separate cognitive abilities; for example, Miyake et al. (2000) provide evidence that the three aforementioned executive functions—shifting, updating, and inhibition—are all in fact distinct executive functions. Likewise, Harnishfeger (1995) argues that inhibition should be further distinguished between motor response inhibition and cognitive inhibition (see also Dempster 1991, 1993).

Importantly, executive functions are relevant to the real-time deployment of grammatical knowledge (for parsing/comprehension, see, *e.g.*, Engelhardt, Nigg, & Ferreira 2013, Novick et al. 2014, Hsu & Novick 2016, Thoathathiri et al. 2018, and for production/generation, see, *e.g.*, Shao, Meyer, & Roelofs 2013, Freund, Gordon, & Nozari 2016, Trude & Nozari 2017, Nozari & Novick 2017, Nozari & Omaki 2018). For example, Novick et al. (2014) show that cognitive control training that enhances conflict resolution, which plausibly involves inhibition control, improves adults' ability to comprehend garden path sentences. Similarly, Hsu & Novick (2016) show that having good cognitive control (as measured by successfully detecting a conflict in an incongruent Stroop trial) leads to more quickly discarding the incorrect parse when processing a sentence that is temporarily ambiguous. And on the production side of things, Nozari & Omaki (2018) show (i) that individuals with better inhibitory control produce fewer agreement attraction errors (*e.g.*, producing *are* in a sentence like *The snake next to the elephants are green*; *cf.* Bock & Miller 1991) and (ii) that taxing inhibitory control resources on a trial-by-trial basis leads to more agreement attraction errors. With children specifically, both Woodard, Gleitman, & Trueswell (2016) and Qi et al. (2020) report evidence suggesting that children's ability to recover from an early but

incorrect parse is predicted by their executive functioning (although see Huang & Hollister (2019) for an alternative interpretation of the data).

Equally importantly, executive functions are known to not reach maturity until sometime in late adolescence (see, among others, Anderson et al. 2001, Anderson 2002, Diamond 2002, Luciana et al. 2005, Davidson et al. 2006). For example, Davidson et al. (2006) showed that children's performance on a variety of tasks that measure different executive functions increases from ages 4 to 13. Children's performance on these tasks at an early age is often quite poor, indicating that the executive function being probed is still developing. This is consistent with brain development in the region that is thought to underlie executive functions, the prefrontal cortex, still undergoing development into mid-to-late adolescence (see, *e.g.*, Huttenlocher & Dabholkar 1997:170). Nonetheless, development of the various executive functions is not monolithic. For example, Dempster (1993) suggests that there may be an ordering to the development of different types of inhibition, with the development of motor response inhibition preceding the development of cognitive inhibition.

Now, the developmental account of English-acquiring children's productions of medial wh-phrases that we propose assumes that children have acquired the target grammar; that is to say, children know that the wh-phrase can only be pronounced once at the left edge of the matrix clause in a multiclausal wh-question. However, because children's executive function of cognitive inhibition is not fully developed, children may fail to inhibit the pronunciation of the copy of the wh-phrase that is at the edge of the embedded clause, leading to a grammatically illicit medial wh-phrase production. Such productions are expected when cognitive inhibition is poor if we adopt the model of sentence production in Dell (1986) and if we adopt the hypothesized explanations of some interesting psycholinguistic facts about how fillers (*e.g.*, wh-phrases) are related to their gap sites.

Following Dell (1986:289–290), we assume that, in the course of sentence production, elements with high activation are what get pronounced and that speech errors arise from incorrect items having higher activation than the correct item. Dell (1986:286–287) posits that activation is a real-valued property. Furthermore, whenever an item has an activation greater than 0, it spreads some of its activation to nearby items in the lexicon. Dell additionally assumes that activation decays exponentially over time towards

0. Dell's model of spreading and decaying activation, coupled with possible small random fluctuations in activation as well as the potential for differing initial background activations of items due to what the speaker is thinking about, what the discourse makes salient, *etc.*, provides an account of a variety of different types of speech errors, including substitution errors, such as *pass the pepper* when what was really meant was *pass the salt*, and perseveration errors, such as *class will be about discussing the class* when what was really meant was *class will be about discussing the test* (Dell 1986:285).

In effect, we take English-acquiring children's productions of medial wh-phrases to be speech errors. To see how this is spelled out, we must consider the mechanisms involved in relating fillers to gaps. First, there is a variety of empirical evidence that fillers are actively maintained in memory until they are associated with their gap site. There is evidence to this effect for both comprehension and production. One piece of evidence in favor of this theory comes from Gibson & Warren (2004). They show that reading times of the predicate from which a wh-phrase receives its theta role are faster when there is an intermediate copy of the wh-phrase in between the wh-phrase and the gap site than when there is not an intermediate copy of the wh-phrase, with the length of the sentences held constant. They explain this by assuming that the wh-phrase is maintained in memory after being read and is reactivated at the position with the copy, leading to higher activation and thus faster reading times than if there were no intermediate position with a copy.²³

Similarly, there are also a variety of complexity effects in production that support the idea that wh-phrases are maintained in memory until their gap site. For example, Scontras et al. (2015) and Scontras, Badecker, & Fedorenko (2017) show that shorter subject dependencies are produced quicker than longer object dependencies. An explanation for this finding is that, in the longer dependency, the memory representation of the filler has decayed more, and so it may take longer to reactivate the filler when the gap position is reached, leading to overall production times that are slower when the dependency spans a

²³This is of course about comprehension, not production, but some have argued that production and comprehension use a lot of the same mechanisms (cf. Momma & Phillips 2018). Moreover, to preview a finding from this chapter, we see that medial wh-phrases are more likely with subject questions than with object/adjunct questions. This is not something we were necessarily expecting to find, but we do think our account offers a natural explanation of this finding so long as one grants that the wh-phrase (or some representation of it) is maintained in memory by the producer and reactivated in positions where syntacticians posit copies of the wh-phrase (see §2.3.5.3 below for more discussion). Absent an alternative explanation of this finding, this bolsters the assumption that comprehension and production share similar mechanisms at least in this particular case involving reactivation of wh-phrases.

greater distance.²⁴ A similar finding is that passives are often produced inside of relative clauses, which is hypothesized to result from attempts to minimize the dependency length by making the head of the relative clause the subject of the relative clause, thereby reducing the overall cost of the production (see, *e.g.*, Fadlon et al. 2019). For example, people will prefer to produce (26b) over (26a).^{25,26}

- (26) a. The day worker that the farmer praised
b. The day worker that was praised by the farmer

(Fadlon et al. 2019:46)

A second relevant fact about the psycholinguistic mechanisms involved in filler-gap constructions is that it is perhaps only syntactic category information and an abstract *wh*-feature that are actively maintained in memory. Wagers & Phillips (2014) show this to be the case at least in the comprehension of long-distance dependencies. They conduct a reading-time study and find that participants are slower at reading the region around the gap site if the lexical content of the *wh*-phrase is semantically odd with respect to the predicate at the gap site, but only when the dependency is a short dependency. In other words, if the dependency is long (*e.g.*, spans a clause), the lexical content of the *wh*-phrase will not be actively maintained in memory; only the syntactic category and a *wh*-feature are maintained in memory, and so no slowdown due to semantic anomaly results when the reader reaches the gap site. Importantly, however, there is a slowdown that occurs after the gap site, suggesting that this lexical content is retrieved from memory, and so the slowdown effect from the semantic oddity is seen after this retrieval process takes place.

If we adopt the working assumption that production uses the same mechanisms as comprehension (cf. fn. 23 above as well as Momma & Phillips 2018), then a producer will also only maintain a *wh*-feature in memory after uttering the *wh*-phrase until associating it with a gap, at least in cases where the gap site is far away (*e.g.*, in another clause). We now have the ingredients needed to state our account precisely in

²⁴Scontras et al. (2015) also show that it takes longer to begin a sentence with a longer dependency, suggesting that there is a planning cost as well.

²⁵For additional psycholinguistic evidence that the production of linguistic dependencies, not necessarily just A-bar- (*i.e.*, *wh*-)dependencies, involves active maintenance of the relevant element in question in memory, see also Badecker & Kuminiak (2007) and Franck et al. (2010).

²⁶It should be noted, however, that a possible alternative explanation of these findings is that the information structural properties of the passive construction better match the design of the experiment (cf. Pullum 2014).

terms of independently motivated performance mechanisms. We describe how our failure of inhibition account provides an explanation for the utterances in (23), repeated here as (27) for convenience, even though, by hypothesis, the speaker has acquired the target, adult-like English grammar.

- (27) a. [CP Who do you think [CP **who** Grover wants to hug?]] (Tiffany 4;9)
 (Thornton 1990:87)
- b. [CP What do you think [CP **who** ate this?]] (Kelly 3;11)
 (Thornton 1990:232)

For (27a), the speaker starts by uttering *who*. Because this is a long-distance dependency, only a *wh*-feature and the syntactic category information is maintained in memory (Wagers & Phillips 2014). However, when the speaker reaches the beginning of the embedded clause, the *wh*-feature receives a boost in activation (Gibson & Warren 2004). Even though the child's grammar forbids the pronunciation of the element in this position, the child may nonetheless accidentally utter the *wh*-phrase, *who*, because sentence production involves producing those things which are highly active (Dell 1986), and the *wh*-phrase just received a boost in activation by way of reactivation of the *wh*-feature. The child may be particularly likely to make this sort of speech error if their cognitive inhibition is poor. Recall that cognitive inhibition is the executive function that suppresses responses that may be prepotent but inappropriate (see, e.g., Dempster 1991, 1993). That is to say, the role that cognitive inhibition plays in our account is in suppressing the pronunciation of a reactivated *wh*-phrase in accordance with the grammar; however, if an individual's cognitive inhibition is underdeveloped, they might fail to inhibit the pronunciation, effectively resulting in a speech error, since what they said does not accord with their grammar.²⁷

²⁷An anonymous reviewer for the version of this chapter published as Liter, Grolla, & Lidz (in press) asks whether our account also predicts that *wh*-phrases should be pronounced in other locations along the movement path. We return to this in more detail below in §2.3.5.3. However, in brief, such productions are, in principle, expected given our account. That being said, we expect them to be extremely rare. Even when cognitive inhibition fails, we would expect the failure to still be constrained by aspects of the grammar, including the statistical distribution of the utterances that the grammar gives rise to. Specifically, *wh*-phrases are only ever pronounced in base positions in very highly constrained contexts in English (echo questions and multiple questions), while, on the other hand, *wh*-phrases occur more frequently at the clause boundary in English, including in embedded interrogatives (e.g., *I wonder what time it is*) and embedded polar interrogatives (e.g., *do you know what time it is*). So, because the child would only hear *wh*-phrases in base positions on an extremely rare basis, we would expect that children would exhibit many fewer instances of failed cognitive inhibition in such cases, compared to at the clausal boundary. If anything, the child might instead be more likely to produce the corresponding DP that gives the answer in the base position, especially since they know the answer given the setup of the task and since it is licit (and common) to pronounce

As for the production in (27b), the story is very similar. Recall that Dell (1986) allows for differing initial background activations of lexical items. Initial activation levels could be influenced by a variety of things, including things like what the speaker happens to be thinking about, what the discourse makes salient, what another speaker just uttered, *etc.*. Indeed, as discussed above, the model in Dell (1986) accounts for speech errors involving substitutions, such as substituting *pepper* for *salt*, perhaps because of different initial levels of activation and/or spreading activation. So, even though the speaker intends to ask a *who* question, *what* may, in this particular instance, initially have a higher level of activation than *who* for whatever reason, and so the speaker may accidentally utter *what*. Sentence production proceeds, and the *wh*-feature is then maintained in memory and reactivated at the edge of the embedded clause because of the copy of the *wh*-phrase in this position. Activation spreads, including to conceptually related words (Dell 1986:287–289), and so the activation can spread to all *wh*-words. Moreover, activation decays over time as well (Dell 1986:287), so the activation of *what* might have decayed towards 0, and *who* is now more highly active than *what*, especially since the speaker intended to ask a *who* question anyway. Finally, again, even though the child’s grammar disallows the pronunciation of *who* in this position, they may accidentally pronounce it because it has a high level of activation, especially if their cognitive inhibition is poor.²⁸

A failure of inhibition account therefore straightforwardly predicts that a measure of cognitive inhibition should correlate with productions of medial *wh*-phrases, with children who exhibit poor cognitive inhibition being more likely to produce medial *wh*-phrases than children who exhibit good cognitive inhibition. On the other hand, non-target grammar accounts, which we briefly discuss next, make no such prediction; in fact, they most straightforwardly predict that there should be no relation between measures of cognitive inhibition and medial *wh*-phrase production.

DPs in the complement to V position in the adult target language. This is similar to an aspect of Dell’s (1986:291–292) theory which holds that speech errors will follow the categorical constraints of the grammar.

²⁸Lutken, Legendre, & Omaki (2020) propose an account of medial *wh*-phrase productions that is similar to our account. We will return to this in §2.3.5.3. However, it is worth noting that they claim our account, as proposed in Grolla & Lidz (2018), cannot account for medial *wh*-phrase productions where the *wh*-phrases are distinct (Lutken, Legendre, & Omaki 2020:43, note 3). As we’ve just discussed, this is not the case. Our account does offer an explanation of medial *wh*-phrase productions with distinct *wh*-phrases. But even if this were true of our account, they themselves adopt two distinct accounts of the two different types of productions, with the productions involving distinct *wh*-phrases hypothesized to be restart errors (Lutken, Legendre, & Omaki 2020:38–39). As such, this criticism of our account would not constitute a reason to prefer one account or the other (even if it were a valid criticism).

2.2.2 Non-target grammar accounts

As noted, the observation that productions like (27) look like grammatical sentences in adult grammars of other languages is a common departure point for the various non-target grammar accounts (see, *e.g.*, Thornton 1990:209 ff., McDaniel, Chiu, & Maxfield 1995:710 ff., de Villiers, de Villiers, & Roeper 2011:353–354). Despite this, the various non-target grammar accounts of English-acquiring children’s productions of questions like (27) that have been proposed all differ somewhat. In our discussion here, we will abstract away from these details and instead raise some questions about the evidence that has been cited in favor of these non-target grammar accounts and raise some general issues for this class of similar accounts.

The details of the various accounts are largely immaterial to the experiment that we conduct, which is aimed at teasing apart the non-target grammar accounts from our own failure of inhibition account. As noted above, the non-target grammar accounts most straightforwardly predict that there should be no relation between a measure of cognitive inhibition and production of medial wh-phrases. These accounts most straightforwardly make this prediction because there is no apparent reason that someone with better cognitive inhibition should have arrived at the target grammar sooner than someone with worse cognitive inhibition, since cognitive inhibition is just the ability to suppress a prepotent but inappropriate response. In other words, under the non-target grammar accounts, one would expect children with differing cognitive inhibition abilities in both groups, those with the target grammar and those with the non-target grammar.²⁹ Since our experiment is designed to look at the relation between cognitive inhibition and medial wh-phrase production, we abstract away from the details of the various non-target grammar accounts. We will instead first discuss some of the evidence that has been argued to favor these accounts, and then we will discuss some issues for these accounts.

²⁹It is of course possible that executive functions impact the speed of language acquisition, but, absent a detailed and testable proposal to this effect, non-target grammar accounts predict there to be no relation between cognitive inhibition and medial wh-phrase production. Moreover, given the issues for non-target grammar accounts that we discuss immediately below as well as converging evidence from other experiments like the ones reported in Lutken, Legendre, & Omaki (2020), we think that non-target grammar accounts, even if they were supplemented with a developmental proposal in the vein suggested here, are likely wrong.

2.2.2.1 Evidence for non-target grammar accounts and its issues

There are generally three pieces of putatively converging evidence that are adduced in favor of the hypothesis that English-acquiring children who produce sentences like (27) have a non-target grammar. The first piece of evidence is just the fact that children between the ages of 3 and 6 produce such sentences and that these sentences look remarkably similar to grammatical adult-like utterances in other non-target languages, as originally reported in Thornton (1990). A second piece of evidence comes from children's answers to certain kinds of questions. For example, de Villiers, Roeper, & Vainikka (1990) found that younger children in their sample of 3- to 6-year-olds would respond to questions such as (28) with an answer to the *who* question (which is an ungrammatical interpretation of this question in the target language), not an answer to the *how* question.

- (28) How did Big Bird say who to paint?
(de Villiers, Roeper, & Vainikka 1990:282)

One possible analysis of this is that children treat sentences like (28) as scope marking constructions, with *how* just marking the matrix scope of *who* (see also Thornton & Crain 1994, Thornton 1995, de Villiers & Roeper 1995, de Villiers et al. 2008, de Villiers, Kotfila, & Klein 2019). Finally, a third piece of evidence comes from the fact that some children between the ages of 3 and 5 report questions with medial *wh*-phrases as being acceptable, despite being ungrammatical in their target language of acquisition (McDaniel, Chiu, & Maxfield 1995).

With regard to the second piece of evidence, it is likely that these sorts of interpretations are driven by extragrammatical factors and do not constitute evidence that English-acquiring children have a non-target grammar. Lutken, Legendre, & Omaki (2020) make a convincing empirical case for this interpretation of these findings. They conducted similar question-after-story tasks, with sentences involving *what* and *that* and sentences involving *how* and *what*, as in (29a) and (29b).

- (29) a. What did Evil Steve tell Detective Sherry that he was gonna steal?
b. How did Evil Steve tell Detective Sherry what he was gonna steal?

These sentences were asked after a story in which Evil Steve told Detective Sherry that he was going to steal

the Queen's ring, not the Queen's crown, in order to try to throw Detective Sherry off his trail. The story is constructed in such a way so that the manner of telling is at issue, and the story is also constructed such that what Evil Steve actually ends up stealing (the crown) is different from what he tells Detective Sherry that he is going to steal (the ring). Lutken, Legendre, & Omaki (2020:26–28) find that children correctly answer (29b) with the manner of telling 67.7% of the time. Moreover, true object answers (*i.e.*, the crown) and false object answers (*i.e.*, the ring) only occur 8.3% of the time each in response to (29b). Only the false object answers would constitute evidence in favor of the idea that English-acquiring children have adopted a non-target grammar because it is only this kind of an interpretation where the *wh*-phrase also takes scope over *tell*. Notably, these sorts of answers were less frequent than non-adult-like true object answers (the crown) to (29a), which occurred 16.7% of the time; thus, it is likely that these false object answers (the ring) to (29b) are just noise in the data. In other words, these sorts of answers should be understood as a fact about performance, not a fact about grammatical competence. And, to the extent that these sorts of answers were more prevalent in previous studies (some of which were investigating other issues), it is likely that they were pragmatic artifacts (cf. Hamburger & Crain 1982, Conroy et al. 2009).

Notably, Lutken, Legendre, & Omaki (2020:30–35) also find no correlation between false object answers and productions with medial *wh*-phrases when they conducted a within-subjects experiment to test this. Yet this correlation would be expected under non-target grammar accounts.

With respect to the third piece of evidence (*i.e.*, the fact that children report some sentences with medial *wh*-phrases as being acceptable), we just want to note that performance measures have always been understood to only constitute defeasible evidence as to the grammatical status of the sentences in question. For example, we know from self embedding sentences and garden path sentences on the one hand (see, *e.g.*, Frazier & Fodor 1978) and comparative illusions on the other hand (see, *e.g.*, Montalbetti 1984, Wellwood et al. 2018) that acceptability and grammaticality can come apart, in both directions (cf. §1.1 above). Thus, it is possible that the acceptability judgments reported in McDaniel, Chiu, & Maxfield (1995) do not reflect the grammatical competence of the children that took part in the study. That is to say, it's possible that the sentences that children reported as acceptable were nonetheless ungrammatical

with respect to their own mental grammars. There were 32 children who took part in their acceptability judgment task, ranging in age from 2;11 to 5;7; the majority were 3- and 4-year-old children. Acceptability judgments are quite hard to elicit from young children, for a variety of reasons, so it is quite possible that their acceptability judgments did not reflect their own mental grammars. Moreover, overall acceptance rates for the sentences with medial wh-phrases were generally low (around 20%), compared to acceptance rates for sentences that are grammatical in adult English (cf. McDaniel, Chiu, & Maxfield 1995:724, Table 2). Given these considerations and given the converging evidence from studies like Lutken, Legendre, & Omaki (2020) and the experiment that we report below suggesting these aspects of child English reflect performance factors, we think this is the correct interpretation of these judgments.

Next, we briefly discuss some general issues that the non-target grammar accounts face.

2.2.2.2 General issues with non-target grammar accounts

Perhaps the biggest issue that non-target grammar accounts face is the fact that languages with scope marking and wh-copying are not monolithic. As just one example of this fact, there are some dialects of German and Romani that allow scope marking but not wh-copying (see, *e.g.*, McDaniel 1986:93–185). Nonetheless, almost all of the non-target grammar accounts treat children’s productions of both sorts of constructions as arising from the same piece of hypothesized (non-target) grammatical knowledge. Thus, on these accounts, it is actually quite unexpected that there would be German and Romani dialects with scope marking but not wh-copying. These accounts only expect there to be dialects with both constructions or neither.³⁰

Relatedly, children do actually produce some utterances that are not possible in the world’s languages. For example, Thornton (1995:151) reports some utterances that involve a wh-phrase with *which* in the matrix clause and some other wh-phrase at the edge of the embedded clause, as in (30).

(30) Tiffany 4;9

³⁰One exception to this is the non-target grammar account in Thornton (1990), where children’s productions with non-identical wh-phrases are treated as distinct from children’s productions with identical wh-phrases; however, no concrete analysis of the former sorts of productions is given. McDaniel, Chiu, & Maxfield (1995:740) do also briefly acknowledge this problem, and they propose, in passing, an *ad hoc* solution to the issue, which is particular to the details of their account that we’ve glossed over.

- a. Which Smurf do you think who has roller skates on?
- b. Which animal do you think what really says “woof woof”?

Such utterances are, as far as we know, not possible in the world’s languages. While it is possible to have a wh-phrase with *which* appear at the edge of the embedded clause in a scope marking construction, it is not possible to use a wh-phrase with *which* in a wh-copying construction (see, *e.g.*, McDaniel, Chiu, & Maxfield 1995:712). But the utterances in (30) are neither wh-copying nor scope marking constructions, since the wh-phrase with *which* appears in the matrix clause (not at the edge of the embedded clause), and the wh-phrase at the edge of the embedded clause is a different wh-phrase.

These utterances are problems for non-target grammar accounts, but they can be straightforwardly accounted for with our failure of inhibition account, as discussed above in §2.2.1. Because it is just the wh-feature that is maintained in memory, when the speaker starts the embedded clause, they reactivate this wh-feature, which causes spreading activation to all wh-words, and so the speaker might accidentally produce a different wh-phrase depending on the prior activations of the different wh-words, especially if they are not good at inhibiting prepotent but inappropriate responses (*i.e.*, they have poor cognitive inhibition).

We conclude that some of the evidence in favor of non-target grammar accounts is not as definitive as it might have appeared. Moreover, there are some non-trivial issues that non-target grammar accounts face. We next turn to experimental evidence that supports our inhibition account above and beyond any non-target grammar account.

2.3 The experiment

We conducted four different tasks with each child in order to tease apart our failure of inhibition account from non-target grammar accounts. Specifically, we conducted (i) an elicited production task, (ii) a task that measures cognitive inhibition, (iii) a task that measures motor inhibition, and (iv) a task that measures motor ability. The tasks themselves are described in more detail below in §2.3.2. We next describe the predictions of the various accounts.

2.3.1 Predictions

As noted in §2.2, the non-target grammar accounts predict there to be no relation between measures of inhibition control and production of medial wh-phrases. On the other hand, our failure of inhibition account predicts that children who exhibit poor inhibition control will be more likely to produce medial wh-phrases than children who exhibit good inhibition control. In fact, as discussed above, both Harnishfeger (1995) and Dempster (1991, 1993) argue that cognitive and motor response inhibition are distinct executive functions and that the development of motor response inhibition precedes the development of cognitive inhibition. Cognitive inhibition, unlike motor inhibition, involves the ability to suppress cognitive processes, such as the suppression of stray thoughts, suppression of memory processes, *etc.* (cf. Harnishfeger 1995:184). So, our account therefore more specifically predicts that the children who exhibit poor *cognitive* inhibition will be more likely to produce medial wh-phrases than children who exhibit good *cognitive* inhibition.

Our account does not predict there to be any correlation between likelihood of medial wh-phrase production and motor inhibition or motor ability. We included these two additional tasks as control tasks, in effect; if we do not see a correlation between these two measurements and the likelihood of medial wh-phrase production, then this is at least suggestive that medial wh-phrase production is not merely predicted by general measurements of development, modulo, of course, the necessary caveats about the interpretation of null effects.

2.3.2 Methods and materials

Next, we describe each of the four tasks in more detail.

2.3.2.1 Elicited production

For the elicited production task, children watched short animated videos while a puppet, Snuggles, was hiding. The videos were short clips from a Brazilian animated cartoon show, *Turma da Mônica* (“Mon-

ica’s Gang”), that lacked dialogue.³¹ There were 6 different clips which averaged 28.167 seconds in length; the range of clip length was 23–30 seconds.

After each video, Snuggles came out of hiding, and the child was encouraged to ask the puppet between 2 and 4 different questions per video. For example, in one video Mônica chased two other children (who’ve stolen her stuffed animal) across a tightrope. The experimenter would then prompt the participant to ask Snuggles a question by whispering something like (31) to the child. (The prompt was whispered so that Snuggles couldn’t hear the answer to the question.)

(31) We know that it was the girl that was chasing the boys, but let’s ask Snuggles who he thinks.

The participant was expected to ask Snuggles the question in (32).

(32) Who do you think was chasing the boys?

As noted, there were between 2 and 4 questions that we elicited per video clip, for a total of 21 questions. We elicited 8 subject questions, 7 object questions, and 6 adjunct questions. A full list of the prompts and the intended elicited questions can be found in Appendix A.

The first video clip had 3 target questions (2 subject questions and 1 object question). During the trials for this first video, if the participant failed to ask a multicausal question, the experimenter reminded the participant that we want to know what Snuggles *thinks* and then prompted the participant to ask again. The hope was that the participant would then ask Snuggles a multicausal question where the first clause was *what/who/how/which game/etc. do you think*. This was not done for subsequent video clips. In our statistical analysis below, we only analyze multicausal utterances where there could have been a medial wh-phrase.

2.3.2.2 Cognitive inhibition task

To measure cognitive inhibition, we used a picture-naming task from the literature on cognitive inhibition, following Kipp & Pope (1997). Participants were asked to name items as quickly as possible in a picture book, *Anno’s Journey*, as the experimenter pointed to them. There were two 2-minute blocks for

³¹The YouTube channel for *Turma da Mônica* can be found at the following link: https://www.youtube.com/channel/UCV4XcEqBswMCryorV_gNENw.

this task. In the first 2-minute block, the participant was told that they were not to name the item the experimenter pointed to if it was an animal (a “distractor” item). In the second 2-minute block, the participant was told to name every item, including the animals. The measure of cognitive inhibition from this task is whether or not a participant erroneously named a distractor in the first block since erroneously naming a distractor is indicative of not being able to inhibit the prepotent response to name the item. The second block was included to ensure that all participants were capable of naming animals, which they were.

Before the first 2-minute block, there was a brief 30-second training period where the experimenter pointed to a few items and the participant named them, just so that the participant could get comfortable with the task.

2.3.2.3 Motor inhibition task

To measure motor response inhibition, we implemented a Simon task (cf. Simon & Rudell 1967, Simon 1969) in PsychoPy (Peirce 2007, 2009, Peirce et al. 2019), following a spatial version of the Simon task as described in Davidson et al. (2006). Specifically, there were three conditions, a congruent, an incongruent, and a mixed condition. In the congruent condition, participants saw a heart appear on the screen and had to press a key on the keyboard that is on the same side of the keyboard as the heart (either the ‘z’ or ‘m’ key). In the incongruent condition, the participant saw a flower and had to press the key on the opposite side of the flower. In the mixed condition, the participant saw both hearts and flowers and had to press the relevant key depending on the side of the screen that the image appeared on and what the image was.

The trials were blocked such that the participant always did the congruent trials, then the incongruent trials, and finally the mixed trials. There were 12 congruent trials, 12 incongruent trials, and 16 mixed trials. Half of the stimuli appeared on the left, and half appeared on the right. Each participant was presented the stimuli in the same pseudorandom order. In between each stimulus, there was a 1000-millisecond interstimulus interval during which a fixation cross appeared in the middle of the screen. The participant had 1500 milliseconds to press either ‘z’ or ‘m’ after the stimulus appeared. If the child did not press a key before these 1500 milliseconds elapsed, the next trial began. Prior to the congruent and

incongruent trials, there was a brief training period with a few trials of each type. There was no training prior to the mixed trials. Screenshots of the mixed block instructions, a heart trial, and a flower trial from the PsychoPy experiment are included in Figure 2.1.

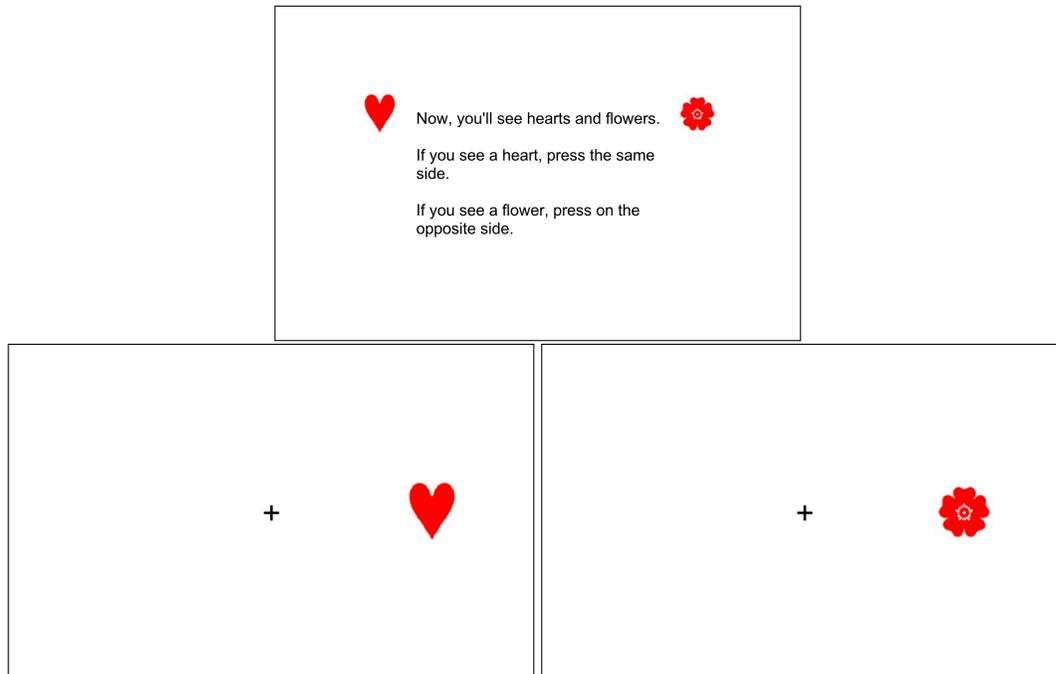


Figure 2.1: Mixed instructions and example trials from Simon task

The incongruent trials and the mixed trials measure motor response inhibition. Because there is a preference to respond on the same side as the stimulus, the participant must first inhibit this response in an incongruent trial and then respond on the opposite side (cf. Davidson et al. 2006). Incongruent trials occur in the mixed block, so results from the mixed block could be used as a measure of motor inhibition, too. However, we expected all children to generally perform poorly in the mixed block because of how difficult it is. Moreover, the mixed block measures both motor inhibition and the executive function of shifting, since the participant has to switch between the appropriate response for the heart and the appropriate response for the flower. We therefore chose to use mean error rate in the incongruent trials as our measure of motor inhibition in the statistical analysis below.

2.3.2.4 Motor ability task

Finally, the task that we used to measure general motor ability was a motor sequencing task from Carlson & Moses (2001), which they adapted from Welsh, Pennington, & Groisser (1991). This task used a toy piano with four different keys. The participant was asked to play each key once in a sequence as many times as possible in 10 seconds, without skipping a key or pressing a key twice. The number of successfully completed scales was used as the measure of motor ability in our statistical analysis below.

2.3.3 Participants

We collected data from 100 participants. This data set is a superset of the preliminary data from 32 participants that was reported in Grolla & Lidz (2018).

Of these 100 participants, 1 participant's sessions were not recorded, and so we could not transcribe the data from this participant. 13 participants did not complete all four tasks, and 1 participant's parent/guardian reported that they did not hear English at least 80% of the time, a threshold for inclusion that was determined before data collection began. This leaves 85 participants. Of these 85 participants, 79 produced at least one multiclausal wh-question such that there could have been a medial wh-phrase. Thus, in what follows, we analyze the data from these 79 participants.³²

Participants were recruited from the University of Maryland's Center for Young Children (an on-campus school for children) or via the University of Maryland's Infant and Child Studies Consortium. Testing happened in one of two ways. Either participants completed all 4 tasks in a single session, with a 5–10 minute break in between the elicited production task and the other 3 tasks, or participants completed the tasks in two different sessions, one with the elicited production task, and one with the other 3 tasks. The elicited production task was usually done first; the mean number of days between the elicited production task and the other three tasks was 7.58 days, with the range being from –7 to 68. The average age of participants during the session with the elicited production task was 4;8,18, with the range being from 3;6,27 to 6;2,29. The average age of participants during the session with the other 3 tasks was 4;8,20, with the range being from 3;6,28 to 6;5,1.

³²The data is available at <https://osf.io/vp6mg/>.

2.3.4 Results

We begin discussion of the results from our experiment with some descriptive statistics and visualizations of the measures from each of the four tasks.

2.3.4.1 Elicited production results

The elicited production results were transcribed and then coded for various linguistic properties of interest. Each utterance was coded for (i) the type of question it was (subject, object, or adjunct), (ii) whether it was a wh-question with two clauses (yes or no; *i.e.*, embedded polar interrogatives such as *Do you know what was under the top hat?* were coded as no), what matrix wh-word was used (*e.g.*, *who*, *what*, *which NP*, *etc.*), (iii) whether there was a medial wh-phrase (yes or no), (iv) what medial wh-word was used (if any), (v) whether the matrix wh-word was the same as the medial wh-word (yes, no, or N/A), (vi) whether there was a *that*-trace violation (yes or no), and (vii) whether there was resumption of the argument in the base position (yes or no). Additionally, following Lutken (2021:171), we coded for several different types of disfluencies. We coded (i) whether a filler was used, such as *uh* or *um* (yes or no), (ii) whether (at most) one word was repeated (yes or no), (iii) whether more than one word was repeated and all repeated words were the same (yes or no), and (iv) whether one or more words were repeated with at least one of the words being changed in the process (yes or no). For each of these four disfluencies, we additionally coded whether the disfluency occurred at the clause boundary (yes, no, or N/A in the case of single-clause utterances), where, for object and adjunct questions, the clause boundary was defined as after the matrix verb but before the subject of the embedded clause and where, for subject questions, the clause boundary was defined as after the matrix verb but before the embedded verb. Disfluencies occurring more frequently at the clause boundary has been claimed to be indicative of greater processing load in that region (cf. McDaniel, McKee, & Garrett 2010).

Out of the 21 questions that we attempted to elicit with each participant, participants asked on average 17.88 multicausal wh-questions that could have had a medial wh-phrase (range: 3–21; SD: 4.91). A breakdown of this average across the three different question types is given in Table 2.1.

37 participants did not ask questions with medial wh-phrases, and 42 participants asked at least one

	Adjunct	Object	Subject	Total
Produced	4.98 (1.58)	5.43 (1.93)	7.48 (2.58)	17.88 (4.91)
Elicited	6	7	8	21

Table 2.1: Average number of produced questions where medial wh-phrase was possible, by question type, with standard deviations in parentheses

question with a medial wh-phrase. For these 42 participants, on average, 17.80% of their questions where medial wh-phrases were possible did in fact contain a medial wh-phrase (range 4.76%–53.33%; SD: 14.51%). For example, let’s consider the data from one of our participants; in (33), we give the questions from this participant that contained medial wh-phrases.

- (33) Samantha 4;7,23
- a. Adjunct questions with medials (3 out of 4 = 75%)
 - i. What do you think how he got lift up?
 - ii. Where do you think where they were walking?
 - iii. Where do you think where he was hiding?
 - b. Object questions (1 out of 5 = 20%)
 - i. What do you think what the girls were eating?
 - c. Subject questions (7 out of 12 = 58.33%)
 - i. Who do you think who kissed the boy?
 - ii. Who do you think what popped the balloons?
 - iii. What do you think what cut the rope?
 - iv. What do you think who fell?
 - v. Who do you think what who which kid flew in the sky?
 - vi. What do you think which kid jumped into the water?
 - vii. Who do you think that who’s great at soccer?

This participant asked 21 multiclausal questions (*i.e.*, 21 questions where medial wh-phrases were possible), and 11 of these did in fact contain medial wh-phrases.³³ This particular participant was near the upper end of the range of medial wh-phrase production (53.33%), with 52.38% of their multiclausal wh-questions containing medial wh-phrases. No child produced exclusively questions with medial wh-phrases. An anonymous reviewer for the version of this chapter published as Liter, Grolla, & Lidz (in press) asks whether children produced one specific type of medial wh-structure or whether there was a mix. To address this, we looked at the 9 children in our data set who produced more than 3 medial wh-structures (range: 3;7,20–5;5,4; mean: 4;5,17). Of these 9 children, 5 exclusively produced medial wh-phrase questions with identical matrix and medial wh-words, and 4 participants produced medial wh-phrase questions with a mix of identical and non-identical matrix and medial wh-words.

In addition to breaking things down by individuals, we also broke things down by question type. We calculated the rates of medial wh-phrase by question type; the proportions are plotted in Figure 2.2. As can be seen in Figure 2.2, medial wh-phrases were not all that frequent, occurring in 4.52% of the adjunct questions in our sample, 5.70% of the object questions, and 14.95% of the subject questions. Overall, collapsing across question type, out of the 1,352 multiclausal wh-questions that we analyzed in our final sample of 79 participants, 124 (9.17%) of them had medial wh-phrases.³⁴

Of these 124 questions with medial wh-phrases, 81 (65.32%) had matching wh-phrases, 19 (13.52%) had *what* in the matrix clause and the target wh-phrase in medial position, and 24 (19.35%) involved some other combination (predominantly (*i.e.*, 15 of 24) a complex wh-phrase in the matrix clause, such as *which kid*, and a related but simplex wh-phrase in the medial position, such as *who*). This information is summarized in Table 2.2.³⁵

³³Note that this participant asked 12 subject questions even though we only tried to elicit 8; similarly, this participant asked 5 object questions, but we tried to elicit 7, and this participant asked 4 adjunct questions, but we tried to elicit 6. Participants did not always ask the type of question that we tried to elicit. We return to this below in §2.3.4.6 and §2.3.5.3.

³⁴For comparison, 22% of the utterances in Experiment 1 (30 children, 354 child utterances) from Lutken, Legendre, & Omaki (2020) included medial wh-phrases, and 15.4% from their Experiment 3 (20 children, number of child utterances not reported) included medial wh-phrases.

³⁵An anonymous reviewer for the version of this chapter published as Liter, Grolla, & Lidz (in press) notes that our account would predict there to be all three of these types of medial wh-phrase productions, but the reviewer points out that the data sets from Thornton (1990) and Lutken, Legendre, & Omaki (2020) predominantly include productions with matching wh-phrases and productions with *what* + target wh-phrase. The reviewer is correct to point out that our theory predicts a mix of production types, including non-matching medial wh-phrase productions that aren't solely of the *what* + target wh-phrase type. This is indeed what we observe in our data set, as can be seen in Table 2.2.

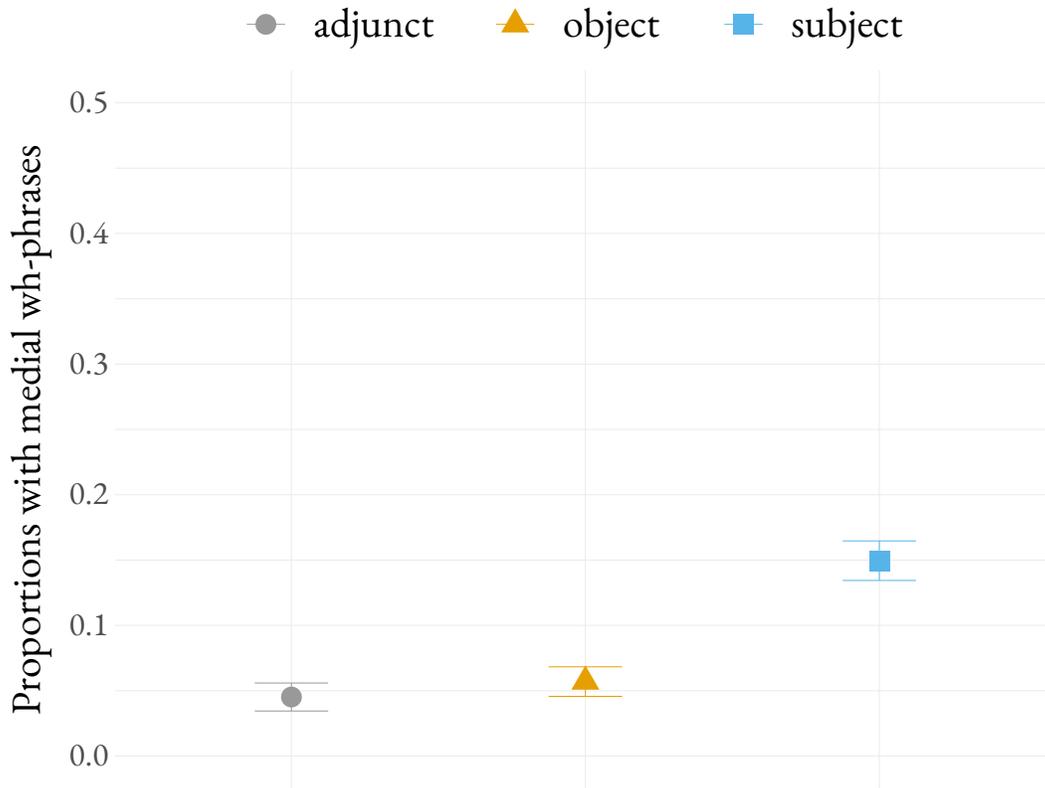


Figure 2.2: Proportions of questions with medial wh-phrases, by question type; error bars indicate one standard error of the proportion

Matching wh-phrases	<i>what</i> + target wh-phrase	Other
81 (65.32%)	19 (13.52%)	24 (19.35%)

Table 2.2: Number of different types of medial wh-phrase productions in our data set

It is also worth noting that there were many more subject questions with medial wh-phrases than there were object or adjunct questions with medial wh-phrases in our data. This is reminiscent of the

Moreover, it's not clear to us that these productions actually are absent from the data sets of Thornton (1990) and Lutken, Legendre, & Omaki (2020). It is hard to ascertain the extent to which they were observed in Thornton (1990) since few summary statistics are given. That being said, Thornton (1990:237) does report some such productions, including *Which Smurf do you think who has roller skates on?*, *Which animal do you think what really says "woof woof"?*, *Which one do the bear and the squirrel think who has two bears?*, and *Which guy did they say which had the orange marble?*. On the other hand, Lutken, Legendre, & Omaki (2020:16) do give the relevant summary statistics for their Experiment 1. In this experiment, a majority of the utterances with non-matching wh-phrases, 11 of 14, are *not* of the *what* + target wh-phrase type. This is consistent with our account. Furthermore, if these types of medial wh-phrase productions are more absent from other data sets than one would expect given our account, we suspect this is due to other studies involving fewer participants and fewer utterances than is the case for our study; that is to say, these other studies might just have happened to fail to observe a preponderance of various other non-matching types of medial wh-structures in virtue of smaller sample sizes.

observation in Thornton & Crain (1994:220) that children’s production of medial wh-phrases persisted longer in subject questions. The evidence that Thornton & Crain (1994) report for this is longitudinal, although they do not give concrete summary statistics. Moreover, it is worth noting that Lutken, Legendre, & Omaki (2020) do not see more medial wh-phrases with subject questions than with object questions. We will return to this point more in §2.3.5.3.

Before turning to the results from the other tasks, we also briefly address the presence of *that*-trace violations and general disfluencies in our data set. There were 60 instances of *that*-trace violations in our data set, from 22 different participants (range: 3;7,20–5;11,10; mean: 4;8,26). The baseline average rate of *that* usage in grammatical adult-like contexts (*i.e.*, adjunct and object questions) was 9.07%. This is comparable to an average rate of *that* usage in subject questions (which is ungrammatical in the adult target language), which was 11.3%.

For disfluencies, we looked at all 1,612 utterances from the 79 participants whose data we analyzed. This therefore includes the 1,352 multiclausal wh-questions that are of main interest, as well as the 260 utterances that were not multiclausal wh-questions. Of these 1,612 utterances, 46 included fillers. Of these 46, 41 occurred in utterances with two clauses, and 23 of these 41 occurred at the clause boundary. 53 of the 1,612 utterances contained the repetition of at most a single word, and, of these 53, 42 were multiclausal utterances, with 10 of the 42 occurring at the clause boundary. 20 of the 1,612 utterances included the repetition of more than just a single word. Of these 20, 18 were in multiclausal utterances, and 2 of the 18 occurred at the clause boundary. Finally, there were 68 out of 1,612 utterances with a repetition of one or more words where at least one word was changed. Of these 68, 64 occurred in multiclausal utterances, and 12 of the 64 were at the clause boundary. This information is summarized in Table 2.3.

2.3.4.2 Cognitive inhibition results

Next, we present some descriptive results from the cognitive inhibition task. In Figure 2.3, we plot the proportion of participants that erroneously named a distractor in the first 2-minute block of the cognitive inhibition task, split by whether the participant produced any medial wh-phrase throughout the course

Disfluency type	Number occurrences	Number at clause boundary
Filler	46 (2.9%)	23 (56.1%)
Repetition	53 (3.3%)	10 (23.8%)
Multi-word repetition	20 (1.2%)	2 (11.1%)
Repetition w/correction	68 (4.2%)	12 (18.8%)
Total	187	47

Table 2.3: Number of occurrences of each disfluency type and number of each type that occurred at a clause boundary. Percentages are given in parentheses for the proportion of these disfluencies relative to the total number of utterances and relative to the number of utterances with that disfluency type and with multiple clauses, respectively. Percentages are not given for the totals because these disfluencies were not mutually exclusive (*i.e.*, they can, and occasionally did, occur in the same utterance).

of the elicited production task. This figure is intended solely as a descriptive summary of the results from this task, but splitting the data in this way anticipates the statistical analysis we report in §2.3.4.6 and is a useful way to visualize the descriptive results in light of the predictions that the different accounts make. As can be seen in Figure 2.3, more participants who produced at least one medial wh-phrase erroneously named a distractor than participants who did not produce any medial wh-phrases.

2.3.4.3 Motor inhibition results

Moving to the motor inhibition results, in Figure 2.4, we plot the mean error rate by group and by the three different conditions in this task. As can be seen in the figure, the mean error rates for the congruent and mixed conditions were similar between the two groups. For the incongruent condition, the group who produced at least one medial made more errors than the group who did not produce any medials.

2.3.4.4 Motor ability results

Next, we present descriptive results of the motor ability task. In Figure 2.5, we plot the average number of successful scales that participants completed, by group. As can be seen in the figure, both groups successfully completed, on average, approximately the same number of scales in this motor sequencing task.

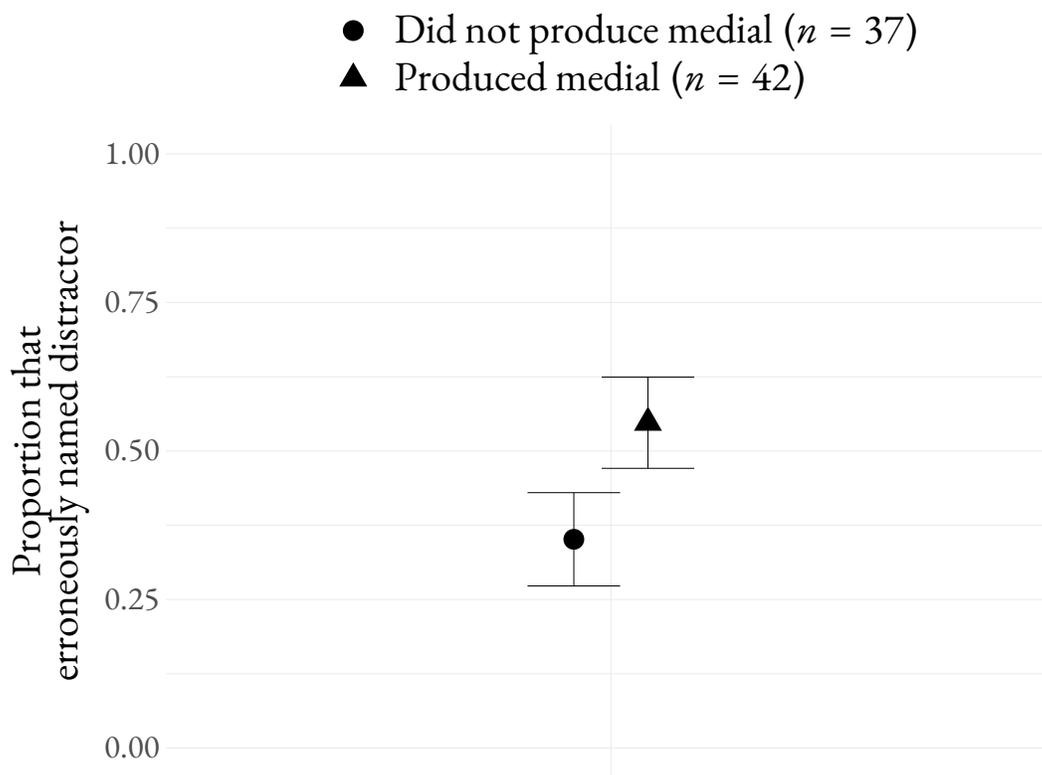


Figure 2.3: Proportion of participants that erroneously named distractor, by group; error bars indicate one standard error of the proportion

2.3.4.5 Inter-task correlations

Finally, before turning to the statistical analysis where we model the presence of a medial wh-phrase in a given production as a function of these various measures, we report Pearson's correlation coefficients between the different task measures that we just discussed in Table 2.4.

	Congruent error	Incongruent error	Mixed error	Number scales
Erroneously named distractor	0.12	0.18	0.16	-0.22
Congruent error		0.11	0.26	-0.36
Incongruent error			0.42	-0.26
Mixed error				-0.20

Table 2.4: Pearson's correlation coefficients for various task measures

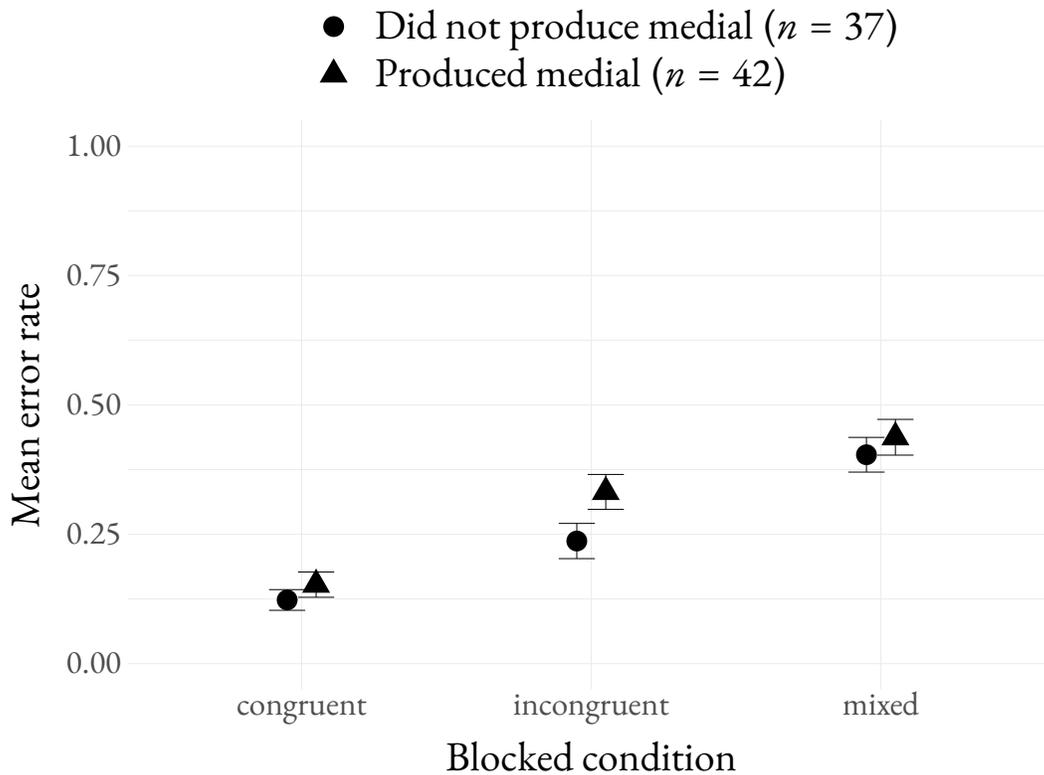


Figure 2.4: Mean error rate, by group and by condition; error bars indicate one standard error of the mean

2.3.4.6 Statistical analysis

We next present a statistical analysis of these results aimed at teasing apart the non-target grammar accounts from our failure of inhibition account on the basis of the predictions discussed above. To reiterate, our failure of inhibition account predicts that cognitive inhibition should be positively correlated with the production of medial wh-phrases, whereas the non-target grammar accounts predict no such relation. To test these predictions, we fit several different logistic mixed-effects models to the data. The models were fit using R (R Core Team 2017) and the package `lme4`'s `glmer` function (Bates et al. 2015).

Each model was fit to predict whether or not a given trial where a medial wh-phrase was possible in fact had a medial wh-phrase. We fit 6 different models, and we compared the model using Akaike Information Criterion (AIC) (cf. Akaike 1973) and χ^2 tests of the log likelihood ratios. The fixed effects in our 6 different models included an intercept term, a categorical variable indicating the type of question

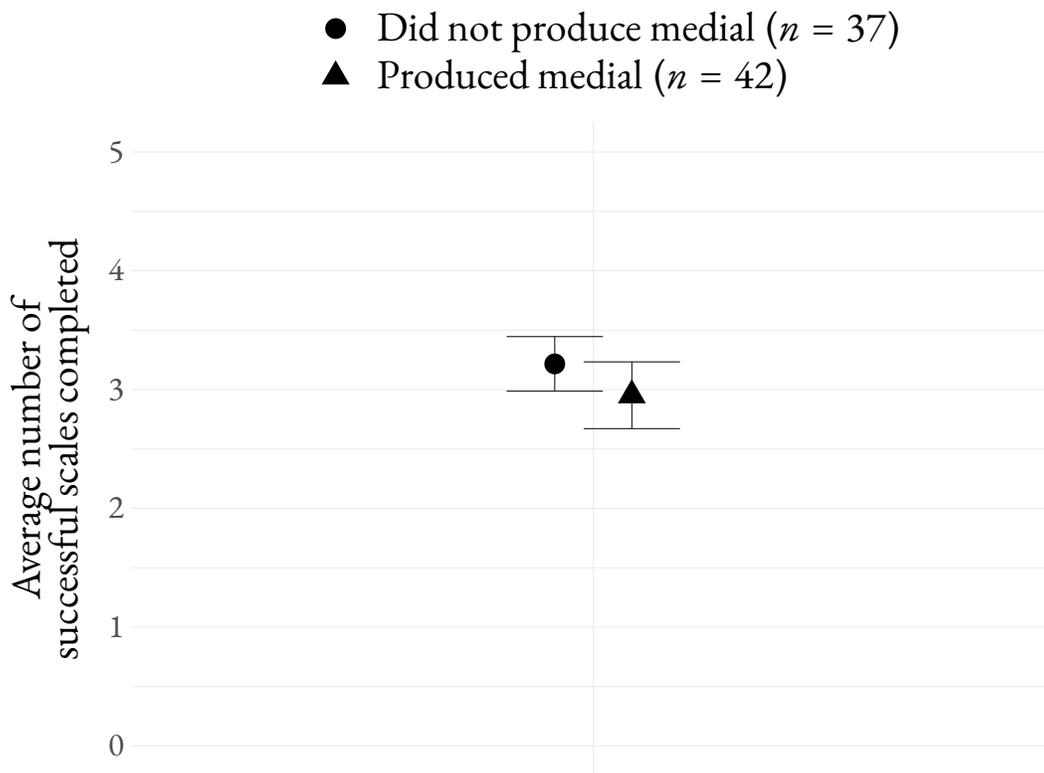


Figure 2.5: Average number of successful scales completed, by group; error bars indicate one standard error of the mean

that the participant actually asked, adjunct, object, or subject (*not* the type of question that we tried to elicit; this variable was deviation coded with adjunct as the reference level), a categorical variable indicating whether or not the participant switched to asking a type of question other than the type that we intended to elicit on that particular trial (treatment coded as yes or no), a categorical variable indicating whether or not the participant erroneously named a distractor in the cognitive inhibition task (treatment coded as yes or no), a variable coding the participant’s mean error rate in the incongruent condition of the motor inhibition task, and a variable coding the number of successful scales that the participant completed in the motor ability task.

By modeling our results with generalized linear models, we can control for the effects of other potential covariates in the statistical analysis by including them as effects in the model (see, *e.g.*, Baayen, Davidson, & Bates 2008:399–400). Particularly given the observation in Thornton & Crain (1994) that medials persisted longer with subject questions, we planned to include a categorical fixed effect predictor

for the type of question that the participant actually asked. As discussed in fn. 33, this was not always the type of question that we tried to elicit, so we also included a categorical variable indicating whether or not the participant switched to asking a question of a different type. Beyond this, our fixed effects included the measures from our three other tasks, as discussed above in §2.3.2.

The fixed effects of the 6 different models are summarized in Table 2.5. This allowed us to compare

	Models					
	m1	m2	m3	m4	m5	m6
Intercept	✓	✓	✓	✓	✓	✓
QuestionType		✓	✓	✓	✓	✓
SwitchedType			✓	✓	✓	✓
NamedDistractor				✓	✓	✓
IncongruentError					✓	✓
NumberOfScales						✓

Table 2.5: The fixed effects of our 6 different logistic mixed-effects models

models in a way that is consistent with the predictions of our account. To reiterate, our account does not predict there to be any relation between the number of successful scales completed and the production of medial wh-phrases. Similarly, our account does not predict there to be a relation between motor inhibition and the production of medial wh-phrases. Our account does, however, predict there to be a correlation between cognitive inhibition and production of medial wh-phrases. We therefore constructed models that successively eliminated the predictors that we did not expect to correlate with production of medial wh-phrases, as specified in the table.

In order to be able to do model comparison in this way, the random effects structures of the models need to be the same. We used the maximal random effects structure justified by design of the experiment that led to model convergence (cf. Barr et al. 2013). Specifically, our models were fit with random intercepts for participant and for trial. The results of comparing the models in this way are given in Table 2.6. We report values for AIC and χ^2 tests of the log likelihood ratios. AIC is a way of measuring how well a model fits the data while also penalizing a model for having lots of predictors, since a model with a large enough number of predictors will be able to fit the data perfectly. Lower values for AIC are better, in-

	AIC	Log likelihood	χ^2	p -value	
m1	729.97	-361.99			
m2	700.79	-345.40	33.18	6.24e-8	***
m3	691.03	-339.51	11.76	6.036e-4	***
m4	687.94	-336.97	5.09	0.0241	*
m5	688.09	-336.05	1.85	0.1741	
m6	688.92	-335.46	1.17	0.2789	

Table 2.6: Comparing the different models

dicating good model fit without having too many predictors. χ^2 tests of the log likelihood ratios of the various models yield p -values, which can be interpreted just like other p -values. As can be seen in the table, both of these measures indicate that the best model is the fourth model.^{36,37}

We can then look at the details of the best fitting model, as in Table 2.7. The fixed effects that were significant predictors of whether or not the utterance contained a medial wh-phrase included being a subject question, being uttered on a trial when the participant switched the question type, and being uttered by a participant who had erroneously named a distractor.

Fixed effect	Estimate	Std. Error	z -value	p -value	
Intercept	-3.952	0.382	-10.340	<2e-16	***
QuestionType – object	-0.249	0.211	-1.178	0.239	
QuestionType – subject	0.833	0.187	4.463	8.08e-6	***
SwitchedType	1.228	0.353	3.480	5.01e-4	***
NamedDistractor	0.992	0.442	2.246	0.0247	*

Table 2.7: Details of the best fitting model

Because the generalized linear model is a logistic model, it is not straightforward to interpret the nu-

³⁶Note that the fixed effect coding the error rate in the incongruent condition of the motor inhibition task was not in the best fitting model, despite the seeming difference between groups that can be seen in Figure 2.4 above, where we simply plotted some descriptive statistics about the measures from this task. This is consistent with the predictions of our account, as discussed in §2.3.1.

³⁷An anonymous reviewer for the version of this chapter published as Liter, Grolla, & Lidz (in press) points out that there is very little variability in our motor ability task measure and so, because of this, the measure may not have been predictive of medial wh-phrase production. This is indeed possible. As Hedge, Powell, & Sumner (2018) point out, when between-subject variability in a measure is low, detecting a correlation with that measure becomes mathematically more unlikely. That being said, neither our account nor any other account predicted there to be a correlation between medial wh-phrase production and motor ability. We only included this task as a control task. If we had a motor ability measure with more between-subject variability, our account (and all other accounts) would still predict there to be no correlation with medial wh-phrase production.

meric value of the estimates without transforming them. The exponentiated estimates yield odds ratios indicating the change in the odds of being an utterance with a medial wh-phrase, for every 1-unit change in the value of the predictor. All of the predictors in our best fitting model are categorical predictors, so, for example, the value $e^{0.992} \approx 2.70$ can be interpreted as indicating that an utterance is 2.70 times more likely to have a medial wh-phrase if it was uttered by a participant who named a distractor in the cognitive inhibition task than if it was uttered by a participant who did not name a distractor in that task. To facilitate interpretation of the best fitting model, we plot these odds ratios in Figure 2.6. In addition to

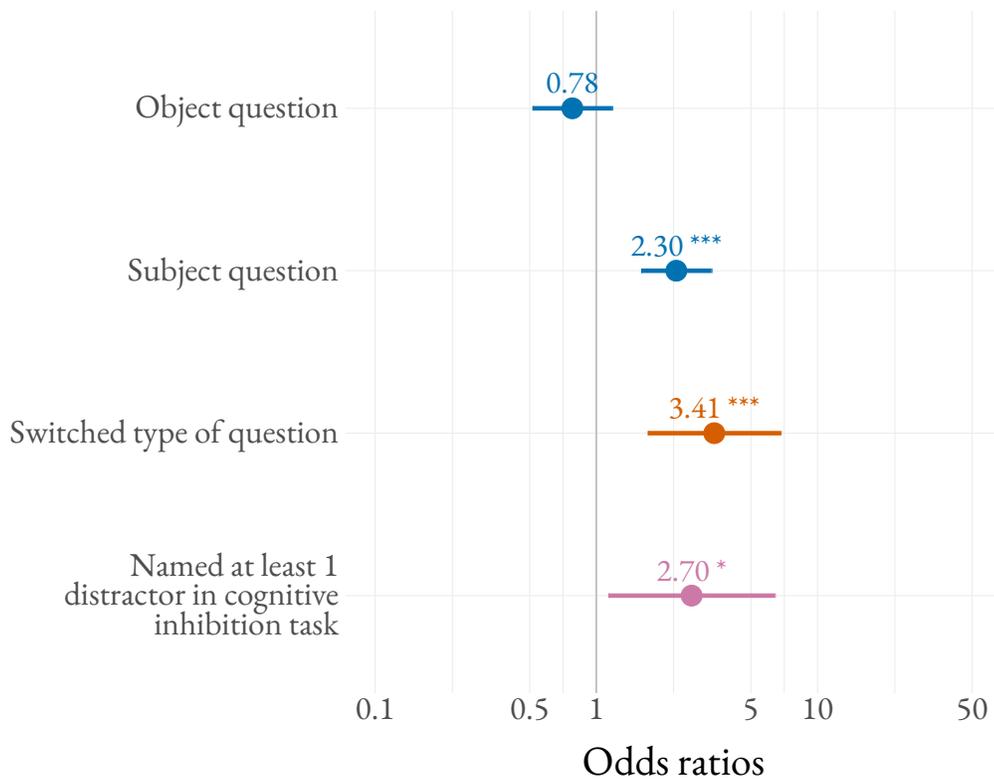


Figure 2.6: Odds ratios of the best fitting model

being 2.70 times significantly more likely on trials uttered by participants who named a distractor, medial wh-phrases were also 2.30 times significantly more likely in subject questions than the average question and 3.41 times significantly more likely on trials where the participant asked a different question type other than the type that we tried to elicit.

2.3.5 Discussion

As predicted by our failure of inhibition account, cognitive inhibition is a significant predictor of medial wh-phrases production by English-acquiring children. This relationship is unexpected (and unexplained) on all of the non-target grammar accounts. In addition to the various issues with the different non-target grammar accounts that we discussed in §2.2.2, this experimental result lends support to our failure of inhibition account over the non-target grammar accounts.

Before turning to some general discussion about our data set, our best-fitting model, our account, and a comparison with the performance account from Lutken, Legendre, & Omaki (2020), we wish to further address the relation between medial wh-phrases productions with both *that*-trace violations and disfluencies, as helpfully suggested by a reviewer for the version of this chapter published as Liter, Grolla, & Lidz (in press).

2.3.5.1 Medial wh-phrases and *that*-trace violations

An anonymous reviewer for the version of this chapter published as Liter, Grolla, & Lidz (in press) asked about the presence of *that*-trace violations in our data set and whether such productions could be accounted for under our account. While studies that discuss medial wh-phrases production often also report instances of *that*-trace violations (see, e.g., Thornton 1990, Lutken, Legendre, & Omaki 2020), we are not aware of any study that reports statistical evidence for a relation between these two types of productions. As such, it is not clear whether a theory should be made to account for both types of productions.

Looking at our data set specifically, we tested whether there is a correlation between a participant's rate of medial wh-phrases production and a participant's rate of *that*-trace violation productions using a Pearson's correlation test and found no evidence for a significant correlation ($r = 0.049, t(77) = 0.432, p = 0.6669$). That being said, we did have a small number of *that*-trace violations in our data set (60, from 22 participants), so the lack of correlation could be due to lack of statistical power, in addition to the normal caveats about interpreting null results. Indeed, it is perhaps suggestive that 17 of the 22 participants who produced *that*-trace violations in our data set also produced medial wh-phrases (although 25 of the 42 who produced medial wh-phrases did not produce any *that*-trace violations).

If it were to turn out that these things are indeed correlated, we do think our account could explain such a correlation. The story would be similar to the story we sketched for medial wh-phrases. Specifically, in subject questions, the grammar of the child says that you can only use the null complementizer (*i.e.*, [_C \emptyset]), but when you activate [_C \emptyset] you get spreading activation to other complementizers, such as [_C *that*]. Thus, in some cases, [_C *that*] might end up being more active than the null complementizer, and so the child might pronounce [_C *that*] instead of [_C \emptyset], even though it goes against the child's grammar.³⁸ The only difference between this and the medial wh-phrase case is that there is no reactivation of an element you've already uttered. Instead, the triggering event is just the initial activation of the embedded complementizer, which can spread.

The implicational relation we observed just above (*i.e.*, if you're a *that*-trace violation producer, you're also likely a medial wh-phrase producer, but not the converse) is perhaps even suggestive that this account might be right. In the case of *that*-trace violations, you're only dealing with spreading activation from an initial activation of a lexical item, whereas in the case of medial wh-phrase productions, you have spreading activation from reactivation of a lexical item (or its features); that is, the spreading activation is likely weaker in the *that*-trace violation case, and so if you see failure of cognitive inhibition in these cases, you'll also see failure of cognitive inhibition in cases where you have stronger spreading activation (but not the converse).

All of this, however, is highly speculative since we do not have concrete evidence of a relation between *that*-trace violating productions and medial wh-phrase productions, nor are we aware of any such evidence from other studies. This possibility is worth further future investigation, but it will likely require a much larger data set than ours in order to avoid lacking sufficient statistical power to detect a possible correlation.

³⁸The account sketched here assumes that there are (at least) two versions of the English complementizer, and one triggers a *that*-trace violation while the other does not. What exactly the correct analysis of *that*-trace effects is is a highly debated matter (see, *e.g.*, Pesetsky 2017). For example, one account assumes that *that* and \emptyset actually are not of the same syntactic category and correspond to varying amounts of syntactic structure (Douglas 2017). On such a view, our account could still offer an explanation of *that*-trace effects. Having the same syntactic category is not necessarily a prerequisite for spreading activation, though one might expect the spreading activation to be weaker between related elements of different syntactic categories. Indeed, this could potentially also contribute to explaining why there are fewer instances of *that*-trace violations in our data set.

2.3.5.2 Medial wh-phrases and disfluencies

An anonymous reviewer for the version of this chapter published as Liter, Grolla, & Lidz (in press) also suggested looking at whether there was a relation between the production of medial wh-phrases and disfluencies. The reviewer noted that under performance accounts, but not non-target grammar accounts, one might expect productions with medial wh-phrases to have more disfluencies. Of the 124 out of 1,352 multiclausal utterances with a medial wh-phrase in our data set, 30 also contained a disfluency, and 109 of the 1,228 multiclausal utterances without a medial wh-phrase contained a disfluency. A χ^2 test of independence indeed suggests that the presence of a medial wh-phrase is not independent of the presence of a disfluency in a given utterance ($\chi^2(1, N = 1,352) = 27.011, p = 2.023e-7$). This is consistent with the reviewer's suggestion and lends support to both our account and the account in Lutken, Legendre, & Omaki (2020) over and above the non-target grammar accounts, though we still think our account offers a better explanation than the performance account in Lutken, Legendre, & Omaki (2020); see §2.3.5.3 below for more discussion.

2.3.5.3 General discussion

Furthermore, there is another aspect of the data from our participants that we think lends support to our account. Some of our participants produced questions where the wh-chain was resumed with an answer. All 20 instances of this from our data set are given in (34), with the relevant words in bold.³⁹

- (34) a. Natalie 4;10,17⁴⁰
- i. **What** were the boys playing with **the ball**?
- b. Ina 4;5,13
- i. **Which kid** do you think that **it** was really right?
- c. Eva 4;7,0
- i. **Who** do you think **he** was really good at it?

³⁹The question in (34m-i) clearly involves argument resumption in the context of the video, which involved a girl popping balloons by spitting watermelon seeds at them. The “[inaudible]” portion of the transcription presumably involved the preposition *with*.

⁴⁰Note that this was not one of the 1,352 multiclausal utterances.

- d. Ralli 3;8,28
 - i. **Who** do you think **the boy** hide?
 - ii. **Who** do you think **a kid** jumped in the water?
 - iii. **Who** do you think the boy saw **the girl**?
- e. Meghan 4;11,6
 - i. **What** do you think that the girl was holding **a bunny**?
 - ii. **What** do you think the girl kissed **the boy**?
- f. Alex 5;4,28
 - i. **What** did you think someone was walking on **the rope**?
 - ii. **What** do you think **the boy** got hit?
- g. Samantha 4;7,23
 - i. **Who** do you think **girl** was chasing the boys?
- h. Kaylee 4;8,16
 - i. Snuggles, **where** do you think the girl was **behind the fence**?
- i. Trey 4;4,9
 - i. Snuggles, how do you think the boy ... the yellow green boy it was flying **with balloons**?
- j. Thomas 4;0,7
 - i. **Where** do you think the green boy hid **under the water**?
 - ii. **Where** do you think the girl was **behind the fence**?
- k. Ellie 3;7,0⁴¹
 - i. **What** did the boy saw **the girl**?
- l. Annabelle 4;4,8
 - i. **Who** you thinks **he's** the good of soccer?

⁴¹Note that this participant did not complete all four tasks and so their data is not analyzed in our main results. This was also not a multiclausal utterance.

m. James 4;2,11

- i. Snuggles, **how** do you think the girl popped ... popped [inaudible] **watermelon seeds**?
- ii. **Where ... where** you think the boys was hiding **in the water**?
- iii. Snuggles, **where** do you think the boy was hiding **over the fence**?

Such non-target productions can be accounted for with our failure of inhibition account in effectively the same way that non-target medial wh-phrase productions are accounted for. Specifically, upon encountering the base position of the wh-chain during the course of sentence production, the wh-feature is reactivated and this leads to spreading activation; this activation spreads to wh-words, but it could also spread to related elements, which would include an answer to the question, particularly given the design of the experiment in which the participant actually knows the answer to the question in the embedded clause. The activation of the answer may, on occasion, exceed the activation of the wh-phrase, depending on the prior background activations; moreover, even though the child's grammar forbids pronouncing anything in this position, the child's developing cognitive inhibition control may sometimes fail to prevent them from pronouncing the highly active lexical material. Our inhibition account therefore provides a unified account of these sorts of non-target productions, something the non-target grammar accounts cannot offer.

Moreover, as can be seen in (34), we did not see any instances of wh-phrase production in the base position. While such productions are, in principle, expected under our account, we would expect them to be exceedingly rare, even more rare than cases in which the DP that answers the question is produced in the base position, as we discussed above in fn. 27. Given that, even in our relatively large data set of 1,352 multiclausal utterances, we only had 20 cases of argument resumption and 124 cases of medial wh-phrases, we would only expect to see such productions in a much larger data set.

To reiterate some of the discussion from above, even in cases of cognitive inhibition failing, we would still expect productions to be constrained by properties of the grammar (see also Dell 1986:291–292), including the statistical distribution of utterances that the grammar licenses and which the child has been exposed to in the course of acquisition. Since wh-phrases only occur in base positions in very highly constrained contexts, we would expect them to be exceedingly rare in children's productions, and, if

anything, we would expect to see more cases of argument resumption. This is exactly what we see in our data set.

Relatedly, we think this account could also be straightforwardly extended to provide an account of the fact that children sometimes produce resumptives in relative clauses, despite such productions being ungrammatical in the target language. (35) gives an example of this from Palestinian Arabic (see, among others, Labelle 1990, McKee & McDaniel 2001, Botwinik, Bshara, & Armon-Lotem 2015).

- (35) `iz-zara:fi illi l-walad ḥazan `iz-zara:fi
the-giraffe that the-boy hugged **the-giraffe**
'The giraffe that the boy hugged'

(Botwinik, Bshara, & Armon-Lotem 2015:49, ex. (20c))

Our account would explain such productions in a very similar manner. Specifically, the idea is that some representation of the filler is maintained in memory until the gap position is reached. When the gap position is reached, the element receives a spike in activation, and if the child is not particularly good at preventing prepotent but inappropriate responses, they may accidentally pronounce the element even though it is ungrammatical to do so in their mental grammar.

Another similar non-adult-like phenomenon that we think our account could also in principle explain is children's productions of two auxiliary verbs, such as in (36) (see, among others, Stromswold 1990, Guasti, Thornton, & Wexler 1995).

- (36) Did I didn't mean to?
(Stromswold 1990:58)

Both of these phenomena are quite similar to children's non-adult-like productions of medial wh-phrases, and it would be straightforward to conduct the same sort of experiment that we report here but with these other two phenomena.⁴²

Finally, we discuss the other two significant predictors of medial wh-phrase production in our best fitting model. While we did not expect these predictors to be significantly correlated with medial wh-

⁴²One of my collaborators for the work reported in this chapter, Elaine Grolla, has collected some preliminary data with Brazilian-Portuguese-acquiring children that tentatively suggests that the production of resumptive elements in relative clauses is also correlated with cognitive inhibition. Unfortunately, this data collection effort has been interrupted by the COVID-19 global pandemic.

phrase production *a priori*, we think these correlations can be explained on our account. First, our best fitting model indicated that medial wh-phrases were significantly more likely on trials where the participant asked a type of question other than the type that we tried to elicit. We think this is consistent with our failure of inhibition account. Recall that the participant was prompted with (31), repeated here as (37) for convenience.

(37) We know that it was the girl that was chasing the boys, but let's ask Snuggles who he thinks

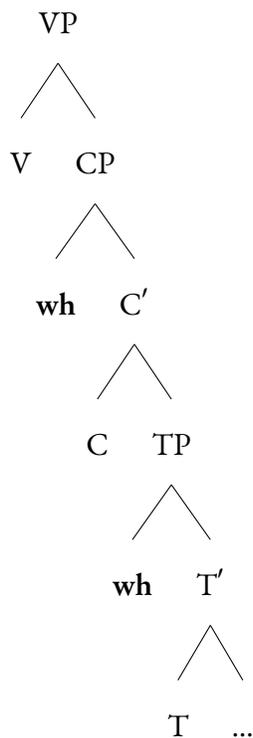
In order to do the task, the child must first recognize what has been clefted, realize that that thing is what they must ask the puppet about, and then form a multiclausal question that queries the puppet for what it thinks is the head of the cleft. This is a non-trivial task and presumably taxing on the child's executive functioning abilities generally. On trials where the child's executive functioning abilities are particularly taxed, for whatever reason, we might see this reflected in the participant simply deciding to ask another question that is easier for them to formulate. If question switching is indeed indicative of taxed executive function, then it is not surprising that we would see more medial wh-phrases on trials where the participant has switched the question type. It should be noted, however, that on the 26 trials in our data set where this happened and where a medial wh-phrase was produced, 22 of these trials involved switching from a non-subject question to a subject question. While the fixed effect for question switching was still a significant predictor in our best fitting model alongside the fixed effect for subject questions, it could be that the significance of this predictor is really driven by the accidental fact that most of the switched-to questions were subject questions. Exploring this possibility further in future work could help to adjudicate between these possibilities.

Second, our best fitting model also included a significant correlation between being a subject question and having a medial wh-phrase. As noted, this is reminiscent of the observation in Thornton & Crain (1994) that medial wh-phrases persisted longer in subject questions, although, again, Lutken, Legendre, & Omaki (2020) did not find this to be the case in their results. It could be that the result in our data is spurious, or it could be that the effect is somewhat small, and Lutken, Legendre, & Omaki (2020) failed to detect it because they had many fewer participants in their experiments than we have in ours. We suspect this subject effect is a genuine effect, and we think it is in fact consistent with our failure of inhibition

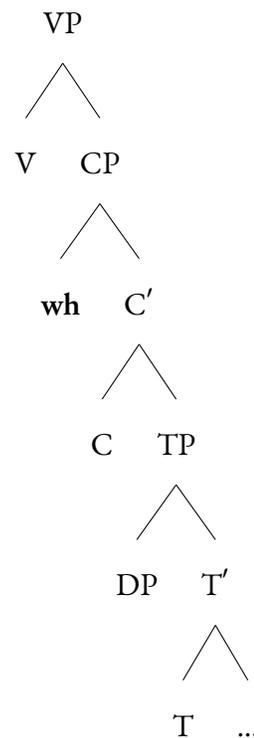
account, though future experiments should investigate this in more detail.

We think medial wh-phrases are more likely to occur in subject questions on our account for the following reason. First, to reiterate, our account holds that medial wh-phrases occur in utterances by children because the wh-phrase becomes highly active due to spreading activation from the reactivated wh-feature at the site of the copy of the wh-phrase, and elements that are highly active are what get pronounced in production planning, as per Dell (1986); moreover, this happens *despite* the child's grammar forbidding it because the child's cognitive inhibition control is still developing. Now, when planning the production of a multicausal subject wh-question, it is plausible that there is a unit of production planning that includes CP and TP of the embedded clause to the exclusion of the embedded VP. If so, then this unit of production planning would contain two copies of the wh-chain in the case of subject questions but only one copy of the wh-chain in adjunct and object questions, as can be seen in (38).

(38) a. Subject question



b. Object and adjunct questions



Therefore, when planning the beginning of the embedded clause of a multicausal subject question, there would be two instances of reactivation of the wh-feature, both of which would lead to spikes of spreading

activation to the wh-element. Thus, in a subject question, the spreading reactivation could be as much as twice as high than in adjunct or object questions, and it could therefore be all that more difficult to prevent oneself from pronouncing the highly active lexical material, particularly if one's cognitive inhibition is still developing.⁴³ We therefore think that subject questions being significantly predictive of medial wh-phrase production is consistent with our failure of inhibition account.⁴⁴ It would be interesting for future work to investigate this relationship further.

Before concluding, we wish to briefly return to the alternative performance account that is offered by Lutken, Legendre, & Omaki (2020). As noted above in fn. 28, they offer a performance-based account of these utterances that is very similar to our own. Their account also relies on the idea that fillers are actively maintained in memory throughout production, but they propose that children struggle to maintain the filler in memory and may sometimes pronounce it at the clause boundary as an attempt to strengthen their memory representation of the filler (Lutken, Legendre, & Omaki 2020:37–38). While very similar

⁴³It should be noted that many take *v*P to be a phase, which entails an additional copy of the wh-phrase at the edge of *v*P due to the successive cyclic nature of movement. If this is correct (though, for some counterarguments, see Keine 2017, Keine & Zeijlstra 2021), then there would also be two copies of the wh-phrase in the lower hypothesized production planning unit. As such, one could argue that this account of the asymmetry between subject questions and object/adjunct questions does not go through. Moreover, one might say that our account predicts there to be medial wh-phrases at the verb edge and, to the extent that we haven't observed any, this could be a reason to prefer the non-target grammar accounts. However, such reasoning fails to take into account the impact that statistical distributions have on the grammar. As discussed in fn. 27 and at the outset of this section, we did not observe any non-adult-like productions with a wh-phrase in the base position. But as we said in fn. 27, productions will still be constrained by the contours of the grammar (cf. Dell 1986:291–292) and the statistical distribution of the input. At least in the case of wh-phrases in the base position, there are multiple wh-questions and echo questions in English. But wh-phrases are never pronounced at the edge of the verb in English, so the impact of spreading activation and underdeveloped cognitive inhibition will be severely outweighed by the fact that wh-phrases are never pronounced in these positions in English. As such, we think this account of the subject asymmetry does go through and that the lack of medial wh-phrases at the edge of the verb is not a problem for our account.

⁴⁴An anonymous reviewer for the version of this chapter published as Liter, Grolla, & Lidz (in press) asks whether the account from McDaniel et al. (2015) could explain the subject asymmetry that we see in our data set. McDaniel et al. posit that there is a general production pressure such that subject extraction across a clausal boundary is more difficult than other types of extraction across a clausal boundary. They furthermore argue that the effects of this production pressure are grammaticalized (2015:421, fn. 7), in an attempt to explain certain Empty Category Principle contrasts and *that*-trace effects in English.

We do not think this account could explain the subject asymmetry that we see in our data. The core of their account still turns on the status of the grammar, even if the nature of grammar has been in part shaped by certain production pressures. We see no evidence in our data set that leads us to posit different grammars for different children at different times. That being said, perhaps the production pressures that disfavor subject extraction across a clausal boundary, which McDaniel et al. (2015) posit as the basis for some grammatical knowledge, could still explain the subject asymmetry in our data set, without appeal to the grammatical knowledge itself. We still, however, fail to see how this would explain the preponderance of medial wh-phrases with subject questions. It's not clear why the general difficulty of subject extraction across a clausal boundary should result in a greater frequency of medial wh-phrases. Moreover, if their account is correct, it's actually surprising that in 22 of the 26 cases in our data set where children asked a question with a medial wh-phrase while also switching the type of question to one other than the one that we tried to elicit, they switched an intended non-subject question to a subject question.

in spirit, we think there is reason to favor our proposal. First, we find it a bit counterintuitive that their proposal is one where you pronounce the elements that you are forgetting.⁴⁵ This seems directly at odds with the model of sentence production proposed in Dell (1986), where you pronounce the elements that are highly active in memory. Second, the experimental results we present here favor our account over their account. If pronunciation of the filler at the clause boundary is an attempt to strengthen its representation in memory, there's no apparent reason why these productions should correlate with cognitive inhibition. That is to say, like the non-target grammar accounts, the most straightforward prediction that this account makes with respect to the experiment that we conducted is that there should be no correlation between cognitive inhibition and medial wh-phrase production. Moreover, it is unclear on their account why production of the wh-phrase should occur at the clause boundary. If pronouncing it just helps to strengthen the memory representation of it, one might expect to find pronunciations of the wh-phrase in other locations, but both in our own data and others' data, we seem to largely only see pronunciations of the wh-phrase in places where there is a syntactic copy. This is expected on our account because that syntactic copy leads to a spike in activation from the spreading activation of the reactivated wh-feature.

Lastly, they criticize our account for only being able to account for productions with identical wh-phrases; as we've argued above, we think our account can indeed account for both sorts of productions. Moreover, their own account explains productions with non-identical wh-phrases as a separate sort of performance error—namely, restart errors. Part of the evidence they provide in favor of this separate account is that there is some subject-auxiliary inversion in the embedded clauses. It may very well be true

⁴⁵Lutken & Legendre (2020) and Lutken (2021:256–260) do find a negative correlation between a composite working memory score and the production of medial wh-phrases of $r = -0.2$, which could be taken as further evidence in support of the account in Lutken, Legendre, & Omaki (2020). However, while this correlation is significant, it is a relatively small correlation. Moreover, it could be that they see a correlation between working memory and medial wh-phrase production because the development of working memory is correlated with the development of cognitive inhibition (see, *e.g.*, Carlson, Moses, & Breton 2002). This would explain both our finding as well as theirs.

One possibility would be to redo our study but also include the working memory measure from Lutken & Legendre (2020) and Lutken (2021). If one still observed a correlation between cognitive inhibition and the production of medial wh-phrases in such a followup where working memory is controlled for in the statistical analysis, this would suggest that our account is correct and that the correlation with working memory arises because of an underlying correlation with cognitive inhibition. Another possibility for teasing these things apart is to upregulate cognitive inhibition on a trial-by-trial basis (cf. Hsu & Novick 2016); if one were to see fewer medial wh-phrases on trials where cognitive inhibition has been upregulated and more on trials where cognitive inhibition has not been upregulated, this would be consistent with our account but unexplained on the account from Lutken, Legendre, & Omaki (2020).

that some of these productions are restart errors, but we do not think all of them are, and our account offers an explanation of the ones that are not. For example, (39) is an example from our data set where the *wh*-phrases are not identical and there is no subject-auxiliary inversion in the embedded clause; thus, it is unlikely that this is a restart error.

(39) What do you think where the girl was walking? (Sophia 4;4,4)

Of the 11 non-subject questions in our data set with medial *wh*-phrases, where the *wh*-phrases were not identical, only 2 of them involved subject-auxiliary inversion in the embedded clause.⁴⁶ Our account still provides an explanation for these 9 other utterances, but it's not immediately clear that their account does.

2.4 Conclusion

In this chapter, we have offered an inhibition-based account of children's medial *wh*-phrase productions based on an independent theory of sentence production and speech errors and independently motivated mechanisms in the performance systems for dealing with filler-gap dependencies (§2.2.1). We argued that our inhibition-based account is a better account than any of the non-target grammar accounts that have been proposed (*e.g.*, Thornton 1990, Thornton & Crain 1994, McDaniel, Chiu, & Maxfield 1995, Roeper & de Villiers 2011, de Villiers, de Villiers, & Roeper 2011). As noted at the outset of this chapter, the non-target grammar accounts are interesting because they make non-trivial commitments to specific types of endogenous factors that drive grammatical feature selection. As such, such accounts should be subjected to careful scrutiny. We've argued that, upon careful scrutiny, the evidence in favor of these non-target grammar accounts is not as compelling as it might have initially appeared (§2.2.2.1), there are some non-trivial issues with non-target grammar accounts (§2.2.2.2), and, in fact, there is empirical evidence that favors our failure of inhibition account over any of the non-target grammar accounts (§2.3).

Moreover, we think these results highlight how important it is for those studying language acquisition to have a good understanding of (i) linguistic representations, (ii) properties of the extralinguistic

⁴⁶We do not consider subject questions here, since there would be no observable subject-auxiliary inversion in these questions anyway.

performance systems that deploy these representations in real time, and (iii) aspects of the development of these extralinguistic performance systems. By incorporating an understanding of how extralinguistic cognitive mechanisms are engaged during sentence production/comprehension, acquisitionists will be in a better position to diagnose the grammatical competence that underpins linguistic performance. As we have seen here, sometimes children's errors may be a reflection not of their grammars but of how they put those grammars to use (see also Shipley, Smith, & Gleitman 1969, Ibbotson & Kearvell-White 2015, Yuile & Sabbagh 2021). Whenever non-adult-like linguistic behavior can be attributed to aspects of extragrammatical performance systems, the theoretical burden of having to identify the factors that would lead a child to acquire grammatical features for which they have no evidence and the factors that would drive them to purge those features from their linguistic system vanishes. That is to say, by treating children's production errors as the interaction between grammar and extralinguistic performance systems, the theory of how such errors arise and are purged from children's productions will reduce to the theory of how those extralinguistic systems develop in childhood.

Chapter 3 Islands: A brief overview

I would now like to turn from issues in distinguishing performance factors and competence when probing children's grammars to these same issues when probing adult's grammars. In Chapter 4, we will investigate the grammaticality status of island violations in English examples involving sluicing. And in Chapter 5, we will investigate the grammaticality status of island violations in Bulgarian examples involving multiple wh-movement. Since both of these chapters will focus on the empirical domain of island phenomena, I would like to first give a brief overview of islands in this chapter. First, in §3.1, I briefly review what island violations are, as well as some different theories that have been proposed to account for them. Then, in §3.2, I discuss how we might try to get at the grammaticality status of island violations more directly by using similar subtraction logic to what we discussed above in §1.1.2.4. Recall that this subtraction logic is afforded by eliciting acceptability judgments for a minimal pair. In the context of island effects, a minimal-pair-type experiment is not possible; instead, a minimal quartet design is required (cf. Sprouse 2007). In §3.3, I'll discuss some studies that have used this design to investigate island effects as well as the ramifications that the results of these studies have for the theory of island phenomena, before turning to the interaction of island effects and sluicing in Chapter 4.

3.1 Island violations and theories of them

3.1.1 A typology of islands

Island effects are one of a variety of types of locality effects exhibited in natural language. Many of the different types of island violations were famously observed and discussed in detail in Ross (1967). Island effects arise when there is an A-bar dependency that spans a certain type of syntactic structure, resulting in unacceptability (and presumably also ungrammaticality) of that example. A-bar dependencies (or A-bar

movement), distinct from A dependencies (or A movement),⁴⁷ are a class of dependencies that includes at least wh-dependencies, relativization, topicalization, and comparative formation. Examples of each of these types of dependencies are given in (40).

- (40)
- a. Who_{*i*} did you see *t_i*?
 - b. The person_{*i*} that you saw *t_i* looks friendly.
 - c. Amy_{*i*}, I saw *t_i* (but Amara_{*j*}, I did not see *t_j*).
 - d. That person is tall_{*i*}-er than Amy is *t_i*.

A-bar dependencies are known to be seemingly unbounded. That is to say, the dependencies shown in (40) can seemingly span any number of clauses, as the examples in (41) show.

- (41)
- a. Who_{*i*} did Allie say that Alicia heard that ... you saw *t_i*?
 - b. The person_{*i*} that Allie said that Alicia heard that ... you saw *t_i* looks friendly.
 - c. Amy_{*i*}, I said that Allie heard that ... Alicia saw *t_i* (but Amara_{*j*} I said that Allie heard that ... Alicia did not see *t_j*).
 - d. That person is tall_{*i*}-er than Allie said that Alicia heard that ... Amy is *t_i*.

While the acceptability of the examples might degrade somewhat as the number of clauses that the dependency spans grows, the examples in (41) are still quite acceptable, and so they have been taken to be grammatical. Moreover, there is no theoretical reason to think they are ungrammatical. However, despite being unbounded in this manner, A-bar dependencies are nonetheless constrained. There are several types of structures which they cannot span. For example, A-bar dependencies cannot hold between a wh-phrase and an element inside the subject of a sentence, as the unacceptability (and presumed ungrammaticality) of the examples in (42) shows.

- (42)
- a. * Who_{*i*} did [the book by *t_i*] win an award?

⁴⁷For an overview of some of the empirical differences that these two types of dependencies exhibit, see, for example, Richards (2014). To date, the field does not have a particularly compelling explanation for why A and A-bar dependencies exhibit different empirical patterns, much less why there should be two distinct classes of dependencies. Nonetheless, these dependencies exhibit different empirical patterns, and so we treat them differently in our theories, even if only by stipulating the difference.

- b. *Who_i did [that Amy liked t_i] surprise Amara?

Such examples are known as subject island violations.

A-bar dependencies also cannot hold between, for example, a wh-phrase and an element inside of an adjunct, as (43) shows.

- (43) *Who_i did Amy meet Amara [after Allie met t_i]?

Such syntactic configurations are known as adjunct islands. Yet another class of island effects is known as complex NP islands. In this case, an A-bar dependency cannot hold between, for example, a wh-phrase and an element inside the complement of a noun. This is shown in (44).

- (44) *Who_i did the [fact [that Amy liked t_i]] surprise Amara?

The final island types I will discuss in detail here are relative clause islands and embedded question islands (sometimes also called wh-islands or *whether*-islands, if one is more narrowly discussing examples like (46a) or examples like (46b), respectively). These two types of island violations are shown in (45) and (46).

- (45) *What_i did Amy meet the person [that bought t_i]?

- (46) a. *What_i did Amy wonder [who bought t_i]?
b. *What_i did Amy wonder [whether Amara bought t_i]?
c. *What_i did Amy wonder [if Amara bought t_i]?

These five island types (subject islands, adjunct islands, complex NP islands, relative clause islands, and embedded question islands) are all arguably examples that are ungrammatical. Moreover, they are arguably cases where ungrammaticality arises because of something going wrong in the syntactic component of the grammar. Some have disputed that the unacceptability of island violations arises because of ungrammaticality. For example, many have argued that island effects are processing effects where the unacceptability arises because of the parsing procedure (*e.g.*, Givón 1979, Deane 1991, Pritchett 1991, Kluender & Kutas 1993, Hofmeister & Sag 2010). Such accounts thus hold that island effects are just like self embedding or garden path examples that we discussed back in Chapter 1, where acceptability and

grammaticality do not covary. Another class of non-competence-based accounts of island effects include pragmatic accounts (*e.g.*, Erteschik-Shir 1973, Goldberg 2006). Such accounts hold that island effects are grammatical but that certain individual examples are unacceptable because the question was not appropriately pragmatically licensed. However, Sprouse, Wagers, & Phillips (2012) have convincingly argued that subject, adjunct, complex NP, and embedded question islands are all ungrammatical. The basis for this argument involves using a version of the subtraction logic that we discussed in Chapter 1 for more directly getting at grammaticality, even though we can only measure acceptability. We will discuss this particular version of the subtraction logic in the context of island effects in much more detail in §3.2. And while Sprouse, Wagers, & Phillips (2012) did not investigate relative clause islands in this particular study, there is good reason to think that relative clause islands are also unacceptable in virtue of being ungrammatical.

Of course, just because such examples are ungrammatical does not mean that their ungrammaticality arises because of an issue with their syntax. It could be that something goes wrong in some other component of the grammar. Indeed, while there are competence-based accounts that attribute the ungrammaticality of island violations to the syntactic component of the grammar (*e.g.*, Chomsky 1973, 1977), there are also competence-based accounts of islands that attribute the ungrammaticality of island violations to the semantics (*e.g.*, de Swart 1992, Kiss 1993, Szabolcsi & Zwarts 1993, Abrusán 2011). However, such semantic accounts generally try to explain what are called “weak islands”. The notion of a weak island is a descriptive term. The empirical phenomena being described with this term include (i) the observation that such island-violating examples are generally more acceptable than other islands; (ii) the observation that such islands might become even more acceptable still when the *wh*-phrase is an argument (instead of an adjunct); (iii) the observation that such islands might also become even more acceptable when the *wh*-phrase is a complex D-linked *wh*-phrase such as *which person* (instead of a simplex *wh*-phrase like *who*); and/or (iv) other similar observations. For example, embedded question islands have commonly been taken to be weak islands insofar as examples with *wh*-dependencies involving a complex *wh*-phrase that span an embedded question island, such as the one in (47), have generally been reported to be relatively acceptable.

(47) ? [Which book]_i did you wonder [whether Amy bought *t_i*]?

Some have thus assumed that embedded question islands with a complex wh-phrase are grammatical (or at least that our theory of the syntax should explain their improved acceptability). At least for embedded question islands with a complex wh-phrase, however, I think that Sprouse et al. (2016) have convincingly shown that such examples (in English) are ungrammatical, whatever their acceptability may be.⁴⁸ They have shown this using the subtraction logic to be discussed shortly in §3.2. If correct, this suggests that, at least in this case, the idea that embedded question islands are weak islands is misleading. Such examples are ungrammatical, even if some do sound somewhat acceptable.

Nonetheless, there are other types of examples that have been argued to be weak islands, including factive islands, negative islands, scope islands, and others. For an overview of weak islands (and their differences from so-called strong islands), see Szabolcsi & Lohndal (2017). It may very well be that other so-called weak islands such as these are ungrammatical in virtue of their semantics, or it may be that they are not ungrammatical at all and that their unacceptability only arises because of their pragmatics. Indeed, it might very well be that these types of “islands” do not constitute a natural class with the other five island types we just discussed; they may very well have different explanations.⁴⁹ The coming chapters of this dissertation will focus on different subsets of these five island types that are arguably all ungrammatical and arguably all ungrammatical because of their syntax (subject, adjunct, complex NP, relative clause, and embedded question islands).⁵⁰

⁴⁸Moreover, I do not think our theory of syntax should deliver an account of acceptability judgments, only grammaticality statuses, though this assumption is not uncontroversial (see, *e.g.*, Lau, Clark, & Lappin 2017, Sprouse et al. 2018).

⁴⁹While the term “weak island” is a fine enough descriptive term for the acceptability of certain types of examples, it is in this regard that I find it to be a uniquely unhelpful designation. Just because certain configurations exhibit similar ameliorated degrees of acceptability does not mean that we should analyze them in a similar fashion. That is to say, we should not let this terminology mislead us into thinking that because these empirical phenomena can be described with the same term they have the same analysis.

⁵⁰There are also left-branch islands and coordinate structure islands, both of which are arguably ungrammatical and arguably ungrammatical because of their syntax, too. However, these island effects might arise because of something like an A-over-A constraint in the syntactic component of the grammar (cf. Chomsky 1964b) instead of a bounded transformational cycle (see §3.1.2).

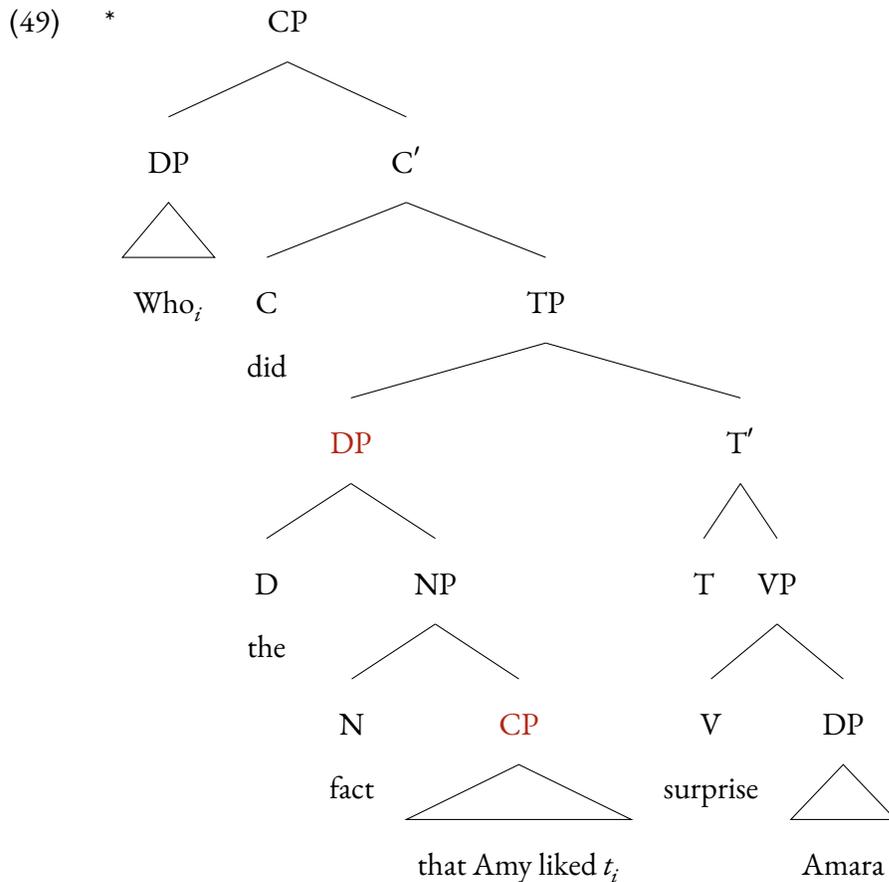
3.1.2 Syntactic theories of island effects

As noted above, there have been different accounts that have tried to explain island effects, including at least processing-based accounts, pragmatic accounts, and semantic accounts. Nonetheless, I'll focus on providing a brief overview of syntactic theories of island effects, on the assumption that the five island violations discussed above are syntactic in nature. In particular, I'll focus on syntactic theories of island effects starting with Chomsky (1973) and subsequent work, as these are the types of accounts I'll be assuming in Chapters 4 and 5.

In an attempt to unify some of the island constraints discussed in Ross (1967), Chomsky (1973) proposed the notion of Subjacency. Subjacency was a configurational notion that additionally required there to be such things as transformational cycles, which were taken to be delineated by certain syntactic categories called cyclic categories. Chomsky (1973:247) stated this configurational notion as follows: “if X is superior to Y in a phrase marker P , then Y is ‘subjacent’ to X if there is at most one cyclic category $C \neq Y$ such that C contains Y and C does not contain X ”. Moreover, for Chomsky (1973), the cyclic categories were assumed to be what we would now consider CP and DP. Finally, there was assumed to be a constraint like the one in (48) which rules out certain types of wh-dependencies.

(48) No [movement] rule can involve X, Y , X superior to Y , if Y is not subjacent to X

Despite being a unification effort (at least to some extent), this notion of Subjacency from Chomsky (1973) only really accounted for complex NP islands and relative clause islands. (49) shows how this account ruled out complex NP island violations.

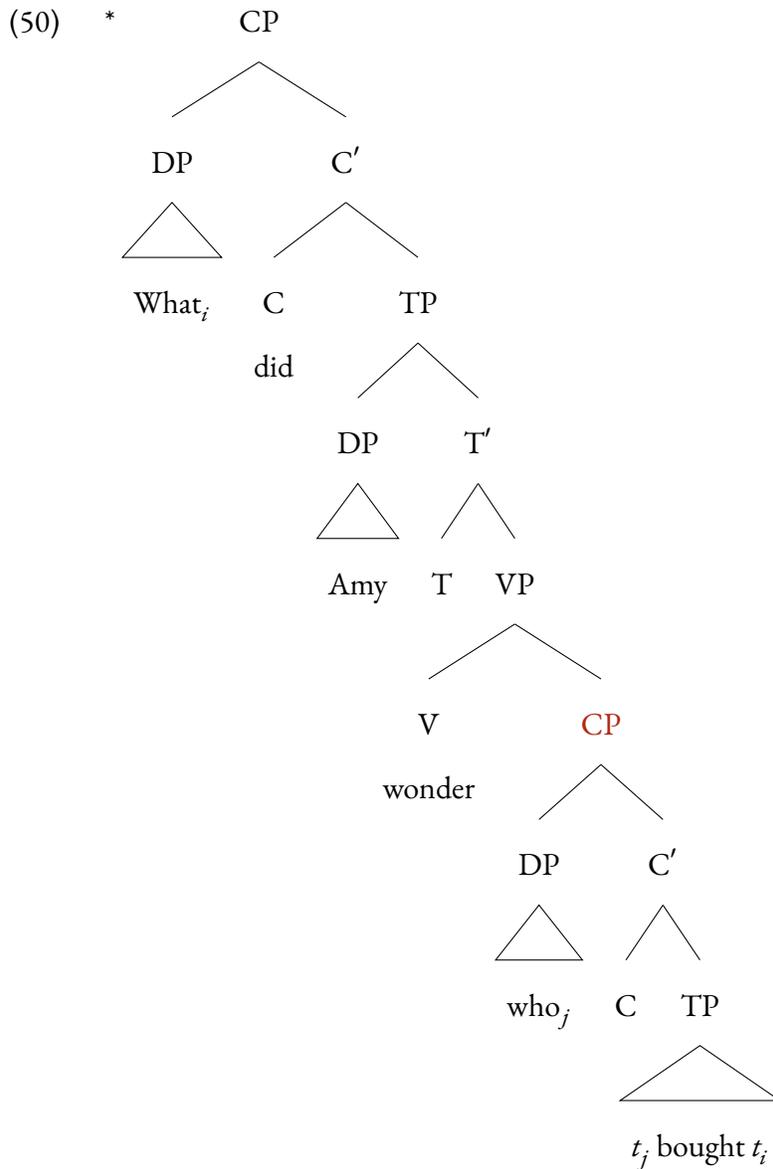


In particular, who_i is superior to its base position, t_i . However, t_i is not subjacent to who_i given the definition from Chomsky (1973) above because there are two cyclic categories, CP and DP (highlighted in red in the tree), that contain t_i but not who_i . As such, this wh-dependency violates the constraint in (48). As a result, such complex NP island examples are ruled out by the theory.⁵¹ The syntactic representation for a relative clause island violation would look very similar to what is in (49).

However, this version of Subjacency fails to rule out, for example, embedded question islands like (50).

⁵¹There are alternative derivations that must be considered, too. For example, one could first move who to the specifier of the CP complement of $fact$, then to the specifier of the DP headed by the , and finally to the specifier of the matrix CP. In this case, all three movement steps would obey Subjacency. We could only rule out such examples in one of two ways. First, we could require that there actually be *no* cyclic categories that contain Y and not X (rather than at most one). This idea of so-called 0-subjacency vs. 1-subjacency became a point of consideration in the version of the theory discussed in Chomsky (1986:30). Though note that without further clarification, this would incorrectly prevent wh-dependencies across objects.

Alternatively, we could simply stipulate that wh-phrases cannot move to the specifier position of DPs (cf. Chomsky 1973). In this case, there would be one movement step that would necessarily violate 1-subjacency.



In (50), t_i is subjacent to $what_i$ because there is only one cyclic category, the CP highlighted in red, which contains t_i and not $what_i$. Thus, the wh-dependency in (50) does not violate the constraint in (48). Similarly, this version of Subjacency from Chomsky (1973) does not rule out subject or adjunct islands, either.

It was not until Chomsky (1977) that we got a unification of more of the island constraints. Chomsky (1977) proposed that the cyclic categories are TP and DP (instead of CP and DP), effectively bringing DP subject island violations and embedded question island violations under the purview of Subjacency. For example, if we treat TP as a cyclic category instead of CP, then, in (50), we can see that there are two TPs which contain t_i and not $what_i$. As such, (50) would violate the constraint in (48) because t_i would

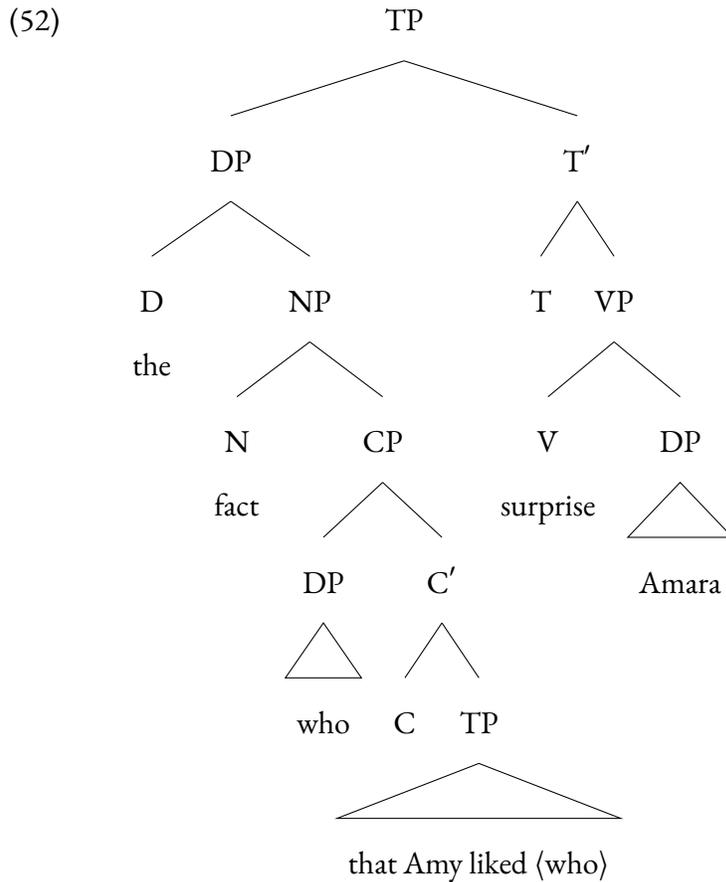
not be subjacent to *what*_. Nonetheless, this version of Subjacency from Chomsky (1977) still doesn't necessarily rule out adjunct island violations (and it also incorrectly rules out wh-dependencies across objects).

Chomsky (1986) attempted to bring adjunct islands under the purview of this sort of account, and, perhaps more interestingly, also tried to provide an answer to the question of why certain categories (in certain positions) but not others counted as barriers to wh-dependencies. With respect to this second point, the thrust of the main idea put forward in Chomsky (1986) was that the maximal projection of every syntactic category was, in principle, a barrier to movement and that there were certain configurations which prevented a given maximal projection from being a barrier to movement. While this theory had relatively good empirical coverage, it only achieved this empirical coverage via a number of stipulations. In particular, one of the stipulations was that you simply cannot adjoin a wh-phrase to an adjunct. This ruled out adjunct island violations, but it only did so by mere stipulation. For a thorough explanation of the details about how different types of island violations were ruled out by this theory, see Lasnik & Saito (1992:69–98).

In more recent syntactic theories, subjacency has been replaced with the notion of phases (see, *e.g.*, Chomsky 2000, 2001, 2008, Rackowski & Richards 2005, Müller 2010). Phases can be understood as the derivational equivalent of cyclic categories (or the barriers of Chomsky (1986)), although the notion of phases was initially used to explain Merge-over-Move-type effects (cf. Chomsky 1995:225–235, 340–348). Nonetheless, the way in which phases were eventually used to account for island violations is very similar to the notion of Subjacency, just recast in a different syntactic framework. Certain syntactic categories are taken to be phase heads, usually at least D, *v*, and C (although there is some debate about the status of *v*; see, *e.g.*, Keine 2017, Keine & Zeijlstra 2021), and syntactic derivations are assumed to be constrained by the Phase Impenetrability Condition (Chomsky 2000:108), stated in (51), which is the rough equivalent of the Subjacency constraint in (48) above. The notion “edge” is to be understood as the specifier of the head, H.

- (51) In phase α with head H, the domain of H is not accessible to operations outside α , only H and its edge are accessible to such operations.

Now let's consider the derivation of a complex NP island example, as in (52).



For illustrative purposes, let's assume that ν is not a phase. While *who* could move to the edge of the first phase head, C, if we assume that it cannot move to the edge of the second phase head, D, then it will not be accessible to operations outside of that DP. In particular, it will not be able to move to the specifier of the CP of the matrix clause. As such, our syntactic theory is not able to derive the complex NP island example, correctly ruling it out. Of course, this requires the stipulation that we cannot move the *who* to the specifier position of D (cf. fn. 51). Additional stipulations will be required to rule out some of the other island violations. For example, we must assume that C only has one specifier position if we want to rule out both embedded question islands and relative clause islands under the phase-based view. While this might seem reasonable for a language like English (though, see Nissenbaum 2000), it's unclear what exactly to say for languages which have multiple wh-movement, such as Bulgarian.⁵²

⁵²In such languages, one might expect there to be no embedded question island violations, which would actually be a theoretically straightforward result. Rudin (1988:457) reports that there does not appear to be an island effect with relativiza-

Nonetheless, the Subjacency version of the theory required a variety of stipulations as well (again, cf. fn. 51 as well as the discussion above about adjunct islands under Subjacency, but see also especially Lasnik & Saito 1992:69–98). Indeed, the phase-based approach to island effects is mostly just a recasting of the Subjacency approach, albeit it in a different theoretical idiom. One interesting difference between Subjacency and the phase-based approach, however, is that the phase-based approach offers a unique answer as to why there should be island effects in natural language at all. Indeed, under either version of the theory, there are two somewhat daunting questions we might hope to have compelling answers to one day: (i) why should there be island effects at all, and (ii) why should they occur where they do.

Under the Subjacency view, the answer to the first question is that we have island effects so as to decrease computational complexity (*i.e.*, there is a bounded computational domain in which syntactic operations take place for computational efficiency). This may be a reasonable enough answer, although spelling out the details of what counts as complex, and why, is a daunting task that, in my view, has not yet been adequately done. On the phase-based view, however, there is a novel answer to this first question. If one adopts a model of the syntactic component of the grammar in which, at the beginning of a higher phase, the complement of the phase head below it is transferred to both of the interfaces (Phonological Form (PF) and Logical Form (LF)), such as in Uriagereka (1999, 2012), then it is possible to understand island effects as resulting from the syntax-PF interface. In particular, since PF turns a syntactic object into a linearly ordered object, it is possible to understand island effects as resulting from the linearization process (cf. Uriagereka 1999, 2012, Hornstein, Lasnik, & Uriagereka 2003, Fox & Pesetsky 2005). In other words, were it not for the fact that we must turn syntactic objects into linearly ordered objects in order to pronounce them, natural language would not have island effects. This view of island effects as the result of the syntax-PF interface will factor heavily into Chapter 4. There will also be some discussion

tion across embedded questions in Bulgarian. However, she notes on the very same page that there does seem to be an island effect with *wh*-dependencies that span embedded questions. Moreover, while relativization of an argument across embedded questions in Bulgarian might be acceptable, it seems that relativization of an adjunct across embedded questions is highly unacceptable (see, *e.g.*, Bošković 2008:260).

As such, it's unclear what to make of the status of the relativization of an argument across an embedded question island in Bulgarian. In my view, the default hypothesis should be that this is just a case where acceptability and grammaticality do not covary. We will see arguments for there being a host of such cases in the empirical domain of island effects below in §3.3. If correct, however, the question remains as to how exactly to account for these island violations since specifiers of CP in a language like Bulgarian can quite clearly host multiple *wh*-phrases.

of this view in Chapter 5, as the results from that chapter are most straightforwardly incompatible with this view.⁵³

Our best syntactic theories of island effects are far from perfect. Stipulations abound. Nonetheless, there is good reason to think that the island effects we've been discussing are ultimately syntactic phenomena in some way. As mentioned, I take Sprouse, Wagers, & Phillips (2012) to have convincingly shown that island effects are at least grammatical phenomena, using the subtraction logic to be discussed in detail in §3.2. Moreover, I don't think semantic accounts provide compelling accounts of the different types of island violations that we've been discussing. If correct, this suggests that they are syntactic phenomena, whatever the state of our current theory. In §3.2, I will discuss the subtraction logic that can be used to more directly get at the grammaticality status of island effects (§3.2). Then, in order to set the stage for Chapter 4, I'll discuss several cases where this subtraction logic has been used to more directly get at the grammaticality status of different types of island violations across different types of languages (§3.3).⁵⁴

3.2 Subtraction logic for island effects

3.2.1 Minimal pairs

Recall from §1.1.2.4 that if we construct a minimal pair in which we hold as much constant as possible, we can then subtract an acceptability rating of one of the form-meaning pairings in the minimal pair from the other in a way that, in principle, allows us to get more directly at grammaticality. For example, we might hold the intended meaning constant and just vary one small thing about the form of the two

⁵³As for the second question, at least in Chomsky (1986), the Subjacency view adopted the idea that all syntactic categories were barriers to movement, and there were only certain environments in which exceptions occurred. In my view, the reason for why the exceptions were what they were was not particularly compelling. Under the phase-based approach, the idea has been that ν P and CP are propositionally complete in some semantic sense and so are reasonable candidates for being phases (see, *e.g.*, Chomsky 2001:12, Ramchand & Svenonius 2014). I also don't find this particularly compelling, though others might disagree. In all fairness, however, both questions are extremely difficult questions to answer. In any event, the first question is most relevant to the content of this dissertation, so I mostly set aside discussion of the second question.

⁵⁴As such, the details of Sprouse, Wagers, & Phillips (2012) will not be discussed in any detail. I take their work to have convincingly established that island effects, when present, are grammatical phenomena and not, for example, processing-based phenomena. The coming chapters will instead be concerned with whether certain island types give rise to ungrammaticality in different kinds of environments. The interested reader should consult their work directly to see the argument against island phenomena being processing-based phenomena.

sentences. Since we've held as much constant as possible, when we subtract the one acceptability rating from the other, most of the factors that contribute to the overall acceptability rating should cancel out (at least so long as there are no unaccounted for interaction effects between these factors that are present in one of the form-meaning pairings but not the other). Moreover, the difference in acceptability that arises from the small variation in the form of the one sentence compared to the other should be near 0. This then allows us to make an inference about the relative grammaticality statuses of the two form-meaning pairings. If the difference is significantly different from 0, we can infer that the two form-meaning pairings have different grammaticality statuses. To see this subtraction logic spelled out more explicitly, refer back to (14) in §1.1.2.4.

Now, however, consider an island-violating sentence such as the one in (53).

(53) *Who did the bartender like that wine that the waitress served to?

The intended meaning of this question is a query for the identity of the person that is such that the bartender liked the wine that the waitress served to that person. Native speakers of English find the pairing of this meaning with the form in (53) to be highly unacceptable. Assuming that acceptability transparently reflects grammaticality, the field has taken form-meaning pairings like these to be ungrammatical. However, one might want to design a minimal-pair-type experiment to investigate this phenomenon more thoroughly, just to be sure, particularly since we do know that acceptability and grammaticality do not always covary. Such an experiment would allow us to get at the grammaticality status of the form-meaning pairing more directly. So what kind of minimal pair could we make for the form-meaning pairing in (53)? Specifically, we'd be looking for a form-meaning pairing that is as similar to (53) as possible but that is grammatical. This would allow us to test the prediction of the hypothesis that (53) is ungrammatical using the subtraction logic. Unfortunately, such a form-meaning pairing doesn't exist. Instead, we have to construct a 2×2 experiment; that is to say, we have to come up with a minimal quartet.

3.2.2 Minimal quartets

Because we as a field already have an adequate understanding of island effects, we can talk in terms of what causes the ungrammaticality above in (53) for illustrative purposes. The ungrammaticality arises

due to the fact that there is a wh-dependency between *who* and *to* that spans a relative clause boundary. Thus, if we wanted to find a minimal pair that is grammatical, we would need to either make the wh-dependency such that it doesn't span this boundary, or we would need to eliminate the relative clause. However, neither of these changes constitute all that minimal of a change. For example, if we made the wh-dependency such that it didn't span the relative clause island, we'd arrive at a sentence like the one in (54).

(54) Who liked that wine that the waitress served to the customer?

Not only have we changed the intended meaning of the sentence, but the wh-dependency is also now quite short (*who* to *liked*). Alternatively, if we eliminated the relative clause but kept the long-distance wh-dependency, we'd have a sentence like the one in (55), with an embedded clause instead of the relative clause.

(55) Who did the bartender think that the waitress served that wine to?

While we've preserved the long-distance nature of the wh-dependency from (53) in (55), we've significantly changed the nature of the syntactic structure that it spans.

So, unfortunately, neither of these form-meanings pairings make a good minimal pair for (53). But Sprouse (2007:52–57) noted how we could still isolate the grammaticality effect of an island violation using the subtraction logic of the minimal-pair-type experiment as long as we independently quantify the effects of the length of the wh-dependency (short or long) and the presence/absence of the relative clause structure. This can be done in a 2×2 experiment, or a minimal quartet, such as the one in (56).

- (56)
- a. Who thought that the waitress served that wine to the customer?
 - b. Who did the bartender think that the waitress served that wine to?
 - c. Who liked that wine that the waitress served to the customer?
 - d. * Who did the bartender like that wine that the waitress served to?

The idea is to compare (56d) and (56a). If we subtract the acceptability rating of (56d) from (56a), we will get a value that is constituted by several factors according to our linking hypothesis, (10), from

Chapter 1: (i) the difference between the grammaticality statuses of these two sentences; (ii) the difference between parsing a complement clause and a relative clause; and (iii) the difference between parsing a short wh-dependency and a long wh-dependency. Because of this, we cannot draw any conclusions about the respective grammaticality statuses of the two sentences. However, if we subtract the acceptability rating of (56b) from (56a), then we will arrive at a value that solely reflects the difference in acceptability that arises from parsing a short wh-dependency compared to a long wh-dependency. The grammaticality statuses of these two form-meaning pairings are the same, so that will cancel out in the subtraction logic, as should all of the other factors since the sentences are otherwise quite similar. Moreover, if we subtract the acceptability rating of (56c) from (56a), we will arrive at a value that solely reflects the difference in acceptability that arises from parsing a complement clause instead of a relative a clause. Again, the grammaticality statuses of these two form-meaning pairings are the same, so that will cancel out in the subtraction logic, just like the other factors that contribute to these form-meaning pairings' overall acceptabilities. We've now independently quantified the effects of the length of the wh-dependency (short or long) and the presence/absence of the relative clause structure. So, we can take these two values, and subtract them from our first difference that we calculated. After doing so, we will be left with a value that solely reflects the difference in grammaticality status between (56a) and (56d). If this difference is significantly greater than 0, we can conclude that the two sentences have different grammaticality statuses. Mathematically, we are asking about the following inequality: $((56a) - (56d)) - ((56a) - (56b)) - ((56a) - (56c)) \stackrel{?}{>} 0$. This is algebraically equivalent to: $((56c) - (56d)) - ((56a) - (56b)) \stackrel{?}{>} 0$. It's a bit easier to see the subtraction logic work out with this second inequality. Because of this, I will spell out the subtraction logic for the second inequality explicitly in terms of our linking hypothesis, (10), from Chapter 1, rather than the first inequality (though it is nonetheless possible to do this same exercise using the first inequality as the two are mathematically equivalent).⁵⁵

To see this spelled out explicitly in terms of our linking hypothesis, let's first calculate the second difference in the inequality. The difference in acceptability between (56a) and (56b) quantifies the effect

⁵⁵One additional thing that this second inequality helps make more clear is the fact that if there is a confound present in two of the four sentences, that confound will subtract out at least so long as it occurs in either the (a) and (b) sentences, the (c) and (d) sentences, the (b) and (d) sentences, or the (a) and (c) sentences (but not the (a) and (d) sentences or the (b) and (c) sentences).

of the wh-dependency length, as can be seen in (57). That is to say, because the grammaticality status is the same for (56a) and (56b), everything cancels out except for the difference that arises from parsing a short wh-dependency and a long wh-dependency.

$$\begin{aligned}
 (57) \quad & \text{grammaticality}_{(56a)} + \text{parsing}_{(56a)} + \text{memory}_{(56a)} + \dots_{(56a)} + \text{noise}_{(56a)} \\
 & - \text{grammaticality}_{(56b)} + \text{parsing}_{(56b)} + \text{memory}_{(56b)} + \dots_{(56b)} + \text{noise}_{(56b)} \\
 \hline
 & (\text{parsing}_{(56a)} - \text{parsing}_{(56b)})
 \end{aligned}$$

Then, we can calculate the first difference from the inequality. This isolates the contribution of the hypothesized ungrammaticality of (56d) by subtracting the acceptability of (56d) from (56c), as in (58).

$$\begin{aligned}
 (58) \quad & \text{grammaticality}_{(56c)} + \text{parsing}_{(56c)} + \text{memory}_{(56c)} + \dots_{(56c)} + \text{noise}_{(56c)} \\
 & - \text{grammaticality}_{(56d)} + \text{parsing}_{(56d)} + \text{memory}_{(56d)} + \dots_{(56d)} + \text{noise}_{(56d)} \\
 \hline
 & (\text{grammaticality}_{(56c)} - \text{grammaticality}_{(56d)}) + (\text{parsing}_{(56c)} - \text{parsing}_{(56d)})
 \end{aligned}$$

Because the grammaticality statuses are (at least hypothesized to be) different, they do not cancel out in (58). Moreover, (56c) contains a short wh-dependency and (56d) contains a long wh-dependency, so there will also be parsing differences that contribute to the value that we obtain in (58). But this difference in parsing should be approximately the same as the previous difference that we calculated in (57), so we can just subtract the result of (57) from the result of (58), as in (59).

$$\begin{aligned}
 (59) \quad & (\text{grammaticality}_{(56c)} - \text{grammaticality}_{(56d)}) + (\text{parsing}_{(56c)} - \text{parsing}_{(56d)}) \\
 & - \qquad \qquad \qquad (\text{parsing}_{(56a)} - \text{parsing}_{(56b)}) \\
 \hline
 & (\text{grammaticality}_{(56c)} - \text{grammaticality}_{(56d)})
 \end{aligned}$$

This gives us a differences-in-differences score that reflects the differential grammaticality status of (56c) and (56d). If this value is significantly greater than 0, it suggests that (56d) is ungrammatical.

If one were to plot the acceptability ratings of these four sentences in the same plot and if one drew connecting lines between the relative clause (island) and complement clause (non-island) conditions, a differences-in-differences score being significantly greater than 0 would look like non-parallel lines. An

example of such a plot can be seen in Figure 3.1. And, statistically, a differences-in-differences score being

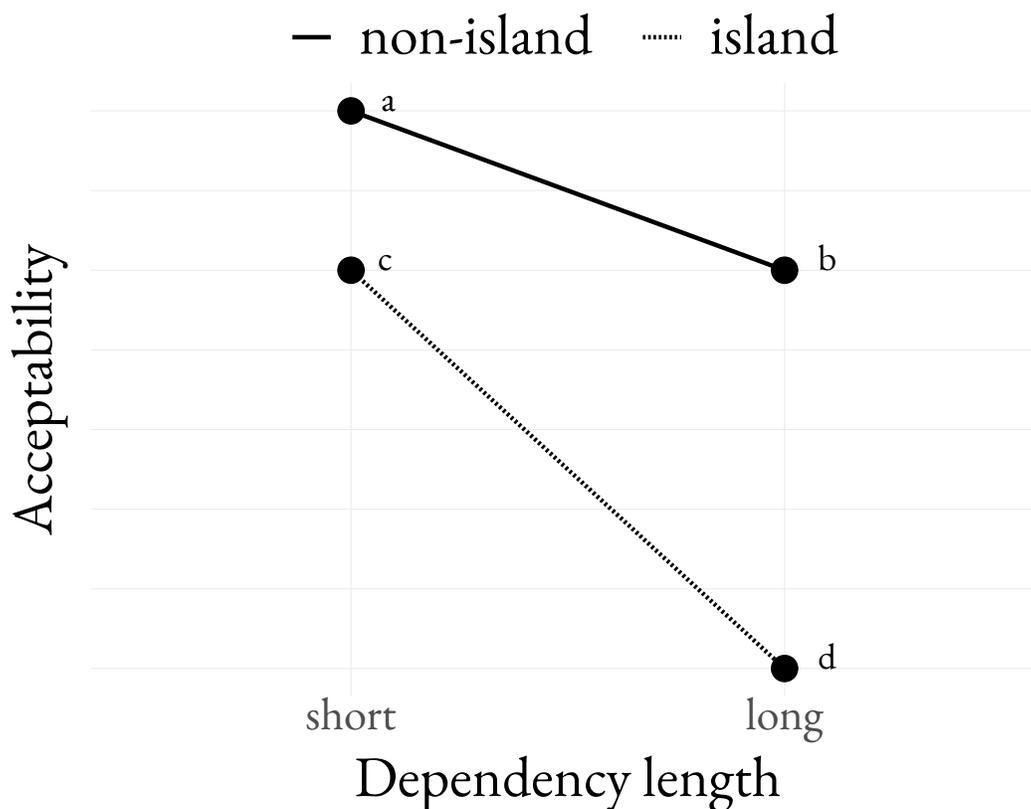


Figure 3.1: Example island effect with non-parallel lines when plotting acceptability scores for form-meaning pairings in a minimal quartet

significantly greater than 0 would be equivalent to a linear model that included both main effects for dependency length (short vs. long) and structure (island vs. non-island) exhibiting a significant interaction effect between these two factors.

So, despite the fact that we cannot construct a minimal pair for an island-violating sentence, a 2×2 experimental design such as this allows for isolating the grammaticality status of island-violating sentences in much the same way as we saw above in Chapter 1 with minimal pairs. And this is all despite the fact that we are just measuring acceptability. So long as there are no confounds that don't subtract out in the subtraction logic (cf. fn. 55), our differences-in-differences score should reflect the differential grammaticality status (if any) of the island-violating form-meaning pairing.⁵⁶

⁵⁶To be clear, it is not the case that merely observing an interaction effect in a 2×2 experiment indicates that one of the examples has a different grammaticality status from the other three. There are many reasons one might observe an interaction

This factorial approach to experimentation has been commonplace in psychology experiments for a long time, although its use in experimental syntax work (in particular to investigate island effects) was pioneered in Sprouse (2007). This technique has allowed for the isolation of island effects in a formal experimental setting. Notably, such an approach to island effects has the ability to rule out one class of explanations of the unacceptability of island violations. The class of explanations that this approach can help to rule out is an approach that seeks to explain island effects as arising from how the parsing system works (see, *e.g.*, Givón 1979, Deane 1991, Pritchett 1991, Kluender & Kutas 1993, Kluender 1998, 2004, Hofmeister & Sag 2010). Because of the way that the subtraction logic works, a minimal-quartet-type experiment for island-violating sentences will subtract out the contributions of the parsing system to the overall acceptability of the island-violating form-meaning pairing, just as we saw above. Indeed, all that is left over in the differences-in-differences score is the (hypothesized) differential grammaticality status of the island-violating form-meaning pairing. If this value is significantly greater than 0, it suggests that the unacceptability of island-violating form-meaning pairings arises because of their ungrammaticality (and not because of being difficult to process). An argument to this effect was made in much more detail in Sprouse, Wagers, & Phillips (2012). This was one of the first arguments made on the basis of data from such minimal-quartet-type experiments.

Another use of this technique in the empirical domain of island phenomena has been to investigate the grammaticality status of several different types of island violations across different types of languages that have been claimed to be grammatical. That is to say, these kinds of experiments have been used to more directly get at the grammaticality status of certain island-violating sentences that have been taken to be grammatical in virtue of being relatively acceptable. The studies that I'll survey have largely shown

effect (or non-parallel lines when plotted). Indeed, Keshev & Meltzer-Asscher (2019:636–640) report results from a 2×2 experiment where they observed a significant interaction effect with four grammatical examples. In this case, their stimuli had been designed in such a way that there was a difference in how one of the four examples in the quartet is processed that did not subtract out in the subtraction logic. This, then, is what drove the interaction effect, not a differential status in grammaticality.

Recall the discussion in §1.1.2.4 from Chapter 1 where we discussed how something similar could happen with the result of a simpler minimal-pair-type experiment. In particular, we conjectured that if you were to collect acceptability ratings for the minimal pair in (16), which was a poorly constructed minimal pair for comparative illusion examples, you might end up with a difference that is significantly greater than 0, even though both examples in the minimal pair have the same grammaticality status.

In other words, it is the subtraction logic behind any potential effect that one might observe that should drive the inference one makes, not the mere effect itself.

with this technique that such examples are instead arguably ungrammatical, though there have also been some studies (which I do not survey here) that have argued certain acceptable island-violating examples are indeed grammatical (Kim & Goodall 2016, Stepanov, Mušič, & Stateva 2018, Ko et al. 2019, Omaki et al. 2020). The interested reader can refer to those studies directly.⁵⁷ For now, let's discuss the cases in the empirical domain of island phenomena where acceptability and grammaticality arguably do not covary.

3.3 Island violations that are acceptable but ungrammatical

3.3.1 On putative variation in Romance's bounding nodes

Various Romance languages have been claimed to lack embedded question islands across a single embedded question. This was famously observed in Rizzi (1978, 1980, 1982:49–76) and led to the proposal that English and Italian have different cyclic categories for the purposes of calculating Subjacency. The observation was based on data from relative clause formation instead of *wh*-movement.⁵⁸ For example, Rizzi (1982:50) showed that there is no embedded question island effect in Italian with examples like the one that can be seen in (60).

- (60) Tuo fratello, a cui_i mi domando che storie_j abbiamo raccontato *t_j t_i*,
 your brother to whom_i myself wonder.I.SG what stories_j have.SBJV.3.PL told
 era molto preoccupato.
 was very worried
 'Your brother, to whom I wonder what stories they told, was really worried.'

(60) shows a form-meaning pairing where there is a relative clause dependency across a clause boundary with a *wh*-phrase in its specifier position. The English counterpart would be judged as unacceptable, but as can be seen by the lack of star or question mark, (60) is reported as acceptable. As such, form-meaning

⁵⁷ Additionally, for a review of much of this literature, see Sprouse & Villata (2021).

⁵⁸ The reason given for this was that multiple *wh*-words co-occurring in a single clause in Italian seemingly give rise to ungrammaticality all on their own. Thus, embedded question island violations with *wh*-movement dependencies (instead of relative clause dependencies) could merely be ungrammatical because of this independent fact about Italian. Though, in more contemporary dialects of Italian, multiple *wh*-phrases can occur in the same clause, at least in limited circumstances; see Moro (2011) for details.

pairings like those in (60) were taken to be grammatical. Similar facts have been shown to hold in Iberian Spanish (cf. Torrego 1984) and Brazilian Portuguese (cf. Miotto & Kato 2005), and so the field has taken all three of these Romance languages to lack embedded question islands.

However, two formal experimental studies, using the minimal-quartet-type experimental design discussed immediately above, have suggested that this conclusion might have been premature. Almeida (2014) tested Brazilian Portuguese speakers and English speakers (for comparison purposes) using the minimal quartet paradigm for embedded question islands in the context of *wh*-movement.⁵⁹ Example stimuli for Brazilian Portuguese from this study are given in (61).⁶⁰ The English stimuli were just the English counterparts of these examples.

- (61) a. Quem achou que o Marcos perdeu o ônibus?
 Who thought that the Marcus missed the bus
 ‘Who thought that Marcus missed the bus?’
- b. O que que a professora achou que o Marcos perdeu?
 The what that the professor.F thought that the Marcus missed?
 ‘What did the professor think that Marcus missed?’
- c. Quem perguntou se o Marcos perdeu o ônibus?
 Who asked whether the Marcus missed the bus
 ‘Who asked whether Marcus missed the bus?’
- d. O que que a professora perguntou se o Marcos perdeu?
 The what that the professor.F asked whether the Marcus missed
 ‘What did the professor ask whether Marcus missed?’

As can be seen, the example of interest, (61d), contains an embedded question, and the *wh*-dependency is a long one that spans this embedded question island. On the other hand, (61a) contains a short *wh*-dependency and an embedded declarative clause instead of an embedded question. (61b) has a long *wh*-dependency that spans the embedded clause, and (61c) has a short *wh*-dependency but an embedded question instead of an embedded declarative clause. This follows the 2×2 paradigm that we discussed

⁵⁹He also looks at embedded question islands in the context of topicalization and left dislocation, which I don’t discuss here. See Almeida (2014:81–83) for the results of the experiments with those structures.

⁶⁰The examples from Rizzi (1978, 1980, 1982) involved subject drop inside the embedded question island, whereas the example in (61d) does not. In principle, this difference could matter. For some proposals about how this difference could matter, see Uriagereka (1988) and Lasnik & Uriagereka (2005:88–95).

above in §3.2.2, crossing structure (embedded question island vs. embedded declarative clause) with dependency length (short vs. long).

There were 60 English speakers and 38 Brazilian Portuguese speakers that were tested. Almeida (2014:78–81) found that the English speakers rated the island-violating form-meaning pairings (*i.e.*, the (61d)-type examples) as more degraded than their Brazilian Portuguese counterparts were rated by the Brazilian-Portuguese-speaking participants, at least in terms of averaged *z*-scores (≈ -0.5 vs. ≈ -0.1). This is consistent with the reports in the literature that Brazilian Portuguese embedded question island violations are judged as relatively acceptable in isolation, unlike in English. Nonetheless, there was still a significant interaction effect between structure and dependency length for both groups of speakers. That is to say, there was evidence that the form-meaning pairing in (61d) is ungrammatical in Brazilian Portuguese, despite the fact that such form-meaning pairings are judged as relatively acceptable in isolation.

This is therefore plausibly a case where acceptability and grammaticality do not covary, just like some of the other cases that were discussed above in Chapter 1. One would still want an explanation of why the Brazilian Portuguese form-meaning pairings should be judged as more acceptable, but, so long as there are no unaccounted for confounds in the stimuli used in the experiment that didn't subtract out in the subtraction logic (cf. fn. 55), this result suggests that Brazilian Portuguese does indeed have embedded question islands.

Interestingly, we see a very similar result for Italian in Sprouse et al. (2016), contra Rizzi (1978, 1980, 1982:49–76). They conducted 8 experiments, 4 with Italian speakers and 4 with English speakers. The 4 English experiments had 55 participants each, and the 4 Italian experiments had 50, 49, 47, and 47 participants. In each language, they investigated four different islands: embedded question islands, complex NP islands, subject islands, and adjunct islands. Moreover, they also looked at all four of these islands across two types of *A*-bar dependencies: *wh*-movement and relative clause formation. Each experiment tested one island with *wh*-dependencies, and another distinct island type with relative clause dependencies. Here, I focus on their results for the embedded question islands.⁶¹ In English, they found significant

⁶¹Interestingly, they did not find evidence of an adjunct island effect with relative clause formation in English, nor did they find evidence for subject island effects in Italian with relative clause formation. However, there was evidence for an adjunct island effect in English with *wh*-formation, and, similarly, there was evidence for a subject island effect in Italian with *wh*-movement. They do not think they failed to find evidence of island effects in these two cases because of unaccounted for

interaction effects for embedded question islands with wh-movement and for embedded question islands with relative clause formation, as expected. Furthermore, in Italian, they also found significant interaction effects for embedded question islands with both wh-movement and relative clause formation.⁶²

Interestingly, while the embedded question island violations for the relative clause dependencies in Italian were rated better in terms of absolute averaged z -scores than their English counterparts (≈ -0.5 vs. ≈ -0.75),⁶³ it's not clear that an averaged z -score of ≈ -0.5 should be treated as all that acceptable. Nonetheless, these results are at least consistent with the reports in the literature that the embedded question island violations in Italian sound more acceptable than their English counterparts when judged in isolation, just like was the case for the Brazilian Portuguese results. But, in any case, the subtraction logic of the 2×2 experiment suggests that Italian does exhibit embedded question island effects, whatever the status of the relevant examples when judged in isolation might be.

To my knowledge, there is no similar set of formal acceptability studies for Iberian Spanish, but it would be interesting to run such a study. While an account of the relative acceptability of the island-violating examples from Italian and Brazilian Portuguese in terms of something other than grammaticality status is still wanting, these results, when taken together, have the interesting theoretical upshot that we could possibly dispense with cross-linguistic variation in the cyclic categories that are relevant for determining Subjacency violations.⁶⁴ In any event, these two studies have shown how the 2×2 paradigm can

confounds (cf. Sprouse et al. 2016:328–329, fn. 7), but it's a surprising result on the assumption that all A-bar dependencies within the same language (and maybe even across languages) should behave alike with respect to island violations. I set this matter aside here, as the focus is on wh-islands in light of the arguments from Rizzi (1978, 1980, 1982:49–76).

⁶²The Italian stimuli used in their experiments did have overt subjects inside the embedded question; cf. fn. 60.

⁶³For the embedded question island violations with wh-movement, the opposite is true. The Italian sentences are rated worse in absolute terms than the English ones. One might expect this because of the independent fact about Italian discussed above that prohibits two wh-elements from occurring in the same clause, which was the reason for Rizzi investigating these island effects with relative clause formation instead of wh-movement. However, the embedded question islands that were tested in Italian were specifically embedded polar question examples, using the interrogative complementizer *se* 'if', so this is perhaps unexpected. In any event, Italian *does* exhibit evidence of embedded question islands, both with wh-movement and with relative clause formation as the A-bar dependency that spans the embedded question island.

⁶⁴That being said, these results still don't address Torrego's (1984:113–114) other argument for variation in the cyclic categories. She noted that in Spanish (and in Catalan) verb preposing is obligatory in clauses in which a wh-phrase has moved through the specifier position of the CP, and it seems that verb preposing need not occur in the lowest clause containing the base position of a wh-phrase that has moved to the matrix clause. This would thus suggest that the wh-phrase can move from its base position to the next highest clause in a single movement step, skipping over the specifier position of the lowest clause from which it is moving. If this is indeed the correct analysis, then it suggests that there are different cyclic categories for Spanish and English.

Another challenge for this prospect is that Hebrew is claimed to not exhibit embedded question islands (see, e.g., Reinhart 1981, Preminger 2010, Keshev & Meltzer-Asscher 2019).

be used in the empirical domain of island effects to investigate whether the signal in our measurements reflect competence or performance factors. In particular, these two studies have shown how this paradigm can be used to get at the grammaticality status of certain examples whose relative acceptability is somewhat surprising (at least on the assumption that their relative acceptability reflects their grammaticality status). I'd like to briefly review two more similar cases involving Norwegian and Mandarin.

3.3.2 On the putative absence of certain island effects in Norwegian

Several Scandinavian languages (Norwegian, Swedish, and Danish) have been taken to allow some kinds of island violations in virtue of the relevant examples being judged as relatively acceptable. For example, Norwegian reportedly allows A-bar dependencies across embedded question islands, (62), relative clause islands, (63), and complex NP islands, (64) (cf. Maling & Zaenen 1982:231–234).

- (62) a. Hvilke bøker spurte Jon hvem som hadde skrevet?
 which books asked John who COMP had written
 ‘Which books did John ask who had written?’
- b. Hvem vet du ikke om Jon så på kino?
 who know you NEG whether/if John saw at cinema
 ‘Who don’t you know whether John saw at the movies?’
- (63) De blomstene kjenner jeg en mann som selger.
 those flowers know I a man who sells
 ‘Those flowers, I know a guy who sells.’
- (64) Hvilket fengsel, er det lite håp om at man kommer helskinnet fra?
 which prison is it little hope about that one comes unscathed from
 ‘Which prison is there little hope that one comes unscathed from?’

As can be seen, these examples are reported as acceptable, and so the field has taken them to be grammatical. Kush, Lohndal, & Sprouse (2018) investigate island effects in Norwegian using the minimal-quartet-type experiment. They conducted three experiments. In the first experiment, they tested four different island types (embedded question islands, complex NP islands, subject islands, and adjunct islands) using simplex wh-phrases (e.g., *hvem* ‘who’). The second experiment added a fifth island type, relative clause

islands, and the third experiment looked at all five island types but using complex wh-phrases (e.g., *hvilke bøker* ‘which books’). The first experiment had 94 participants, the second experiment had 46 participants, and the third experiment had 63 participants.

They found significant interaction effects between structure and dependency length for all four/five island types across all three experiments, both with simplex and complex wh-phrases. Interestingly, the size of the differences-in-differences scores for complex NP islands and relative clause islands were pretty comparable to the size of the differences-in-differences score for the subject and adjunct islands. These differences-in-differences scores can be thought of as an effect size for the island violation, so this suggests that complex NP islands and relative clause islands exhibit about as strong of an island effect as do subject and adjunct islands in Norwegian. Moreover, the (d)-type examples (i.e., the island violating ones) from the minimal quartets for all four of these island types were rated roughly the same in absolute terms of their averaged z -scores (all approximately between -0.5 and -1.1). This is not particularly consistent with the reports in the literature that examples like those in (63) and (64) are reported as acceptable.⁶⁵ On the

⁶⁵Of course, it is worth noting that the A-bar dependency in (63) is that of topicalization, not wh-movement. In a set of followup studies, Kush, Lohndal, & Sprouse (2019) investigate these same five islands but with topicalization instead of wh-movement. The results are a bit more mixed. They conducted two experiments, the first of which involved topicalized examples presented to the participants devoid of any context and the second of which first provided context before presenting the examples to the participants (so as to make the topicalized examples sound more natural). In the first experiment without context, they found significant interaction effects for all island types except for embedded question islands. In the second experiment with context, they found significant interaction effects for all island types except for adjunct islands and embedded question islands. Unlike in the first experiment, however, the results for the embedded question islands were trending in the direction one would expect if there were an island violation, with a marginally significant p -value of 0.081.

They furthermore conducted by-participant analyses, as they were worried that averaging across participants might obscure certain patterns of behavior at the individual level. On the basis of these individual analyses, they conclude (i) that there are both subject island and complex NP island effects with topicalization, (ii) that there may be a relative clause island effect with topicalization for some participants but that there isn’t for some others, (iii) that there is no embedded question island effect with topicalization, and (iv) that there is no adjunct island effect with topicalization (for the details, see Kush, Lohndal, & Sprouse 2019:402–403, 407–412).

It’s interesting that these results are much more variable, and it’s not clear what exactly to make of them. On the face of it, these results, in conjunction with those of Kush, Lohndal, & Sprouse (2018), argue against the idea that A-bar dependencies are uniform with respect to island violations within the same language (much less across languages, for that matter). Personally, I find the conclusions about the lack of island effects with certain island types and topicalization that they draw premature. In these two experiments, participants judged two items per condition, and a lot of their analysis is based on response patterns that arise from comparing the sign of the z -score of these two judgments. While many syntactic effects are so large that it’s reasonable to investigate them with very few items per condition (cf. Sprouse & Almeida 2017), there’s no reason to expect all island effects to be of the same magnitude, particularly if there are language-specific extragrammatical factors in Norwegian that ameliorate the acceptability of island effects. Indeed, if there were such language-specific extragrammatical factors in Norwegian, one might expect an individual’s acceptability judgments to exhibit more variability across time than would be normal in cases where acceptability judgments are much more heavily determined by the grammar, in which case perhaps we don’t want to rest a lot on these by-participant analyses involving two items per condition (see also §3.3.2.1 below). These mixed topicalization results would be interesting to investigate further, but I set them aside for now.

other hand, the results for the embedded question islands were a bit more consistent with what has been reported in prior literature. While they did find a significant interaction effect in all three experiments for wh-islands, the differences-in-differences scores (0.68, 0.44, and 0.27) were a good bit smaller than the differences-in-differences scores for the other islands (all >1). Moreover, the absolute averaged *z*-score ratings for the (d)-type examples in the embedded question island paradigms all had an average greater than 0, unlike the (d)-type examples for the other islands. This is more consistent with prior reports in the literature that the embedded question island examples are judged as relatively acceptable in isolation (especially compared to their English counterparts).

Nonetheless, they did still find significant interaction effects for the embedded question islands in all three experiments. However, Kush, Lohndal, & Sprouse (2018) worry that the significant interaction effects for the embedded question islands were an artifact of averaging across participants. To investigate this possibility, they first looked at individual differences-in-differences scores, where they found that a non-trivial number of participants across all three experiments had relatively small differences-in-differences scores (between 0 and 0.25). They also looked at the sign of the two *z*-score transformed ratings that participants gave for each of the two embedded-question-island-violating tokens (*i.e.*, the (d)-type examples from the minimal quartet paradigm) in each experiment, and they found a good bit of variability, with many participants having one positive and one negative or even two positive *z*-score transformed ratings for the two tokens (for the exact details, see Kush, Lohndal, & Sprouse 2018:762–765). Because of this, they conclude that Norwegian does exhibit some degree of embedded question island *insensitivity*, and they heavily imply this is because these embedded-question-island-violating examples are grammatical in Norwegian (though they don't explicitly commit to this) (cf. Kush, Lohndal, & Sprouse 2018:768–774).⁶⁶

⁶⁶At the very least, they do explicitly suggest that there is no bounding constraint/mechanism (*e.g.*, Subjacency, phases, *etc.*) that rules out embedded question islands in Norwegian and that instead such examples may be ungrammatical due to scope intervention (cf. de Swart 1992, Kiss 1993, Szabolcsi & Zwarts 1993), but that this intervention effect can be eliminated if the wh-phrase is interpreted as ranging over individuals, not properties.

3.3.2.1 A brief aside on interpretations of acceptability magnitudes

The main point of this part of this chapter is to review some precedents for the idea that there are island-violating sentences which have been taken to be grammatical in virtue of being judged as acceptable that have nonetheless been shown to be ungrammatical using a formal 2×2 acceptability judgment study, in order to set the stage for the work reported in Chapters 4 and 5. Whatever the status of embedded question islands in Norwegian, it seems that embedded question islands in Brazilian Portuguese and Italian as well as complex NP and relative clause islands in Norwegian do serve as precedent-setting cases in this regard. However, I'd like to briefly discuss the interpretation of the embedded question island results that Kush, Lohndal, & Sprouse (2018) give in more detail, particularly since these considerations are highly relevant to the main topic of this dissertation as described at the outset in Chapter 1—namely, the explicit consideration of linking hypotheses in linguistic inquiry and what this might imply for ascertaining whether the signals in our measurements reflect competence or performance factors.

In conducting their by-participant analyses for the embedded question islands, Kush, Lohndal, & Sprouse (2018) binarize the acceptability ratings they collected by looking at the signs of the individual *z*-score transformed ratings, despite the fact that the task they had participants do was not a binary acceptability judgment task, but rather a Likert scale acceptability judgment task. A number of participants had two positive ratings for the two embedded question island tokens that they judged in the study and very few had two negative ratings. Additionally, many gave “inconsistent” judgments by having one rating with a positive sign and one with a negative sign. These were the main reasons for their conclusion that there is at least some embedded question island insensitivity in Norwegian. However, the logic behind this by-participant analysis of the acceptability ratings seems highly arbitrary and not at all motivated. To start, the ratings were *z*-score transformed on a by-participant basis, which means that the ultimate ratings that we're interpreting are highly dependent on how participants rated the set of entire sentences in the study, including the filler items. Second, and more importantly, while we do have a good linking hypothesis between acceptability and grammaticality ((10) from Chapter 1), this linking hypothesis is far from well enough articulated to allow us to make specific numerical predictions about what different magnitudes of acceptability might or might not mean. That is to say, there's no reason to think that any

example rated above, say an untransformed rating of a 4 (much less a z -score transformed rating of 0), should be taken to be grammatical, which is what they seem to be implicitly assuming insofar as they take many of their participants to have given “inconsistent” ratings.⁶⁷ Perhaps if we had better theories of parsing, of the lexicon, and of how the grammar, parsing, and the lexicon all interact with memory, we’d be able to make specific numerical predictions about the magnitudes of acceptability various grammatical and ungrammatical examples might have. But it is precisely because our current theories do not allow us to make such predictions that we instead use something like the subtraction logic to investigate the grammaticality status of examples in a minimal pair or a minimal quartet.

It thus strikes me as odd that, despite three significant interaction effects for embedded question islands in three different experiments, which the subtraction logic would suggest indicate ungrammaticality of embedded question islands, Kush, Lohndal, & Sprouse (2018) nonetheless want to conclude that embedded question islands may not be islands to *wh*-movement in Norwegian because the differences-in-differences scores were smaller than one might naively expect and because there is more variation in participant judgments than one might naively expect. If embedded question islands were ungrammatical in Norwegian but there were some language-specific extragrammatical fact about Norwegian that lead to an amelioration in acceptability, it seems to me that one would actually expect that there would be a smaller (but significantly greater than 0) differences-in-differences score and that there would be more variability across participants, exactly as they found (see also fn. 65). Of course, in this case, just like in the Brazilian Portuguese and Italian cases, an account of what language-specific factors might give rise to this amelioration in acceptability (but not grammaticality) is still wanting. Nonetheless, careful consideration of the linking hypothesis and the subtraction logic it affords in a 2×2 experimental paradigm

⁶⁷One might fairly wonder whether this assumption is any worse of an assumption than the simplifying assumption that we discussed in Chapter 1 and that has been the basis for a lot of linguistic inquiry and theorizing to date—namely, the assumption that acceptable sentences are grammatical and unacceptable ones are ungrammatical. I think it is a worse assumption, as Likert scale judgments are much more likely to be sensitive to the other examples that a participant rates in the same task, and so it’s not clear that the midpoint of the scale in any given participant’s data will actually reflect where that same participant would have made the cut between acceptable and unacceptable in a binary acceptability judgment study for those same examples. However, even if it’s not all that worse of an assumption, the point of the subtraction logic that minimal-pair-type experiments and minimal-quartet-type experiments afford us is that it allows us to circumvent having to make this assumption, which is exactly what we should be doing in cases where we suspect grammaticality and acceptability might not covary. I thus find it extremely odd that Kush, Lohndal, & Sprouse (2018) would sneak something like the assumption that grammaticality and acceptability *do* covary back into their reasoning about their results after they went to the trouble of designing and conducting an experiment that allows them to avoid having to rely on such an assumption in the first place.

suggests to me at least that we should interpret their results as evidence for embedded question islands in Norwegian being ungrammatical.

At any rate, I now turn to our final precedent-setting case in order to round out the discussion in this chapter.

3.3.3 On putative argument-adjunct asymmetries in Mandarin

Some *wh*-in-situ languages (*e.g.*, Mandarin, Japanese) have been taken to lack island effects when an argument *wh*-phrase, but not an adjunct *wh*-phrase, takes interrogative scope from its in-situ position outside of an island. The evidence for this comes from examples like those in (65). In (65), we have two embedded questions. Each embedded question contains a relative clause (*i.e.*, ... *de nühai* ‘the girl that ...’) and there is an in-situ *wh*-phrase inside each of the relative clauses, but these *wh*-phrases take interrogative scope over the embedded question (*i.e.*, outside of the relative clause island). Notably, (65a) and other examples like it are reported as being generally quite acceptable, whereas (65b) and other examples like it are reported as unacceptable (see, *e.g.*, Huang 1982a,b, Watanabe 1992, Lasnik & Saito 1992, Aoun & Li 1993, Tsai 1994).

- (65) a. Yuehan xiangzhidao Bier jian le chi shenme de nühai
 John wonders Bill meet ASP eat what REL girl
 ‘John wonders what_i Bill met the girl that ate *t_i*’
- b. *Yuehan xiangzhidao Bier jian le weishenme chi shousi de nühai
 John wonders Bill meet ASP why eat sushi REL girl
 ‘John wonders why_i Bill met the girl that ate sushi *t_i*’

One of the original analyses of this difference involved the Empty Category Principle (ECP). The ECP is a syntactic principle that governs the distribution of traces, and it is generally assumed to apply at the LF syntactic level of representation. Part of the principle effectively stipulates a difference between argument and adjunct traces, allowing argument traces to conform to the requirements of the ECP in virtue of being lexically governed, whereas adjunct traces must conform to the requirements of the ECP by being antecedent governed, as they can never be lexically governed (for a more explicit spelling out of the details, see, *e.g.*, Lasnik & Saito 1992:13–39). Moreover, Subjacency was taken to only apply at S-Structure (*i.e.*,

to only apply to overt movement). Thus, neither (65a) nor (65b) violate Subjacency (unlike their English counterparts), as there is no overt movement of the *wh*-phrases, but (65b) does violate the ECP, and (65a) does not. Such an account would thereby explain why the example in (65a) is grammatical, and the example in (65b) is not, if those are indeed the correct grammaticality statuses for these two examples.

Lu, Thompson, & Yoshida (2020) set out to investigate whether these are the correct grammaticality statuses using the 2×2 experimental paradigm in Mandarin. They constructed minimal quartets for each *wh*-phrase type (*i.e.*, argument and adjunct), so they effectively conducted a $2 \times 2 \times 2$ experiment, crossing *wh*-phrase type with structure with dependency length. If there is a genuine asymmetry in the grammatical status of argument and adjunct questions, one would expect that there would be a significant three-way interaction and that there would be no significant two-way interaction of structure and dependency length for arguments but that there would be for adjuncts. On the other hand, if both types of examples have the same grammaticality status, one would expect that there would be no three-way interaction and that there would be significant two-way interactions of structure and dependency length for both arguments and adjuncts. One might furthermore expect there to be a main effect of *wh*-phrase type, with adjunct questions being rated lower across the board compared to their argument question counterparts, as that would partly explain the prior reports in the literature that the argument question is more acceptable than the adjunct question.

The materials that they used all involved embedded questions with a verb that takes an interrogative clause as its complement (*xiangzhidao* ‘wonder’). This was done to make the scope of the questions explicit and unambiguous. The examples given above in (65) were the (d)-type examples in their minimal quartet paradigm for argument and adjunct questions, respectively. Moreover, they only looked at one type of island: relative clause islands. For example stimuli for all 8 conditions in their $2 \times 2 \times 2$ experiment, see Lu, Thompson, & Yoshida (2020:615, Table 1).

They tested 56 Mandarin speakers in their experiment, and they found a significant interaction effect of dependency length and structure, both across the entire data set and for each subset of the data with only one *wh*-phrase type. Moreover, there was no significant three-way interaction effect of dependency length, structure, and *wh*-phrase type. And, finally, just as one might have expected, there was a main

effect of wh-phrase type, with the adjunct questions being rated as less acceptable than their argument question counterparts (for the full details, see Lu, Thompson, & Yoshida 2020:616–618).

These results therefore suggest that at least covert wh-dependencies with an argument wh-phrase across a relative clause island boundary are ungrammatical, even if somewhat acceptable. This accords with the grammaticality status of their adjunct question counterparts, contrary to prior reports in the literature. Moreover, while these results are only for one island type (relative clause islands) in one wh-in-situ language (Mandarin), these results raise the question of whether this is also the case for other island types and in other wh-in-situ languages. If it does turn out that argument questions exhibit island effects in wh-in-situ languages, this raises the interesting possibility of dispensing with the ECP as a syntactic principle. This would have the upshot of greatly simplifying a theory of island violations, as the ECP had to independently recapitulate certain aspects of the Subjacency condition. Specifically, the definition of antecedent government had certain locality restrictions baked into it, which looked remarkably similar to the locality conditions imposed by Subjacency (again, for a more concrete spelling out of the details, see Lasnik & Saito 1992:13–39). If it would be possible to reduce one of these conditions to the other, thereby eliminating the redundancy, that would constitute an interesting simplification for syntactic theories of island effects. Of course, an extragrammatical account of the differences in previously reported acceptability judgments is still wanting,⁶⁸ and it also remains to be seen whether similar results will actually hold for other island types and in other wh-in-situ languages,⁶⁹ but these results are highly

⁶⁸My personal hunch is that the difference in acceptability likely has something to do with the fact that argument wh-phrases in wh-in-situ languages can often also be interpreted as indefinites like English's *some*. However, this is just a hunch, and not at all a spelled out hypothesis.

⁶⁹Moreover, there were other facts that the ECP accounted for, including some data from English, like in (i).

- (i) a. ?What_i did you wonder whether Amy fixed *t_i*?
- b. *Why_i did you wonder whether Amy fixed the car *t_i*?

(ib), when paired with the meaning in which *why* modifies the embedded clause (not the matrix clause), has been noted to be much more unacceptable than (ia). One account of this difference is that (ia) only violates Subjacency, whereas (ib) violates both Subjacency and the ECP. If one were to reduce one of these principles to the other, an independent explanation for the difference in acceptability ratings for examples like those in (i) would be needed. Whether such an explanation should be a grammatical one or an extragrammatical one is, in my view, an open question. Indeed, it's worth noting that examples with long-distance wh-dependencies involving *why* don't sound particularly acceptable even in non-island contexts (at least out of the blue), as the contrast in (ii) shows.

- (ii) a. What_i did you hear that Amy fixed *t_i*?
- b. ?Why_i did you hear that Amy fixed the car *t_i*?

suggestive.

At any rate, I hope these three cases (Romance, Norwegian, and Mandarin) have underscored how the 2×2 experimental paradigm and the subtraction logic that it affords when applied to island effects, as first used in Sprouse (2007), can be used to ascertain whether the signal in our measurements reflects competence or performance factors. Moreover, these prior studies have also shown that certain examples which were previously reported as relatively (or at least marginally) acceptable and, as a result, taken to be grammatical, are actually arguably ungrammatical. This state of affairs is distinctly possible for the data we will consider in the next two chapters. In Chapter 4, we will look at English island violations in the context of sluicing, an elliptical construction that has been claimed to eliminate island effects. Then, in Chapter 5, we will look at the Bulgarian data that was part and parcel of the motivation for a syntactic principle called the PMC. The relevant examples were originally reported as marginally acceptable, but taken to be grammatical.

Let us first turn to island violations and sluicing in English.

Chapter 4 Sluicing away island violations: Competence or performance?

In Chapter 3, we just saw how the 2×2 experimental paradigm can be used to investigate island effects. Moreover, we saw several cases where this paradigm was used to argue that certain island-violating examples which were taken to be grammatical in virtue of being judged as relatively acceptable are instead ungrammatical. In this chapter, we will use this same experimental paradigm to investigate another empirical domain where the grammaticality status of the relevant examples is at least somewhat contested. In particular, the empirical domain that we investigate is that of island effects in the context of sluicing.

Sluicing is an elliptical phenomenon in which a TP is elided. Sluicing is most common in cases of uncertainty, where a speaker asserts something containing an indefinite phrase and then elides a constituent question in the next clause relating to that indefinite phrase, leaving only a wh-phrase remnant behind. An example is given in (66), with the elided material struck through (for an overview of sluicing, see, *e.g.*, Merchant 2006).

(66) Amy saw somebody, but she wasn't sure who_i ~~she saw t_i~~ .

Ross (1969) famously observed that sluicing seems to improve island violations. For example, consider the examples in (67).

- (67) a. * Amara believes the claim that Andi saw someone, and Alyssa wonders who_i Amara believes the claim that Andi saw t_i .
- b. ? Amara believes the claim that Andi saw someone, and Alyssa wonders who_i ~~Amara believes the claim that Andi saw t_i~~ .

Both examples involve a wh-dependency that holds across a complex NP island (*the claim that ...*). However, in the case of (67b) (and not in the case of (67a)), the base position of the wh-dependency is con-

tained in syntactic structure that is ultimately elided. Notably, the example in (67b) with the TP ellipsis is judged as more acceptable than its counterpart in (67a) without the TP ellipsis. Various degrees of acceptability have been reported for similar kinds of examples, involving different types of island violations across sluiced material. Most examples are reported as at least marginally acceptable, if not outright acceptable.⁷⁰ As such, the field has largely assumed that such examples are grammatical, an assumption that is in line with the simplified linking hypothesis between acceptability and grammaticality discussed above in Chapter 1—namely, that acceptability directly reflects grammaticality.

However, different reasons have been given for why such examples should be grammatical. Some argue that sluicing repairs island violations (*e.g.*, Ross 1969, Chomsky 1972, Lasnik 2001, Fox & Lasnik 2003, Merchant 2005, 2008b, 2009, Temmerman 2013, Griffiths & Lipták 2014). That is to say, eliding the structure that contains the island violation eliminates the island violation, rendering the example grammatical. Such views are consistent with the idea briefly mentioned in §3.1.2 that island effects ultimately arise because of the syntax-PF interface; that is to say, island effects are ultimately a result of the linearization process (*e.g.*, Uriagereka 1999, 2012, Hornstein, Lasnik, & Uriagereka 2003, Fox & Pesetsky 2005).⁷¹ On the other hand, some argue that such examples are grammatical because of different evasion strategies (*e.g.*, Barros 2014a, Barros, Elliott, & Thoms 2014, 2015). The idea here is that the elided material in an example like (67b) need not contain an island. Merchant (1999, 2001) was one of the first to advocate for such an analysis (though see also Baker & Brame 1972, Erteschik-Shir 1973). He argued that some types of island violations allow for a “short source” interpretation of the elided material.⁷² For example, instead of what is shown above in (67b), it’s possible that the elided material is instead as in (68).

(68) Amara believes the claim that Andi saw someone, and Alyssa wonders who; ~~Andi saw t_i~~ .

In this case, the elided material does not include an island, since the complex NP (*the claim that ...*) is not

⁷⁰Most of the original examples in Ross (1969) were reported with ‘?’ as the judgment, but many subsequent papers have reported such examples as fully acceptable.

⁷¹On this view, it also makes sense that LF movement wouldn’t be sensitive to islands, as has been claimed to be the case for argument questions in *wh*-in-situ languages; but see §3.3.3 above for some experimental evidence suggesting this could be wrong.

⁷²Merchant held that some other island types did not allow for such an evasion strategy and instead exhibited island repair under sluicing. More recently, he has argued for the island repair approach across the board (see, *e.g.*, Merchant 2005, 2008b, 2009).

part of the elided material. Thus, it need not be the case that sluicing repairs island violations. Instead, it only needs to be possible to interpret the elided material as, in the case of (68), merely containing *Andi saw t_i*.

Both of these approaches have some common properties. Both types of analyses share the assumption that the wh-phrase remnant in the sluice involves a wh-dependency that spans elided material which has been deleted at PF. This approach to ellipsis is generally called PF deletion, and it stands in contrast to approaches to ellipsis that involve the idea of LF copying. The idea of LF copying approaches to ellipsis is that the wh-phrase is base generated in the position in which it is pronounced, and then there is some copying process that happens at LF which copies the syntactic structure of the antecedent of the elided material into the ellipsis site, thereby allowing the example to receive the interpretation that it ultimately receives (for such analyses of sluicing in particular, see, *e.g.*, Chung, Ladusaw, & McCloskey 1995, Ginzburg & Sag 2000, Culicover & Jackendoff 2005, Sag & Nykiel 2011, Barker 2013). In this dissertation, I also adopt the assumption that the correct approach to ellipsis, including sluicing, is the PF deletion approach (for an overview of both approaches in the context of sluicing, see Merchant 2006:272–281).

A second common property that the island repair and evasion strategies approaches share is that they both take the relevant examples (such as the one in (67b)) to be grammatical in virtue of being (relatively) acceptable. However, they do differ slightly in that the analyses that adopt the evasion strategies view would have it that, were the examples constructed in such a way so as to rule out the different possible evasion strategies (such as a short source interpretation of the elided material), the prediction would be that the examples should be ungrammatical. The island repair approaches always predict that the relevant examples should be grammatical, since sluicing eliminates the island violation.

Given that this empirical domain is one in which there are differing degrees of acceptability that have been reported and is one in which different theories make different predictions about grammaticality statuses, it seems like a case where the 2×2 experimental paradigm could, in principle, be helpful for trying to more directly get at the grammaticality status of these island violations in the context of sluicing. This is exactly what the work reported in this chapter aims to do. The chapter proceeds as follows. §4.1

reviews the island repair and evasion strategies approaches in a bit more detail. Then, in §4.2, we report and discuss the results of 8 different 2×2 experiments that try to more directly get at the grammaticality status of island violations in the context of sluicing, before concluding in §4.4.

4.1 Island violations and sluicing

As noted above, Merchant (1999, 2001) was one of the first to argue for an evasion strategy approach to account for the relative acceptability (and presumed grammaticality) of examples involving island violations and sluicing, such as in (68) above, repeated here as (69).

(69) Amara believes the claim that Andi saw someone, and Alyssa wonders who_i Andi saw t_i .

Merchant assumed that this short source evasion strategy was only available for islands in which the content of the island domain corresponded to a proposition (*e.g.*, complex NP islands, relative clause islands, and adjunct islands). For example, (69) is a complex NP island example, and the complement of the noun phrase, *claim*, is the proposition *that Andi saw someone*. By taking this subpart of the intended antecedent for the elided material as the actual antecedent instead, one can avoid having an island inside the ellipsis site. In the case of complex NP islands, this works quite straightforwardly. In the case of, for example, a relative clause island like in (70), it's not quite as straightforward because the short source is not exactly isomorphic to a subpart of the larger, intended antecedent for the ellipsis site. Specifically, if one looks at the example in (70a) which shows the full intended antecedent in the elided material that is struck through, one can see that the subject of *speaks* is the tail of the relative clause dependency headed by *who*. But, in order to interpret the ellipsis site as a short source in the case of a relative clause island like this, one must have a slightly different antecedent for the elided material than what is present in the first clause of the sentence, as (70b) shows.

- (70) a. Amara met the professor who speaks a Balkan language, and Amy wanted to know
 [~~which Balkan language~~]_i Amara met the professor who_j t_j speaks t_i .
- b. Amara met the professor who speaks a Balkan language, and Amy wanted to know
 [~~which Balkan language~~]_i the professor speaks t_i .

This is one difference between views that adopt the island repair approach and views that adopt the evasion strategies approach. The island repair views often posit stricter identity requirements between the material inside the ellipsis site and its antecedent than the evasion strategies views do. For Merchant (1999, 2001), the short source in (70b) is close enough in identity to its antecedent in the preceding clause by means of E-type anaphora (for the details, see, *e.g.*, Merchant 1999:284–307, cf. Evans 1980).

As noted at the outset of this chapter, the two types of views share the assumption that sluicing examples with island violations that are judged to be acceptable are grammatical; however, the evasion strategies views predict that if the possibility of the evasion strategy is eliminated, the example should be ungrammatical. Merchant (1999, 2001) argues that this prediction is borne out for these kinds of islands. Specifically, we can eliminate the availability of E-type anaphora with a negative operator like *no*, as in (71). Merchant (1999, 2001) notes that such examples sound unacceptable and so are presumably ungrammatical, bearing out the prediction of his evasion strategy view.

(71) * Amara met no professor who speaks a Balkan language, and Amy wanted to know which.

However, Lasnik (2001:313–315) points out that there is an independent issue with examples like those in (71). Specifically, it's not clear that *a Balkan language* in (71) is able to take wide scope. If it cannot take wide scope, then it's plausible that the reason that (71) sounds so unacceptable is just because there is no scope parallelism between the two clauses (see also Chung, Ladusaw, & McCloskey 1995, Barker 2013). Lasnik notes how adding *certain*, as in (72), facilitates the wide scope reading of the indefinite in the first clause, which makes the example sound much more acceptable.

(72) Amara met no professor who speaks a certain Balkan language, and Amy wanted to know which.

On the assumption that (72) is thus grammatical, this suggests that the island repair approach is correct, as the evasion strategy is still ruled out by the presence of *no*.

Lasnik (2001:315–316) gives another argument against Merchant's evasion strategy view involving short sources. The idea of this second argument is twofold. The first part of the argument is to use another independent syntactic mechanism that rules out the short source interpretation of the elided material,

but, in this case, show that the resulting example is acceptable (and thus presumably also grammatical). This is just like the use of *no* above, albeit with a different empirical outcome. The examples that Lasnik uses to make this argument were constructed such that something in the wh-phrase remnant of the sluice must be bound by something that is only present in the full source antecedent (*i.e.*, the binder is not present in the short source). Let's walk through the this first part of the argument.

In order for a pronoun to receive an interpretation such that it covaries with, for example, a universal quantifier, it must be bound by the quantifier. For example, in (73), *their* can be understood so as to vary with the assignments of the universal quantifier *every child*.

(73) [Every child]_{*i*} likes their_{*i*} parents.

This contrasts with an example like (74), where such an interpretation is unavailable. Such an interpretation is unavailable because *every child* does not c-command *their* and so cannot bind it.

(74) *The teacher of [every child]_{*i*} likes their_{*i*} parents.

Notably, however, bound variable interpretations are possible in contexts where the pronoun is seemingly not bound by the quantifier (at least on the surface), but can reconstruct to a position that is c-commanded by the quantifier. In other words, bound variable interpretations are possible when the pronoun is the head of a dependency whose tail is c-commanded by the quantifier. Such an example is shown in (75).

(75) [Which mannerism of their_{*i*} parents]_{*j*} did [every child]_{*i*} find *t_j* annoying?

In (75), the pronoun *their* is part of a wh-dependency whose tail is c-commanded by the universal quantifier. As such, the pronoun can reconstruct, and the bound variable reading is possible. Now, with that in mind, consider the example in (76) reported by Lasnik (2001).

(76) [Every linguist]_{*i*} met a philosopher who criticized some of his_{*i*} work, but I'm not sure [how much of his_{*i*} work]_{*j*} [~~every linguist]_{*i*} met a philosopher who criticized *t_j*~~.

In this case, the idea is that the full source interpretation of the elided material is required because *his work* must be bound by *every linguist*, and this binding is only possible if *how much of his work* reconstructs

to a position that is c-commanded by *every linguist*. Such a position would not exist if the short source was chosen as the antecedent for the ellipsis site. However, in choosing the full source antecedent for the ellipsis site, while ensuring that *his work* can be c-commanded by *every linguist* and thus properly license the bound reading, we introduce an island violation into the ellipsis site. Moreover, the example is reported as sounding acceptable, and so it is presumed to be grammatical. As such, it would seem that sluicing does repair island violations.

The second part of this argument is the observation that the corresponding example to (76) with the short source made overt doesn't sound particularly acceptable, as (77) shows.

(77) ?? [Every linguist]_i met a philosopher who criticized some of his_i work, but I'm not sure [how much of his_i work]_j the philosopher criticized *t_j*.

The idea here is that if one were still somehow able to assign the short source interpretation to the ellipsis site in (76) despite the independent constraints from the bound reading of the pronoun, one would, all other things being equal, expect the acceptabilities of (76) and (77) to be comparable. Since they are not, this is taken as additional evidence against the idea that island violations in the context of sluicing are only grammatical because of an evasion strategy (and not because sluicing repairs island violations).

However, in support of the evasion strategies views, Barros, Elliott, & Thoms (2014:8–10) offer some counterarguments to these arguments from Lasnik (2001). They first note that, in addition to short source interpretations for the ellipsis site, there are arguably two more evasion strategies that can be employed for the purposes of assigning an antecedent to the ellipsis site that avoids an island violation in the ellipsis site: cleft sources and predicational sources (Barros, Elliott, & Thoms 2014:5–8).

The idea of a cleft source for elided material is that it involves an expletive pronoun followed by some copular verb. For example, a cleft source antecedent for a sluice would be like in (78).

(78) Amara believes the claim that Andi saw someone, and Alyssa wonders who_i ~~it was~~ *t_i*.

Barros, Elliott, & Thoms note how both short sources and cleft sources are possible antecedents for sluiced material in many of the same contexts, but there are certain contexts where it seems that only a cleft source is possible. Setting aside island violations for the moment, this can be seen by making the

continuation overt in an example like the one in (79), where the first part of the example involves a disjunction of propositions (cf. AnderBois 2011:77–80, Barros 2014b:66–91).

(79) Either something's on fire, or Adam's baking a cake, but I don't know which it is.

If one introduces sluicing into an example like (79), as in (80), it seems that only the cleft source is possible as an antecedent. There is no short (much less full) source interpretation for the ellipsis site that would give the example the meaning that it has.

(80) Either something's on fire, or Adam's baking a cake, but I don't know which ~~it is~~.

The second additional evasion strategy that Barros, Elliott, & Thoms (2014) discuss is that of predicational sources. This kind of alternative antecedent for the ellipsis site is very similar to the cleft source type of antecedent. The predicational source also involves a copular verb; however, instead of an expletive subject of the copular verb, the idea is that the subject is an E-type pronoun that covaries with an argument in the first clause of the example. Consider their example in (81) (see also Rawlins 2013, Ott & de Vries 2014, 2016). The idea here is that the elided material must be something like in (81a) and cannot be as in (81b) or (81c), as these would not give the correct meaning of the example.

- (81) John will fight any man, no matter [how tall]_{*i*}
- a. ... [how tall]_{*i*} ~~he is~~ *t_{*i*}*.
 - b. # ... [how tall]_{*i*} John will fight a *t_{*i*}* man.
 - c. # ... [how tall a man]_{*i*} John will fight *t_{*i*}*.

Given these additional types of evasion strategies, Barros, Elliott, & Thoms (2014:8–10) offer counterarguments to the two arguments against the evasion strategies view from Lasnik (2001) discussed above. First, they note that the examples from Lasnik (2001) with *certain* allow for the cleft source interpretation of the ellipsis site. For example, the acceptability (and presumed grammaticality) of an example like (72) could be accounted for in virtue of the fact that the cleft source interpretation for the elided material is possible, as (82) shows.

(82) Amara met no professor who speaks a certain Balkan language, and Amy wanted to know which_{*i*} ~~it was~~ *t_{*i*}*.

As for the second argument from Lasnik (2001) against the evasion strategies view, Barros, Elliott, & Thoms (2014) report acceptability judgments from an informal poll of 17 native-English-speaking linguists. 11 of these 17 people found no difference between examples like (76) with an intended bound variable reading and ellipsis and examples like (77) with an intended bound variable reading and the overt short source in the second clause. While the judgments from these 11 people did vary from acceptable to unacceptable, the point is that their judgments were the same for both examples.⁷³ This raises questions about the second part of Lasnik’s second argument, though it doesn’t yet rebut the first part of the argument—namely, the point that the short source interpretation of the ellipsis site for examples like those in (76) is in principle unavailable because of the independent licensing requirements for the bound variable interpretation of the pronoun, thereby requiring the full source antecedent that contains an island violation.⁷⁴ With respect to this part of the argument, they simply point out that the judgments from those that they consulted do seem somewhat variable.⁷⁵

While there is no discussion of the linking hypothesis between acceptability and grammaticality in Barros, Elliott, & Thoms (2014), now is perhaps a good juncture at which to remind ourselves that, while these two properties often do covary, this is not always the case. To recap, we discussed several cases in Chapter 1 where acceptability and grammaticality are known to not covary. Moreover, we just saw in §3.3 of Chapter 3 several cases where results from experiments that use the 2 × 2 paradigm suggest that certain

⁷³Barros, Elliott, & Thoms (2014) unfortunately do not report how many of these 11 found the two examples to be acceptable and how many found them to be unacceptable. As for the remaining 6 people they consulted, 3 found the example with the ellipsis to be more acceptable, as would be expected under Lasnik’s view, and 3 found the example with the overt short source to be more acceptable, as would not be expected under Lasnik’s view.

⁷⁴That being said, it’s not clear why these examples couldn’t have a short source and the binding of the pronoun just occurs via the mechanism that allows for cross-sentential binding (“telescoping”; see, e.g., Roberts 1989, Poesio & Zucchi 1992). For example, consider the example in (i) under the assumption that every linguist is a man and every philosopher is a woman.

- (i) A: Every linguist always meets a philosopher at some point who criticizes some of his work.
 B: Yeah, and it’s always his semantics work that she criticizes.

In (i), *his* has a co-varying interpretation of the domain that *every linguist* quantifies over. The mechanism that allows for this could also allow the pronoun *his* to be bound by *every linguist* in the example in (77) if the ellipsis site were given a short source interpretation instead.

⁷⁵In addition to offering counterarguments to the arguments from Lasnik (2001), Barros, Elliott, & Thoms (2014:10–30) go on to make several positive arguments of their own in support of the evasion strategies approach to seeming island repair in the context of sluicing, including arguments that the types of island violations that Merchant (1999, 2001) thought did exhibit genuine island repair do not, in fact, exhibit genuine island repair and arguments that, when all three evasion strategies are prevented, the result is unacceptability (and thus also presumably ungrammaticality) of the relevant examples. Some of these arguments are discussed in a bit more detail below in §4.3.

island-violating examples which were assumed to be grammatical in virtue of being relatively acceptable are arguably ungrammatical. This empirical domain of island violations in the context of sluicing would seem to be a case where similar such experiments could also hopefully help us to adjudicate whether such examples are grammatical, whatever their acceptability statuses might be. With this in mind, let us turn to 8 experiments that were designed to do precisely that.

4.2 The experiments

In this series of 8 experiments, we use the 2×2 paradigm to investigate the status of island violations under sluicing.

4.2.1 Experiment 1

In this first experiment, we investigated the status of subject islands and complex NP islands under sluicing. Recall from above that Merchant (1999, 2001) observed that islands that contain a proposition allow for a short source short interpretation of the ellipsis site. By looking at complex NP islands and subject islands in this experiment, we thus investigate one island type that does readily allow for a short source interpretation (the complex NP island) and one that does not (the subject island). Let's take a look at the considerations that went into designing the materials.

4.2.1.1 Experimental design and materials

The overall experiment consisted of two different island types (subject islands and complex NP islands). This makes for 8 target conditions per participant (4 items per island type because of the 2×2 design). We did our best to design the stimuli in such a manner so as to rule out evasion strategies. Above, we saw that Merchant (1999, 2001) did this by the use of negation with a quantifier like *no*. Here, we opted to make the short source interpretation semantically infelicitous with the use of a negative adverb or adjective, such as in (83).

- (83) Elizabeth reported the false claim that Carly met some celebrity, but Deb doesn't know who_i
~~Elizabeth reported the false claim that Carly met t_i.~~

The idea is that the short source interpretation should be semantically infelicitous in this case because Carly didn't meet a celebrity, as the claim was false. This is shown explicitly in (84).

- (84) # Elizabeth reported the false claim that Carly met some celebrity, but Deb doesn't know who_i
Carly met t_i.

In the case of subject islands, there is no short source interpretation of the ellipsis site that doesn't also contain an island violation. This can be seen in (85).

- (85) # Maddie wrongly thinks that the dress by some designer is worth a lot of money, but Lisa isn't
sure who_i the dress by t_i is worth a lot of money.

Even if one doesn't interpret the ellipsis site as containing the matrix clause that embeds the island, *Maddie wrongly thinks that ...*,⁷⁶ the ellipsis site will still contain an island violation, as (85) shows. This is in contrast to the case of complex NP island violations in the context of sluicing.

Recall, however, that if Barros, Elliott, & Thoms (2014) are correct, another evasion strategy is to posit a cleft source for the ellipsis site. The negative adjective/adverb strategy should, in principle, rule out this evasion strategy as well. For example, consider the complex NP island with a negative adverb and a cleft source shown in (86).

- (86) # Elizabeth reported the false claim that Carly met some celebrity, but Deb doesn't know who_i
~~it was t_i.~~

Since Carly didn't actually meet a celebrity, the interpretation of the ellipsis site as a cleft source is also semantically infelicitous.

⁷⁶In principle, however, interpreting the ellipsis site as not containing the embedding matrix clause should be prevented in this case because of the negative adverb. That is to say, because this thought that Maddie has is wrong (*i.e.*, the dress in question is not worth a lot of money), this interpretation of the ellipsis site should be semantically infelicitous, as the judgment of '# for (85) shows.

However, even though the the negative adjective/adverb is not needed in this case of subject islands to rule out the short source interpretation of the elided material, we still included it for the subject stimuli for two reasons: (i) to ensure the examples across island types were similar; and (ii) to rule out other evasion strategies, such as the cleft source interpretation (see below).

With these considerations in mind, we designed minimal quartets for both island types for this experiment. An example minimal quartet for the 2×2 paradigm for complex NP islands in the context of sluicing is given in (87) and an example minimal quartet for the 2×2 paradigm for subject islands in the context of sluicing is given in (88).⁷⁷

- (87) a. Someone mistakenly claimed that Carly met Oprah, but Deb doesn't know who_i ~~*t_i*~~ mistakenly claimed that Carly met Oprah.
- b. Elizabeth mistakenly claimed that Carly met some celebrity, but Deb doesn't know who_i ~~Elizabeth mistakenly claimed that Carly met *t_i*~~.
- c. Someone reported the false claim that Carly met Oprah, but Deb doesn't know who_i ~~*t_i*~~ reported the false claim that Carly met Oprah.
- d. Elizabeth reported the false claim that Carly met some celebrity, but Deb doesn't know who_i ~~Elizabeth reported the false claim that Carly met *t_i*~~.
- (88) a. Someone wrongly thinks that the designer is worth a lot of money, but Lisa isn't sure who_i ~~*t_i*~~ wrongly thinks that the designer is worth a lot of money.
- b. Maddie wrongly thinks that some designer is worth a lot of money, but Lisa isn't sure who_i ~~Maddie wrongly thinks that *t_i* is worth a lot of money~~.
- c. Someone wrongly thinks that the dress by the designer is worth a lot of money, but Lisa isn't sure who_i ~~*t_i*~~ wrongly thinks that the dress by the designer is worth a lot of money.
- d. Maddie wrongly thinks that the dress by some designer is worth a lot of money, but Lisa isn't sure who_i ~~Maddie wrongly thinks that the dress by *t_i* is worth a lot of money~~.

The examples of interest are (87d) and (88d). Both examples have a wh-dependency headed by *who* that spans an island; moreover, the island that each wh-dependency spans is contained in the ellipsis site. As we saw above in §3.2.2, in order to create a minimal quartet for such a structure, we have to change the

⁷⁷For a full list of the materials for this experiment as well as the rest of the experiments reported in this chapter, see Appendix B.

wh-dependency from a long one to a short one (as in (87c) and (88c)), replace the island with a non-island (as in (87b) and (88b)), or both (as in (87a) and (88a)).

The predictions of such an experiment should be relatively straightforward, given what we discussed above in §3.2.2. Specifically, if island violations in the context of sluicing are ungrammatical, we would expect to see a significant interaction effect between structure and dependency length. On the other hand, if island violations in the context of sluicing are grammatical, we would expect to see no interaction effect. Both predictions are plotted in Figure 4.1.

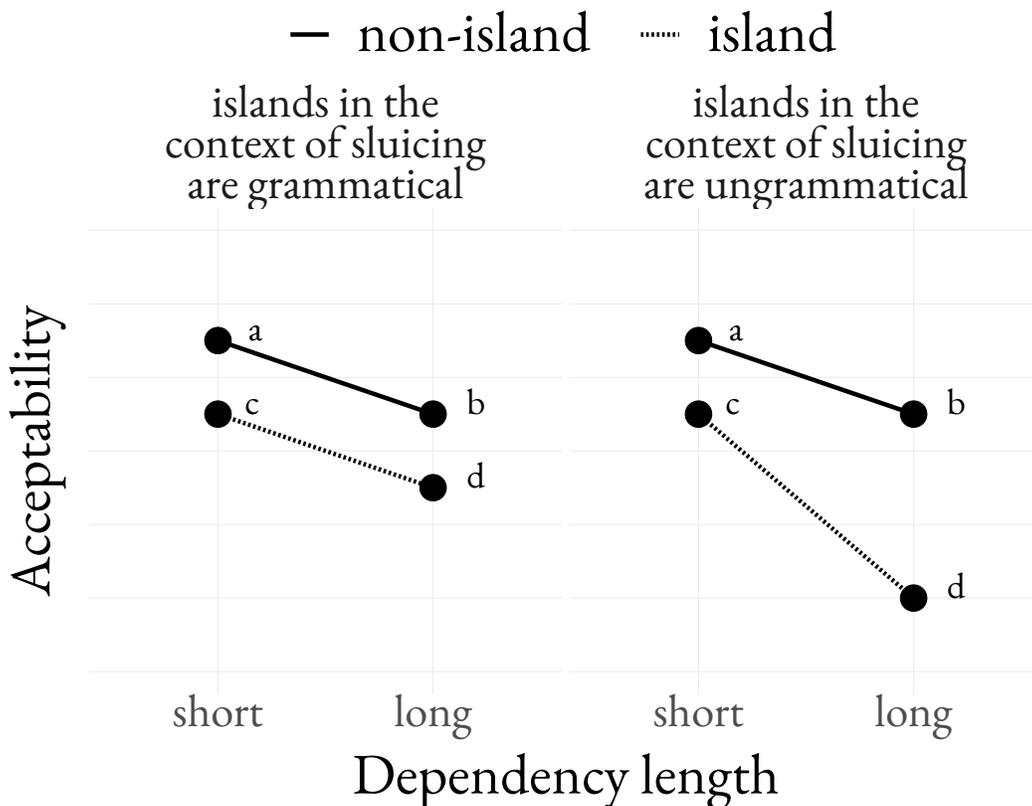


Figure 4.1: Predictions for island violations in the context of sluicing 2×2 experiments, with the left panel showing what we would expect if (87d) and (88d) are grammatical, and the right panel showing what we would expect if they are not

4.2.1.2 Methods

We used a Likert scale judgment task (with a scale from 1 to 7), and we elicited 6 judgments per condition per participant, for a total of 48 target items per participant, as there are 4 conditions per island and 2

island types in this experiment. While many previous studies that use the 2×2 paradigm to investigate island effects just elicit 2 judgments per condition per participant, we decided to elicit more judgments because we were concerned that the island violation effect size would be smaller in the context of sluicing. Moreover, in experiments where a sample of participants respond to a sample of stimuli (*i.e.*, most psychology experiments), statistical power (the probability of rejecting the null hypothesis when the alternative hypothesis is true) can be mathematically shown to plateau as the number of participants in the sample goes to infinity but the number of items is held constant. For example, in a fully-crossed experimental design, if the effect size of the effect under investigation is 0.2, the maximum attainable power with 4 stimuli is less than 0.1. That is to say, no matter how many participants you have in a fully-crossed design, if you only have 4 experimental items, you will only ever have, at best, less than a 10% chance of rejecting the null hypothesis when the alternative hypothesis is true. With an effect size of 0.5 and 4 stimuli, the maximum attainable power is 0.2. And with an effect size of 0.8 and 4 stimuli, the maximum attainable power is just below 0.5 (see Westfall, Kenny, & Judd 2014:2027).

While the effect sizes of syntactic phenomena are generally quite large and can usually be detected with a single judgment from a few participants (cf. Sprouse & Almeida 2017), we wanted to ensure that we would have a high powered study so that we could detect an effect of ungrammaticality if such an effect genuinely exists. Unfortunately, none of the different types of study designs investigated in Westfall, Kenny, & Judd (2014) directly map onto the present design, so it's not clear what exactly the best number of stimuli to have is. Moreover, to the best of our knowledge at the time of the experimental design for this study, there weren't any comparable studies that we could use as a basis for estimating an effect size that we could then use to conduct a power analysis. As such, we decided to triple the number of judgments that we elicited from each condition per participant from the standard 2 to 6. We decided to treat this first experiment as a pilot experiment, with the hope that we could use the results to inform the design decisions of subsequent experiments.

Given 6 judgments per condition per participant, this made for 48 target items per participant, and we included filler items at a 1:1 filler to target ratio, for a total of 96 items that each participant had to judge. Of the 48 target items, 36 are grammatical and thus expected to be relatively acceptable. The remaining 12

target items are the items whose grammaticality status is under investigation. We did our best to balance grammaticality statuses across target and filler items, as well as balance the range of expected acceptability statuses. 36 of the 48 filler items were designed to be ungrammatical, with half of these 36 designed in such a way that we expected them to be relatively unacceptable, and the other half designed in such a way that we expected them to be somewhat more acceptable, though still by no means outright acceptable, as they are ungrammatical examples. The remaining 12 filler items were grammatical filler items that we expected to be acceptable. Overall, the 96 items consisted of 48 grammatical items, 36 ungrammatical items, and 12 items whose grammaticality status is under investigation.

We used a Latin square design to construct 4 different lists from the minimal quartets so that the participants weren't judging examples from the same quartet, as is standardly done in these sorts of experiments. The target and filler items that were assigned to each list were organized in a pseudorandom fashion for the purposes of presenting the examples to the participants. The constraints that were placed on the pseudorandomization process were (i) that no more than 3 target items occurred in a row; and (ii) that at least 2 of the fillers that we expected to be judged the most unacceptable occurred before any of the (d)-type examples from the minimal quartets so as to avoid potential floor effects. All materials, including the lists in their pseudorandomized orders, can be found in Appendix B.

The experiment was implemented in the PCIBex platform (Zehr & Schwarz 2018) in order to collect judgments from participants online. Participants were recruited using the Amazon Mechanical Turk platform.

4.2.1.3 Participants

We recruited 80 participants to participate in the experiment using Amazon Mechanical Turk. In order to participate in the experiment via Amazon Mechanical Turk, participants were required to have an approval rating greater than or equal to 95% for their other work on Amazon Mechanical Turk, be located in the United States (as determined by IP address), and correctly judge at least 7 out of 10 examples in an English proficiency screener that was constructed to prevent bots and non-native English speakers from submitting the experiment for payment. Participants were given a unique completion code at the end of

the experiment and were paid for their participation based upon the unique completion, allowing us to verify that they did the experiment.

Moreover, in addition to the English proficiency screener, we conducted a brief demographic survey before the acceptability judgment portion of the experiment, where we asked participants if they were native speakers of English. All 80 participants self-reported being native English speakers. We did exclude 5 participants from the analysis because of their performance on the filler items. An exclusion criterion was set before analyzing any of the data. We decided in advance to exclude participants if they rated more than 6 of the filler items in an anomalous way. An anomalous rating was defined as giving a z -score transformed rating more than 2 standard deviations above the mean z -score transformed rating for that item across all participants if it was an ungrammatical item. For the grammatical items, an anomalous rating was defined as giving a z -score transformed rating more than 2 standard deviations below the mean z -score transformed rating for that item across all participants. After removing these 5 participants because they had 7 or more anomalous ratings on the filler items, we are left with 75 participants whose data we analyze immediately below in §4.2.1.4. Lists 1, 2, and 4 had 19 participants each, and list 3 had 18 participants in the final dataset.

4.2.1.4 Results

As is standardly done in these sorts of experiments, raw Likert scale judgments were z -score transformed on a per-participant basis. This was done so as to avoid scale bias. For example, one participant might choose to only use a subset of the 7 point Likert scale, whereas another participant might use the full scale, and another participant still might use a different subset of the Likert scale. Transforming these ratings into z -scores on a per-participant basis gives us individual ratings that are comparable across individuals, whatever part of the scale they used. These z -scores are what we plot and analyze below.

Now, recall that we expect to see a significant interaction effect indicating an island violation just in case sluicing does not repair island violations (*i.e.*, just in case the (d)-type examples are ungrammatical). On the other hand, if it does repair island violations (*i.e.*, if the (d)-type examples are grammatical), we expect to see no significant interaction effect (cf. Figure 4.1). The results from the four conditions for

the complex NP island stimuli are plotted in Figure 4.2, and the results from the four conditions for the subject island stimuli are plotted in Figure 4.3. The differences-in-differences score for the complex NP

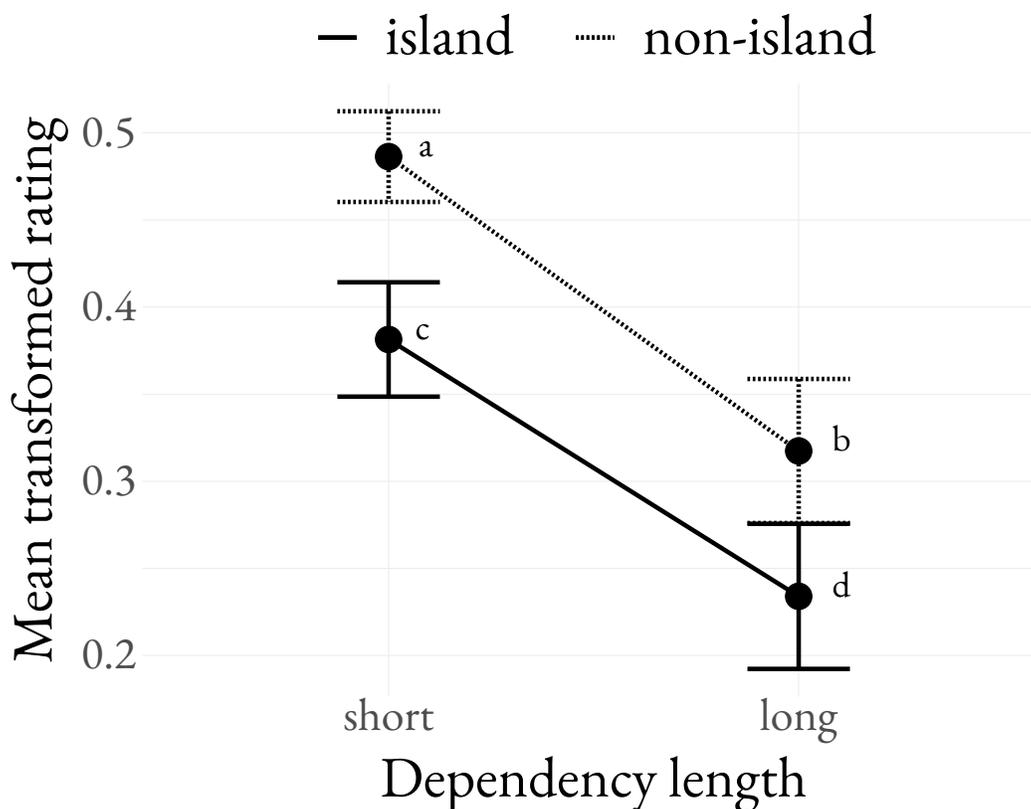


Figure 4.2: Results from experiment 1 for the complex NP island stimuli collapsed across lists, with mean z -score transformed acceptability ratings plotted on the y -axis; error bars indicate one standard error of the mean

island items was -0.021 , and the differences-in-differences score for the subject island items was 0.049 . Neither set of results is trending in the direction that would be expected if the (d)-type examples were ungrammatical. Indeed, in linear mixed-effects models for each island type with the z -score transformed rating as the response variable that included fixed effects for structure, dependency length, and their interaction, as well as random intercepts for participant and item, neither interaction term was significant. Table 4.1 shows the model details for the complex NP island data from experiment 1. And Table 4.2 shows the model details for the subject island data from experiment 1.

The results from experiment 1 for both island types would thus appear to suggest that the (d)-type examples are grammatical. Nonetheless, because we were approaching this first experiment as a pilot

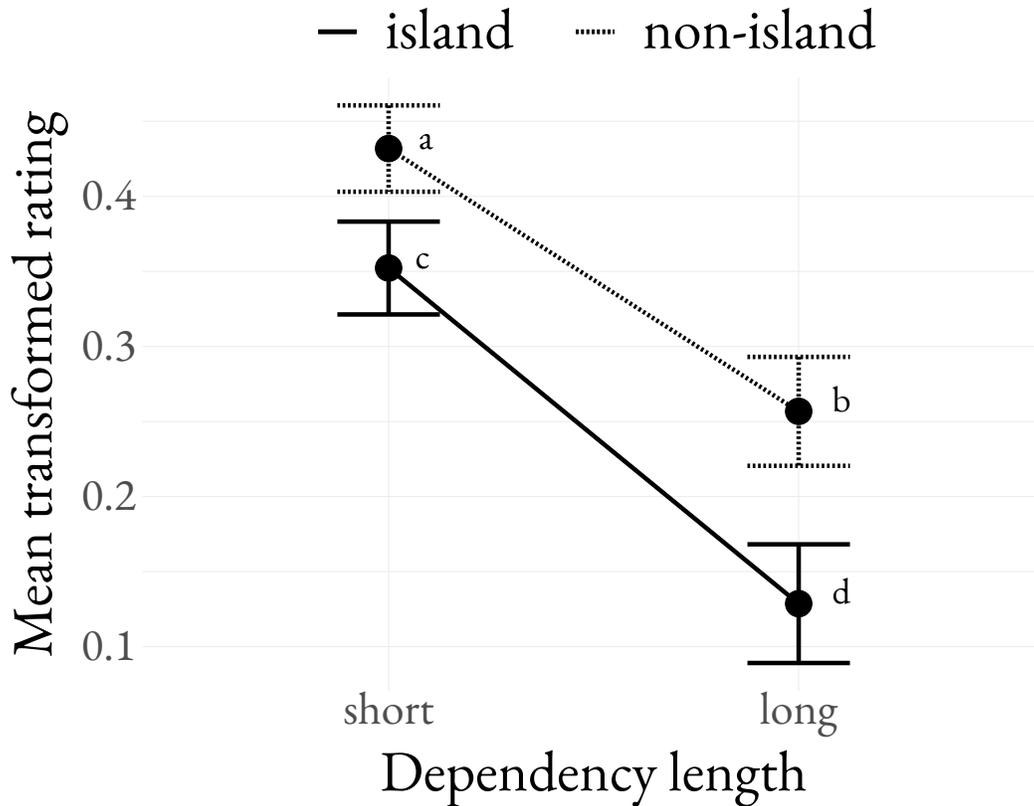


Figure 4.3: Results from experiment 1 for the subject island stimuli collapsed across lists, with mean z -score transformed acceptability ratings plotted on the y -axis; error bars indicate one standard error of the mean

Fixed effect	Estimate	Std. Error	t -value	p -value
Intercept	0.3182	0.0378	8.422	6.39e-14 ***
Structure – island	-0.0848	0.0456	-1.861	0.0660
Dep. Length – short	0.1681	0.0456	3.687	0.0004 ***
Structure \times Dep. Length	-0.0206	0.0645	-0.319	0.7501

Table 4.1: Details of the linear mixed-effects model for the complex NP island data from experiment 1

Fixed effect	Estimate	Std. Error	t -value	p -value
Intercept	0.2569	0.0464	5.522	1.99e-7 ***
Structure – island	-0.1266	0.0597	-2.123	0.0365 *
Dep. Length – short	0.1753	0.0597	2.940	0.0042 **
Structure \times Dep. Length	0.0468	0.0844	0.554	0.5808

Table 4.2: Details of the linear mixed-effects model for the subject island data from experiment 1

experiment, we also decided to explore different subsets of the data. In particular, we chose to elicit 6 judgments per condition per participant as discussed above in §4.2.1.2 to ensure we had a well-powered experiment. Because of this, though, we did also worry that there could be fatigue effects. In particular, because many of the examples appear similar to one another if you’re not paying close attention and because the examples themselves are also rather complicated, we worried that participants might artificially treat the conditions as similar when giving judgments if not paying all that close of attention. To explore this possibility, we plotted average z -score ratings for each island type when only considering the first 64 of 96 items that each participant saw. The complex NP island results from just the first two-thirds of the experiment are plotted in Figure 4.4, and the subject island results from the first two-thirds of the experiment are plotted in Figure 4.5. The differences-in-differences score for the complex NP island items when

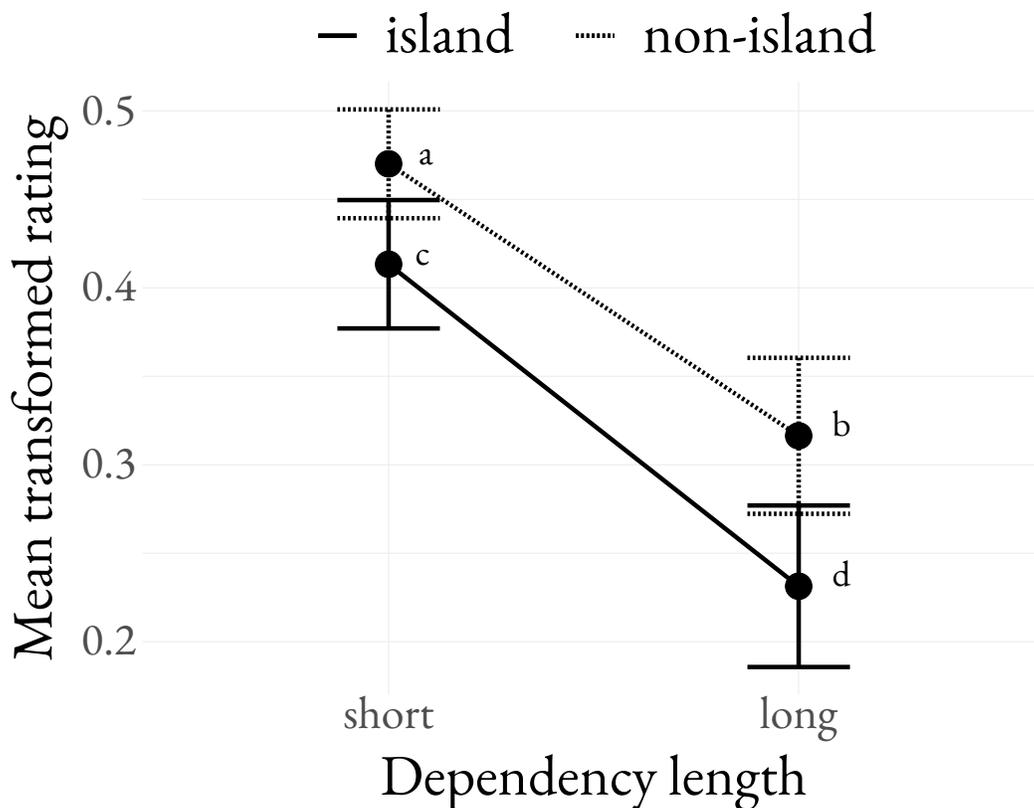


Figure 4.4: Results from the first two-thirds of experiment 1 for the complex NP island stimuli collapsed across lists, with mean z -score transformed acceptability ratings plotted on the y -axis; error bars indicate one standard error of the mean

only looking at data from the first two-thirds of each list in experiment 1 was 0.03, and the differences-in-

differences score for the subject island items when only looking at data from the first two-thirds of each list in experiment 1 was 0.20. We did not explore this subset of the data statistically, since it is a subset of

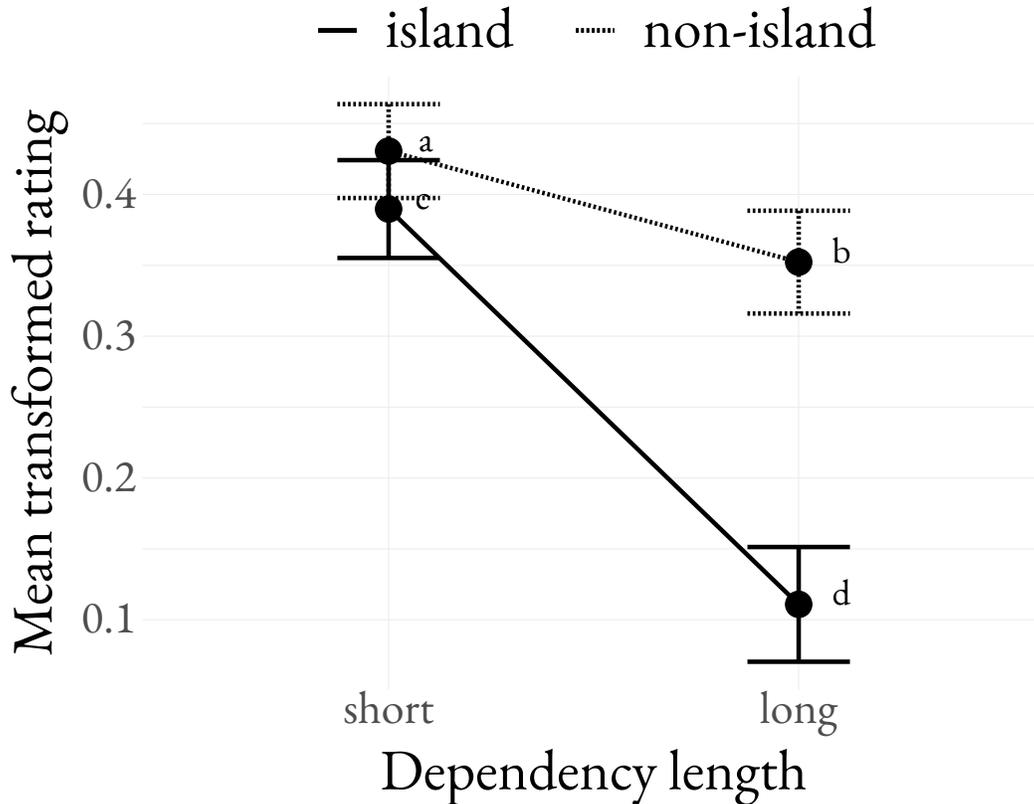


Figure 4.5: Results from the first two-thirds of experiment 1 for the subject island stimuli collapsed across lists, with mean z -score transformed acceptability ratings plotted on the y -axis; error bars indicate one standard error of the mean

the full dataset that we collected. Nonetheless, breaking the data down in this way suggests that, at least for the subject island examples, there may have been a fatigue effect from the length of the experiment.⁷⁸

The differences-in-differences score is somewhat small, but we expected the effect size to be smaller than effect sizes that are standardly reported for island effects because of the nature of the examples. When plotted, the results from the four conditions for the subject island do trend in the expected direction if the (d)-type examples are ungrammatical, as can be seen in Figure 4.5, whatever the size of the differences-in-

⁷⁸In the case of the complex NP island items, the idea would not be that there was no fatigue effect but rather that the short source interpretation of the complex NP island stimuli was not sufficiently ruled out, so we didn't see evidence of an island effect to begin with (cf. §4.2.1.5 below). In other words, there was nothing for the fatigue effect to wipe out in the case of the complex NP island stimuli.

differences score (and again, we don't have well-enough articulated theories to make concrete predictions about effect sizes; cf. the discussion above in §3.3.2.1).

Interestingly, though, breaking the data down in this way did not suggest the same for the complex NP island items. When plotted, as in Figure 4.4, the data does not appear to be trending in the expected direction if the (d)-type examples are ungrammatical. Indeed, the differences-in-differences score is effectively 0.

4.2.1.5 Discussion

To recap, at least on the face of it, the data from experiment 1 is consistent with the idea that sluicing does repair island violations. However, further analysis suggested that, at least for the subject island items, there may have been a fatigue effect that masked an interaction effect which would have indicated an island violation was present and that the island violation was not actually repaired by the ellipsis. If this is true, the effect size of the island was small. Moreover, if this is true, it's also surprising that there was no similar evidence for an interaction effect for the complex NP island items, as one might expect that sluicing either repairs all island types or none (at least *a priori*).⁷⁹

One possible explanation of the difference between subject island items and complex NP island items when only looking at the first two-thirds of the judgments could be as follows. It could be the case that participants were not paying all that close of attention to the meanings of the examples. As noted above in §4.2.1.1, we tried to rule out the short source interpretation for complex NP island items by making the example semantically anomalous if one did assign the short source interpretation to the sentence. We also noted that there is no short source interpretation available for the ellipsis site of the subject island items that doesn't also contain an island violation. As such, it could be the case that we didn't see a complex NP island effect in the first two-thirds of the judgments like we did for the subject island items because participants were disregarding the semantically anomalous nature of the short source interpretation of the ellipsis site for the complex NP island items and just giving it that short source antecedent anyway. If

⁷⁹By "all" island types, I mean all of the island types that arise for the same reason (*e.g.*, because of a Subjacency violation). There is no reason to expect *a priori* that all things that are called island effects should behave the same under sluicing if these things are ultimately heterogeneous in nature (cf. §3.1.1).

this is indeed what was going on, then we wouldn't expect to see an island effect because there is no island violation in the ellipsis site.

Our next experiment was designed to investigate these possibilities.

4.2.2 Experiment 2

In this experiment, we set out to investigate the possibility that the lack of interaction effects from the previous experiment was due to fatigue effects and/or insufficient attention paid to the meanings of the examples such that the short source interpretation for the ellipsis site was not sufficiently ruled out. In §4.2.2.1 and §4.2.2.2, we describe how we designed the experiment to try to address these possibilities.

4.2.2.1 Experimental design and materials

Like in experiment 1, we investigated complex NP islands and subject islands in the context of sluicing, making for 8 target conditions per participant (4 target items per island type because of the 2×2 design). In order to address the possibility that participants weren't paying close enough attention to the meaning of the examples, we decided to include basic yes/no comprehension questions after some of the experimental items so as to encourage people to pay attention to the meaning. For example, one of the (b)-type examples from a complex NP island minimal quartet is given in (89).

- (89) Someone from Hawaii reported the false claim that Carly met Oprah, and Deb will want to ask who.

After a participant saw this item, they were asked the question in (90).

- (90) Did Carly meet Oprah?

The answer to this question is no. Questions were balanced such that half of the expected answers were yes and half were no.

As one might have noticed, in this version of the experiment, we also added prepositional modifiers to the indefinite phrases (*i.e.*, instead of *someone* we now have *someone from Hawaii*). This change was made independently of the concerns that we discussed after seeing the results from the first experiment.

These modifiers were added so as to facilitate the wide scope reading of the indefinite (cf. the discussion in §4.1) and to make the examples sound more natural. An example minimal quartet for the complex NP island items for this experiment is given in (91), and an example minimal quartet for the subject island items is given in (92).

- (91)
- a. Someone from Hawaii mistakenly claimed that Carly met Oprah, and Deb will want to ask who; ~~t_i mistakenly claimed that Carly met Oprah.~~
 - b. Elizabeth mistakenly claimed that Carly met some celebrity from Hawaii, and Deb will want to ask who; ~~Elizabeth mistakenly claimed that Carly met t_i .~~
 - c. Someone from Hawaii reported the false claim that Carly met Oprah, and Deb will want to ask who; ~~t_i reported the false claim that Carly met Oprah.~~
 - d. Elizabeth reported the false claim that Carly met some celebrity from Hawaii, and Deb will want to ask who; ~~Elizabeth reported the false claim that Carly met t_i .~~
- (92)
- a. Someone from Sweden wrongly thinks that the designer is worth a lot of money, but Lisa isn't sure who; ~~t_i wrongly thinks that the designer is worth a lot of money.~~
 - b. Maddie wrongly thinks that some designer from Sweden is worth a lot of money, but Lisa isn't sure who; ~~Maddie wrongly thinks that t_i is worth a lot of money.~~
 - c. Someone from Sweden wrongly thinks that the dress by the designer is worth a lot of money, but Lisa isn't sure who; ~~t_i wrongly thinks that the dress by the designer is worth a lot of money.~~
 - d. Maddie wrongly thinks that the dress by some designer from Sweden is worth a lot of money, but Lisa isn't sure who; ~~Maddie wrongly thinks that the dress by t_i is worth a lot of money.~~

Again, the examples of interest are (91d) and (92d). Both examples have a wh-dependency headed by *who* that spans an island; moreover, the island that each wh-dependency spans is contained in the ellipsis site. (91c) and (92c) change the wh-dependency from a long one to a short one, (91b) and (92b) replace the island with a non-island, and (91a) and (92a) do both of these things. Like with experiment 1, the

predictions are that we would expect to see a significant interaction effect between structure and dependency length if the (d)-type examples are ungrammatical. On the other hand, if the (d)-type examples are grammatical, we would expect to see no interaction effect (cf. Figure 4.1).

4.2.2.2 Methods

In this experiment, we also used a Likert scale judgment task with the scale ranging from 1 to 7. However, instead of collecting 6 judgments per condition per participant, we only collected 4. This was done to mitigate the possibility of fatigue effects that might lead the stimuli from the different conditions to be treated the same due to their similarity and due to the overall length of the experiment, as discussed above in §4.2.1.4 and §4.2.1.5. This gives a total of 32 target items per participant, as there are 4 conditions per island and 2 island types in this experiment. We included filler items at a 1:1 filler to target ratio, for a total of 64 items that each participant had to judge. The filler items were designed in the same manner described above for experiment 1 in §4.2.1.2 in order to try to balance both grammaticality and acceptability statuses across target and filler items. Moreover, 25% of all items (both target and filler) were followed by a yes/no comprehension question as discussed immediately above, in order to encourage paying attention to the meanings of the examples.

Like in experiment 1, we used a Latin square design to construct 4 different lists from the minimal quartets. The target and filler items that were assigned to each list were organized in a pseudorandom order for the purposes of presenting them to the participants to be judged. The pseudorandomization process was subject to the same two constraints from above plus a new one because of the comprehension questions. The three constraints were (i) that no more than 3 target items occurred in a row; (ii) that at least 2 of the fillers that we expected to be judged the most unacceptable occurred before any of the (d)-type examples from the minimal quartets to as to avoid potential floor effects; and (iii) that there were no more than 6 trials in a row without a comprehension question and no more than 3 trials in a row with a comprehension question. All materials, including these lists in pseudorandomized order with the accompanying comprehension questions, can be found in Appendix B.

This experiment was also implemented using the PCIBex platform (Zehr & Schwarz 2018).

4.2.2.3 Participants

Because we reduced the number of items that each participant was judging, we decided to increase the number of participants that we collected data from 80 to 100 to try to achieve a well-powered study. 100 participants were recruited from Amazon Mechanical Turk, subject to the same restrictions discussed above for experiment 1 in §4.2.1.3. In addition to those restrictions, participants were also prevented from seeing the experiment on Amazon Mechanical Turk if they had participated in the first experiment. This was done by adding the Amazon Mechanical Turk Worker IDs of the participants who participated in experiment 1 to a block list for experiment 2. From the 100 sets of judgments that we collected, data from 1 participant was lost due to a technical error, leaving data from 99 participants. Of these 99 participants, 1 self-reported not being a native English speaker in the brief demographic survey at the start of the experiment (despite passing the English proficiency screener). Of the 98 participants who self-reported being native speakers, 2 were excluded for giving 7 or more anomalous ratings on the filler items, with anomalous ratings being defined in exactly the same way as described above in §4.2.1.3. This leaves 96 participants whose data we analyze below. These 96 participants ended up being evenly distributed across all 4 lists, with 24 in each.

4.2.2.4 Results

All ratings were *z*-score transformed on a per-participant basis like we did for experiment 1. Again, recall that we expect to see a significant interaction effect indicating an island violation just in case sluicing does not repair island violations (*i.e.*, just in case the (d)-type examples are ungrammatical). On the other hand, if it does repair island violations (*i.e.*, if the (d)-type examples are grammatical), we expect to see no significant interaction effect (cf. Figure 4.1). The results from the four conditions for the complex NP island stimuli are plotted in Figure 4.6, and the results from the four conditions for the subject island stimuli are plotted in Figure 4.7. The differences-in-differences score for the complex NP island items was 0.008, and the differences-in-differences score for the subject island items was 0.176. Interestingly, the results from the complex NP island items do not appear to exhibit an interaction effect, which is predicted if the (d)-type examples are grammatical; however, the results from the subject island items are at least

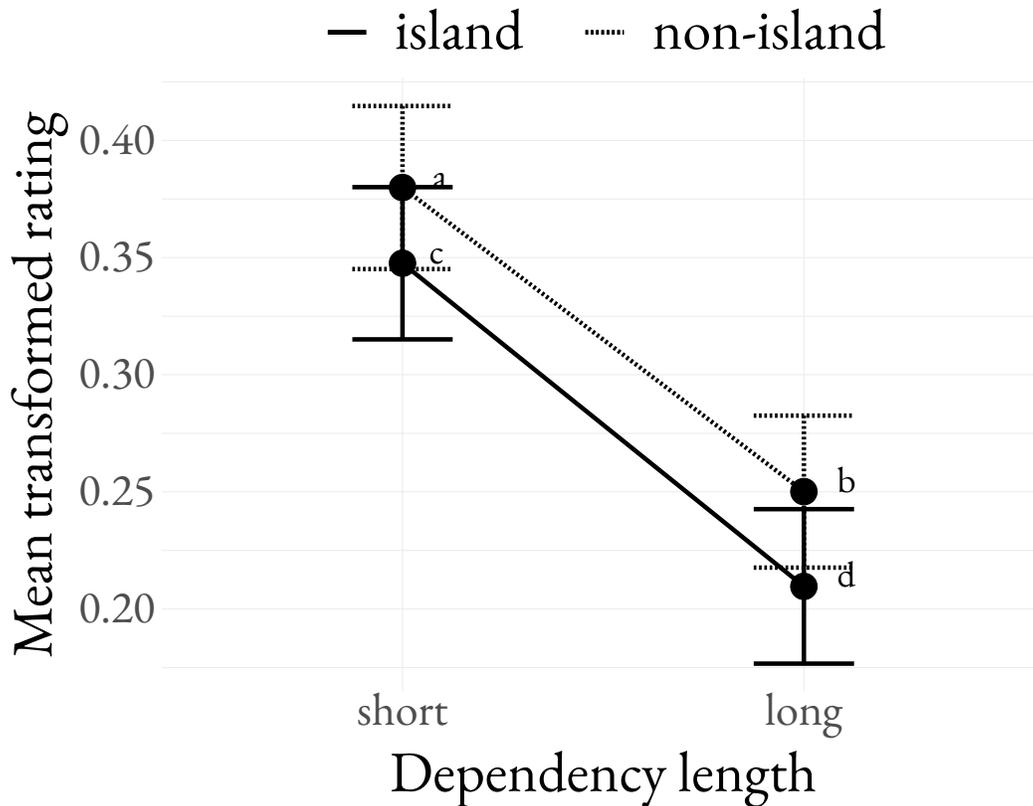


Figure 4.6: Results from experiment 2 for the complex NP island stimuli collapsed across lists, with mean z -score transformed acceptability ratings plotted on the y -axis; error bars indicate one standard error of the mean

trending in the direction of exhibiting an interaction effect, which is predicted if the (d)-type examples are ungrammatical. To confirm these trends, we fit linear mixed-effects models for each island type, just like we did above for experiment 1 (cf. §4.2.1.4). The z -score transformed rating was the response variable in the model, and each model included fixed effects for structure, dependency length, and their interaction, as well as random intercepts for participant and item. Table 4.3 shows the model details for the complex NP island data from experiment 2, and Table 4.4 shows the model details for the subject island data from experiment 2. As can be seen, the interaction effect is significant in the model for the subject island items but not the model for the complex NP island items, confirming what the graphs appeared to show. In other words, taken at face value, it would appear that the (d)-type items in the complex NP island minimal quartet are grammatical, whereas the (d)-type items in the subject island minimal quartet are ungrammatical.

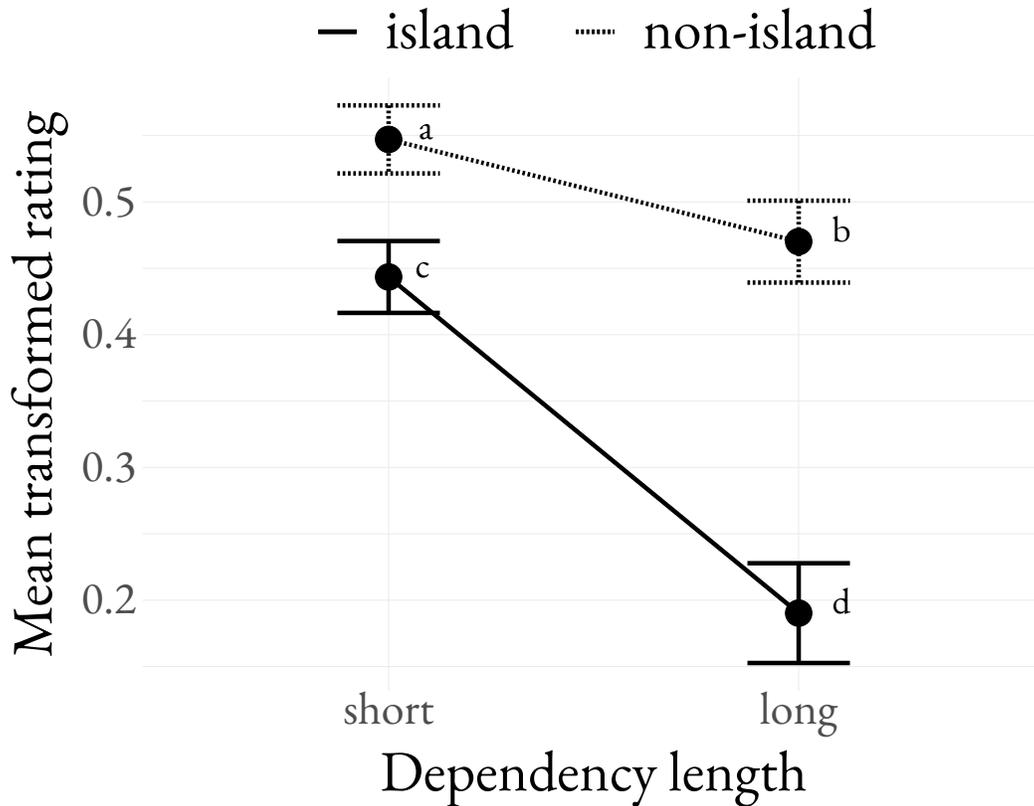


Figure 4.7: Results from experiment 2 for the subject island stimuli collapsed across lists, with mean z -score transformed acceptability ratings plotted on the y -axis; error bars indicate one standard error of the mean

Fixed effect	Estimate	Std. Error	t -value	p -value
Intercept	0.2501	0.0452	5.535	3.93e-7 ***
Structure – island	-0.0405	0.0587	-0.690	0.4932
Dep. Length – short	0.1298	0.0587	2.212	0.0309 *
Structure \times Dep. Length	0.0081	0.0830	0.098	0.9222

Table 4.3: Details of the linear mixed-effects model for the complex NP island data from experiment 2

Fixed effect	Estimate	Std. Error	t -value	p -value
Intercept	0.4701	0.0375	12.527	<2e-16 ***
Structure – island	-0.2799	0.0507	-5.516	8.24e-7 ***
Dep. Length – short	0.0770	0.0507	1.518	0.1344
Structure \times Dep. Length	0.1762	0.0718	2.456	0.0170 *

Table 4.4: Details of the linear mixed-effects model for the subject island data from experiment 2

4.2.2.5 Discussion

Taken at face value, the results from experiment 2 suggest that sluicing repairs complex NP islands but not subject islands. If correct, this would force us to give up the assumption that sluicing should either repair all island types or none. However, there are alternative explanations that might also be consistent with these results.

First, one might worry that because the effect size of the island violation for subject islands in the context of sluicing is small, it doesn't constitute genuine evidence of an island violation. If that were true, then it would be the case that sluicing repairs both (and presumably all) types of island violations. Indeed, exactly this kind of concern ultimately led Kush, Lohndal, & Sprouse (2018) to discount small but significant interaction effects for embedded question islands as being indicative of genuine island violations in their Norwegian data. The case of their results was discussed above in §3.3.2.1. For reasons stated in that part of Chapter 3, I don't find this kind of dismissal of the significant interaction effect to be particularly compelling, and such reasoning actually undercuts the whole point of this kind of experimental design to begin with (see especially fn. 67 in §3.3.2.1). But even setting aside this worry, there are still alternative ways one might account for the significant subject island result and the non-significant complex NP island result.

One further possibility is that even though we did our best to control for the short source interpretation of the ellipsis site in the case of the complex NP islands with the use of a negative adjective/adverb and, in this second experiment, the addition of occasional comprehension questions to encourage people to pay attention to the meanings of the examples, participants still just assigned the short source interpretation to the ellipsis site and the semantic anomaly that results from doing so was too complicated or subtle to be reflected in the participants' judgments. If this were the case (*i.e.*, if participants were still not particularly sensitive to the semantic anomaly that arises because of the negative adjective/adverb when using an evasion strategy), then we might also expect that participants would have occasionally interpreted the ellipsis site as a cleft source, in addition to a short source. This could explain why we saw a small but significant interaction effect in the case of the subject islands but no interaction effect in the case of the complex NP islands. That is to say, the short source interpretation for the subject island does not actually

evade the island, as we discussed above in §4.2.1.1. For the subject islands, only the cleft source strategy evades the island. But for the complex NP islands, both the short source interpretation and the cleft source interpretation of the ellipsis site evade the island violation. So, if participants occasionally used an evasion strategy despite the semantic anomaly, they would have had access to more evasion strategies for the complex NP island items than for the subject island items. If this is correct, then it would suggest that were we better able to rule out the evasion strategies in the case of the complex NP island items, we would see evidence of an island violation by way of a significant interaction effect. This would also allow us to maintain the assumption that sluicing either repairs all island types or none.

However, yet another possibility is that the significant interaction effect we see for the subject island items is actually driven by properties of the first clause of the (d)-type examples and not driven by properties of the ellipsis site. In particular, it could be the case that the significant interaction effect is driven by the fact that the indefinite must take scope outside of the island in the (d)-type examples in order to achieve scope parallelism. Indeed, this is exactly the kind of concern that motivates the argument from Lasnik (2001) discussed above in §4.1. To reiterate, Lasnik noted that adding *certain* to the indefinite phrase helped to facilitate the wide scope reading. In this second experiment, we did add prepositional modifiers to the indefinites in order to make them more specific (and to make the examples sound more natural), but we did not add *certain*. Thus, it could be that the significant interaction effect for the subject island items is driven solely by this inability of the indefinite to scope outside of the island in the first clause and has nothing to do with the properties of the ellipsis site. If this were the case, however, one might have expected to also see a similar small but significant interaction effect in the case of the complex NP island items, too, unless there is some independent property about those examples that allows for easier wide scope readings of the indefinite in the (d)-type examples than in the case of the (d)-type examples in the subject island minimal quartets.

At any rate, in the rest of the experiments reported in this chapter, we investigate this possibility that the small but significant interaction effect for the subject island items was driven by the inability of the indefinite to take wide scope outside of the subject island in the first clause. As such, we set aside the complex NP islands for the time being, with the hope that we can return to investigating this and other

island types in future work.

4.2.3 Experiments 3a and 3b

In this set of two experiments, we did two things to try to address the possibility that the small but significant interaction effect observed in the previous experiment for the subject island items was driven by the inability of the indefinite phrase in the first clause to take wide scope outside of the island in the (d)-type sentences. In the first experiment, 3a, we replaced *some* with *certain*, following Lasnik (2001). In the second experiment of this set, 3b, instead of crossing wh-dependency length (short vs. long) with structure (non-island vs. island), we crossed pronoun type in the second clause (definite vs. wh) with structure (non-island vs. island). The details of the experimental materials and the rationale behind both of these experiments are described in more detail below in §4.2.3.1.

4.2.3.1 Experimental design and materials

The design of the materials for experiment 3a is quite straightforward. We effectively just replaced *some* in the materials from experiment 2 ((92) above) with *certain*. An example minimal quartet can be seen in (93).

- (93)
- a. A certain person from Sweden wrongly thinks that the designer is worth a lot of money, but nobody could determine who; ~~t_i wrongly thinks that the designer is worth a lot of money.~~
 - b. Miles wrongly thinks that a certain designer from Sweden is worth a lot of money, but nobody could determine who; Miles wrongly thinks that t_i is worth a lot of money.
 - c. A certain person from Sweden wrongly thinks that the dress by the designer is worth a lot of money, but nobody could determine who; ~~t_i wrongly thinks that the dress by the designer is worth a lot of money.~~
 - d. Miles wrongly thinks that the dress by a certain designer from Sweden is worth a lot of money, but nobody could determine who; Miles wrongly thinks that the dress by t_i is

worth a lot of money.

The prediction here is thus also effectively the same. That is to say, we would expect to see a significant interaction effect if the (d)-type examples are ungrammatical, and we would expect to see no significant interaction effect if they are not. Moreover, given that we've used *certain* instead of *some*, we've hopefully facilitated the wide scope reading of the indefinite outside of the island in the first clause of the (d)-type examples. As such, if we do see a significant interaction effect, we can be somewhat more confident that it is driven by the properties of the ellipsis site and not the properties of the first clause.

Nonetheless, just changing from *some* to *certain* doesn't entirely rule out this possibility, which is the reason for experiment 3b. Recall from the subtraction logic of the minimal quartet design discussed above in §3.2.2 (see especially fn. 55) that confounding interactions between independent properties of the examples will subtract out so long as they are present in an appropriate two of the four examples in the paradigm. In this case, however, even though we've added *certain* to the examples, there is no other example in the minimal quartet design where an indefinite phrase has to take scope outside of an island in the first clause other than in the (d)-type example. In other words, even though *certain* might help facilitate the wide scope reading in the first clause, there could still be a degradation in acceptability because of this reading, and this degradation will not be subtracted out by one of the other examples in the analysis because there is no other example in the quartet where the indefinite is contained inside of the island structure in the first clause. Because of this, we designed experiment 3b as well.

In experiment 3b, we crossed crossed pronoun type in the second clause (definite vs. wh) with structure (non-island vs. island). An example minimal quartet is given in (94).

- (94)
- a. Miles wrongly thinks that a certain designer from Sweden is worth a lot of money, but nobody could determine her name.
 - b. Miles wrongly thinks that a certain designer from Sweden is worth a lot of money, but nobody could determine who_i Miles wrongly thinks that t_i is worth a lot of money.
 - c. Miles wrongly thinks that the dress by a certain designer from Sweden is worth a lot of money, but nobody could determine her name.

- d. Miles wrongly thinks that the dress by a certain designer from Sweden is worth a lot of money, but nobody could determine who; Miles wrongly thinks that the dress by t_i is worth a lot of money.

As can be seen in the (94a) and (94c) examples in the paradigm, the second clause contains a definite pronoun like *her*, instead of the wh-pronoun, *who*. These two examples with the definite pronoun in the paradigm don't actually contain any ellipsis, but they do give us a way to control for the degradation in acceptability that might arise from the indefinite having to take scope outside of the island. That is to say, we now have an example in the paradigm in addition to the (d)-type example where the indefinite phrase must take scope over the island, so this will subtract out in the subtraction logic. In particular, in order to license the anaphoric reading of *her name* in the (c)-type example, the indefinite phrase in the first clause of the example must take scope over the matrix clause (and thus outside of the island), just like it must in the (d)-type example in order to achieve scope parallelism with the sluice in the second clause of that example. Thus, in this experiment, we would also expect to see a significant interaction effect if the (d)-type examples are ungrammatical, and we would expect to see no significant interaction effect if they are not.

Finally, like in experiment 2, in both experiments 3a and 3b, we included some basic yes/no comprehension questions to encourage people to pay attention to the meanings of the examples.

4.2.3.2 Methods

We continued to collect just 4 judgments for each condition from each participant in both experiments 3a and 3b, using a Likert scale acceptability judgment task with a scale from 1 to 7. There were thus 16 target items per participant. We used the same fillers that we used in experiment 2 in these two experiments. This means we included fillers at a 2:1 filler to target ratio, because we only have 16 target items in these experiments (since we're only looking at one island type).⁸⁰ As was the case for experiment 2, 25% of all items (both target and filler) were followed by a yes/no comprehension question. We constructed 4

⁸⁰Using the exact same fillers as the previous experiment was an accidental oversight. In particular, this means that these two experiment did not have as balanced of a distribution of grammaticality statuses and expected acceptability statuses as the previous two experiments did. In particular, this means that there were more ungrammatical items than grammatical items in these two experiments. This will be discussed more below in §4.2.3.5.

different lists of items using a Latin square design. The order of the items in each list was pseudorandomized subject to the same constraints for experiment 2 discussed above in §4.2.2.2. As always, all materials, including the lists in their pseudorandomized order, can be found in Appendix B. Both of these experiments were also implemented using the PCIBex platform (Zehr & Schwarz 2018).

4.2.3.3 Participants

Like before, participants were recruited via Amazon Mechanical Turk and paid for their participation. Also like before, participants were required to meet the following four conditions in order to be able to participate in the experiment: (i) have a 95% approval rating or greater for their past work on Amazon Mechanical Turk, (ii) be located in the United States (according to IP address), (iii) pass the English proficiency screener, and (iv) not have participated in one of our past sluicing experiments. (The data from experiment 3a was collected first, and then participants who participated in experiments 1, 2, and 3a were precluded from participating in experiment 3b in the manner described above for experiment 2 in §4.2.2.3).

Moreover, now that we had an idea of the rough effect size of the interaction effect that we were trying to detect, we conducted a power analysis in order to determine how many participants to recruit for each experiment. The power analysis was conducted using the R package *simr* (cf. Green & MacLeod 2016). A standard practice in psychology is to aim to achieve at least 80% power in a given study, in order to have an 80% chance of rejecting the null hypothesis just in case the null hypothesis is false. The power analysis that we conducted based on our results from the previous study showed that if we collected data from 200 participants, we would achieve 82% power. We therefore recruited 200 participants for each of experiments 3a and 3b.

For experiment 3a, all 200 participants that we collected data from self-reported being native English speakers in the brief demographic survey at the start of the experiment. Moreover, like before, we excluded participants if they rated 7 or more of the fillers in an anomalous way. This led to excluding data from 5 participants, so we analyze the data from 195 participants below. After these exclusions, there were 49 participants in lists 1, 2, and 4, and there were 48 participants in list 3.

For experiment 3b, 198 of the 200 participants that we collected data from self-reported being native English speakers in the brief demographic survey at the start of the experiment. Of these 198 participants, 10 participants rated 7 or more of the fillers in an anomalous manner, leaving data from 188 participants in the analysis discussed below. There were 48 participants in list 1, 47 in lists 2 and 3, and 46 in list 4.

4.2.3.4 Results

As before, all ratings were z -score transformed on a per-participant basis. Moreover, recall that we expect to see a significant interaction effect in both experiments 3a and 3b just in case sluicing does not repair island violations (*i.e.*, just in case the (d)-type examples are ungrammatical). The results from the four target conditions from experiment 3a are plotted in Figure 4.8, and the results from the four target conditions from experiment 3b are plotted in Figure 4.9. The differences-in-differences score from experiment

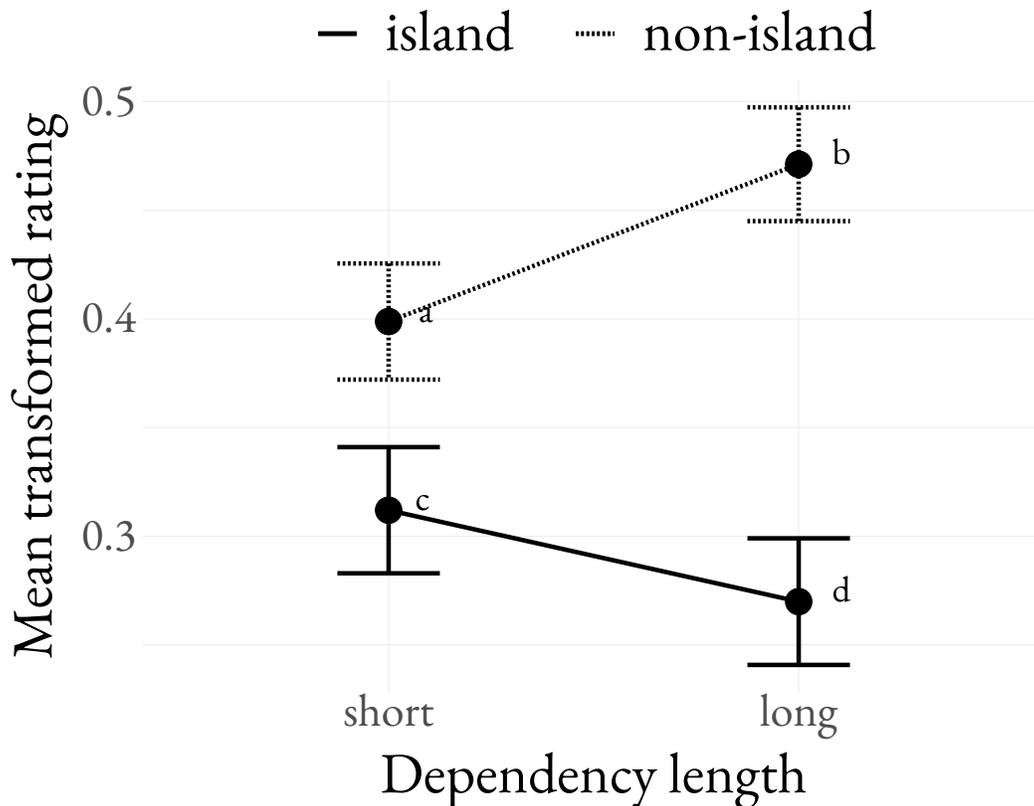


Figure 4.8: Results from the four target conditions from experiment 3a collapsed across lists, with mean z -score transformed acceptability ratings plotted on the y -axis; error bars indicate one standard error of the mean

3a was 0.11, and the differences-in-differences from the experiment 3b items was 0.058. Graphically, at least, it appears as if the results from both experiments are trending in the expected direction if the (d)-type examples are ungrammatical, but the differences-in-differences scores are quite small (as the y -axis in both of the figures also indicates). In particular, the differences-in-differences score from experiment 3b is quite close to 0. Moreover, it is interesting to note that in experiment 3a, the (c)-type examples (and, to a lesser extent, the (a)-type examples) seem to have received worse acceptability ratings than they did in experiments 1 and 2. We also see lower acceptability of the (c)-type examples in experiment 3b than one might naively expect, though these are one of the two conditions in the paradigm for this experiment that involved the definite pronoun and did not involve sluicing, so we don't have a point of comparison for these (c)-type examples from the previous two experiments.

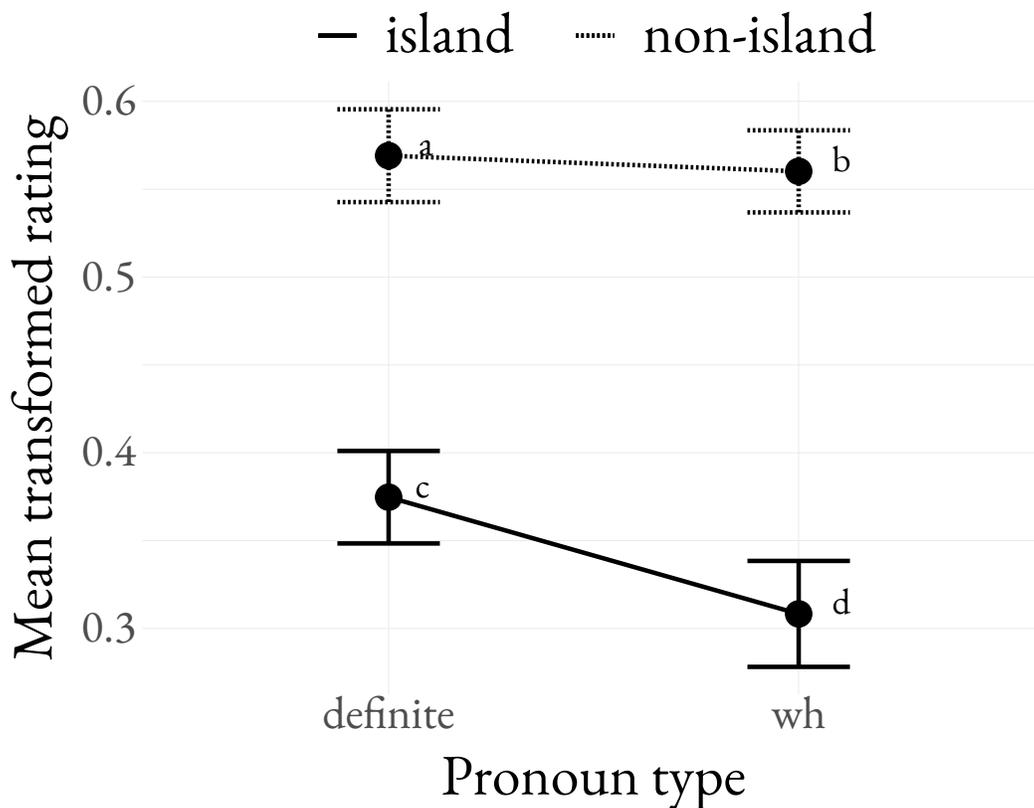


Figure 4.9: Results from the four target conditions from experiment 3b collapsed across lists, with mean z -score transformed acceptability ratings plotted on the y -axis; error bars indicate one standard error of the mean

To explore the trends seen in the graphs, we fit linear mixed-effects models to the data from each exper-

iment, as for previous experiments reported in this chapter. In both cases, the z -score transformed rating was the response variable, and we included fixed effects for structure, dependency length (or pronoun type in the case of experiment 3b), and their interaction, as well as random intercepts for participants and items. Table 4.5 shows the model details for the data from experiment 3a, and Table 4.6 shows the model details for the data from experiment 3b. As can be seen in both tables, neither of the interaction

Fixed effect	Estimate	Std. Error	t -value	p -value	
Intercept	0.4708	0.0435	10.810	<2e-16	***
Structure – island	-0.2008	0.0551	-3.646	0.0006	***
Dep. Length – short	-0.0722	0.0551	-1.310	0.1955	
Structure × Dep. Length	0.1147	0.0779	1.473	0.1463	

Table 4.5: Details of the linear mixed-effects model for the data from experiment 3a

effects are significant. Such a result is most straightforwardly consistent with the (d)-type examples being grammatical.

Fixed effect	Estimate	Std. Error	t -value	p -value	
Intercept	0.5611	0.0466	12.049	<2e-16	***
Structure – island	-0.2542	0.0611	-4.162	0.0001	***
Pronoun type – definite	0.0082	0.0611	0.134	0.8937	
Structure × Pronoun type	0.0598	0.0864	0.692	0.4916	

Table 4.6: Details of the linear mixed-effects model for the data from experiment 3b

4.2.3.5 Discussion

As noted, these results from experiments 3a and 3b are most straightforwardly consistent with the idea that sluicing does repair island violations (*i.e.*, that the (d)-type examples are grammatical). Nonetheless, there is an alternative explanation of the results that we might want to consider. As noted, the (c)-type examples, particularly those from experiment 3a, were rated as less acceptable than we might have otherwise expected given the results from the previous two experiments. Of course, this could have been for a variety of reasons, one of which might be the change from *some* to *certain*. Moreover, at least in principle, as long as there are no independent confounding properties of the (c)-type examples that aren't also

present in the (a)-type examples, the actual value for the mean z -score acceptability of the (c)-type examples shouldn't matter, as the differences would subtract out. However, in retrospect, we worried that by including fillers at a 2:1 filler to target ratio, we might have compressed the differences in acceptability between our four target conditions of interest. Moreover, as noted above in fn. 80, when using the fillers from the previous experiment, we accidentally forgot to adjust the relative number of grammatical and ungrammatical items in the set of fillers. As a result, both of these experiments had more ungrammatical than grammatical items. Since ungrammatical items are expected to be less acceptable, it's possible that the design of our experiment led to decreased sensitivity to the differences between the target conditions. In other words, we might have reduced the size of the effect that we were trying to detect in these two experiments by having twice as many filler items as target items, particularly given that there was not an even distribution of grammaticality statuses and expected acceptability statuses in these two experiments. We conducted two followup experiments to try to address this possibility that the filler items reduced our ability to detect an effect of an island violation.

4.2.4 Experiments 4a and 4b

In this set of two experiments, we tried to address the possibility that the uneven distribution of grammaticality statuses and expected acceptability statuses in the previous two experiments compressed the acceptability ratings of our four target conditions, thereby reducing the effect size of the interaction effect that we were trying to detect. The main manner in which we addressed this was to go back to using a 1:1 filler to target item ratio and to ensure that we had a balanced distribution of grammaticality statuses and expected acceptability statuses across target and filler items. Additionally, however, we also made a few changes to the target items as discussed immediately below in §4.2.4.1.

4.2.4.1 Experimental design and materials

The experimental materials for experiments 4a and 4b were designed in largely the same as they were for experiments 3a and 3b. However, we did make a few small changes. In particular, now that we have replaced *some* with *certain*, we worried that the prepositional modifiers that we had in experiments 2, 3a, and 3b

that were used to make the indefinite phrase more specific and thus to make the intended scope reading more natural were serving a redundant purpose and just making the examples too complicated. That is to say, in addition to the unequal distribution of grammaticality statuses and expected acceptability statuses from the previous experiment, we also worried that the overall length and somewhat complicated nature of the examples was contributing to the acceptability statuses of the target examples being compressed, reducing our ability to detect an interaction effect if there is indeed such an effect. As such, we removed the prepositional modifiers and replaced *certain person* with *certain N*, where N was some profession. An example minimal quartet for experiment 4a is given in (95), and an example minimal quartet for experiment 4b is given in (96).

- (95)
- a. A certain reporter thinks that the designer is worth a lot of money, but Mark couldn't determine who_i ~~*t_i thinks that the designer is worth a lot of money.*~~
 - b. Miles thinks that a certain designer is worth a lot of money, but Mark couldn't determine who_i ~~*Miles thinks that t_i is worth a lot of money.*~~
 - c. A certain reporter thinks that the dress by the designer is worth a lot of money, but Mark couldn't determine who_i ~~*t_i thinks that the dress by the designer is worth a lot of money.*~~
 - d. Miles thinks that the dress by a certain designer is worth a lot of money, but Mark couldn't determine who_i ~~*Miles thinks that the dress by t_i is worth a lot of money.*~~

By doing this, we reduce the overall complexity of the examples but still have indefinite phrases that are somewhat specific in virtue of them being, for example, *certain reporter* instead of *certain person*. In addition to having *certain*, this specificity afforded by having a noun for a profession instead of a generic noun like *person* should help facilitate the wide scope reading of the indefinite without the added complexity of the prepositional modifiers.

- (96)
- a. Miles thinks that a certain designer is worth a lot of money, but Mark couldn't determine her name.

- b. Miles thinks that a certain designer is worth a lot of money, but Mark couldn't determine who; Miles thinks that t_i is worth a lot of money.
- c. Miles thinks that the dress by a certain designer is worth a lot of money, but Mark couldn't determine her name.
- d. Miles thinks that the dress by a certain designer is worth a lot of money, but Mark couldn't determine who; Miles thinks that the dress by t_i is worth a lot of money.

Moreover, as can be seen in (95) and (96), we also opted to remove the negative adverbs/adjectives. This was done for the same reason—namely, to reduce the overall complexity of the examples, which we worried was compressing the acceptability ratings of the four target conditions. Recall from §4.2.1.1 that the main purpose of the negative adjective/adverb was to rule out evasion strategies where the ellipsis site is interpreted as something other than syntactic structure that contains an island violation. As we also discussed above, however, the short source interpretation of the ellipsis site in the case of a subject island example still involves an island violation (unlike for the complex NP island examples). This does still leave the cleft source interpretation as an in-principle possible interpretation of the elided material; however, we felt that this tradeoff was worth it in order to reduce the overall complexity of the examples. Even though we eliminated the negative adjectives/adverbs, we did still include basic yes/no comprehension questions so that the experiments would be similar to the previous ones and to continue to encourage participants to pay attention to the examples.

4.2.4.2 Methods

We continued to elicit 4 judgments for each condition from each participant in both experiments 4a and 4b, and we also continued to use a Likert scale that ranged from 1 to 7. There were 16 target items per participant. As for the filler items, for the reasons discussed above, we went back to having a 1:1 filler to target item ratio, and we also ensured that there was an equal distribution of expected grammaticality statuses and expected acceptability statuses across the filler and target items. This was done in the same manner as described above for experiment 1 in §4.2.1.2. Similar to before, 25% of all items (both target and filler) were followed by basic yes/no comprehension questions. We constructed 4 different lists using a

Latin square designed, and the order of the items in each list was pseudorandomized subject to the same constraints for experiment 2, as discussed above in §4.2.2.2. All materials, including the lists in their pseudorandomized order, can be found in Appendix B. Both of these experiments were implemented using the PCIBex platform (Zehr & Schwarz 2018).

4.2.4.3 Participants

Participants were again recruited via Amazon Mechanical Turk, and they were paid for their participation. Moreover, participants were required to meet the same four eligibility criteria discussed above in §4.2.3.3 in order to participate in the experiment. We also aimed to collect data from 200 participants for each experiment in line with the power analysis discussed above in the same section, §4.2.3.3. Of the 200 participants that we collected data from for experiment 4a, 1 self-reported being a non-native English speaker on the brief demographic survey that we included before the experiment. No participants were excluded from experiment 4a because of anomalous behavior on the filler items, so the data that we analyze below for experiment 4a is from 199 participants. There were 50 participants in lists 1, 3, and 4, and there were 49 participants in list 2.

For experiment 4b, we collected data from 200 participants, but we also got data from an additional 2 participants. We think this happened because of how the Amazon Mechanical Turk platform works. When someone views the recruitment information on Amazon Mechanical Turk, called a “HIT”, they see instructions to follow a link to our external survey on the PCIBex platform. At the end of the PCIBex experiment, they receive a unique completion code, and they must go back to the Amazon Mechanical Turk platform and enter this completion code. We post a certain number of HITs at a given time on Amazon Mechanical Turk. For example, we might post 10 HITs at a time. If a participant does not accept the HIT before starting the survey, that HIT remains active and somebody else can view and accept it. For example, say 9 participants accept the HIT but 1 doesn’t. These 10 participants start doing the experiment on PCIBex. However, in the meantime, there is still 1 HIT that is available on the Amazon Mechanical Turk platform. Somebody else can come along, accept the HIT, and start the experiment on PCIBex. Now that all 10 HITs have been accepted, the 1 person who did accept the HIT will not be able

to return to the Amazon Mechanical Turk platform and enter their unique completion code, even if they finish before the person who accepted the HIT after them. We instructed participants to accept the HIT before clicking on the PCIbex link, but we suspect that 2 of the 200 participants did not, which is how we got 2 extra participants. Unfortunately, because of this, we had no way to pay the 2 participants who did the experiment but were not able to submit their unique completion code on Amazon Mechanical Turk. Moreover, because we have no record of who these 2 participants are, it's possible that these 2 participants ended up participating in a subsequent sluicing experiment of ours because we are not able to preclude them from seeing future experiments on the basis of their Amazon Mechanical Turk Worker ID.

At any rate, of the data from these 202 participants, 3 self-reported that they are not native English speakers, despite passing the English proficiency screener. Moreover, 1 participant gave 7 or more anomalous ratings on the filler items. This leaves 198 participants in the final analysis for experiment 4b, with 50 each in lists 1 and 3 and 49 each in lists 2 and 4.

4.2.4.4 Results

We *z*-score transformed the Likert scale ratings on a per-participant basis, as before. The predictions are also effectively the same as before. If the (d)-type examples are ungrammatical, we expect to see significant interaction effects in both experiments 4a and 4b, whereas the lack of an interaction effect is expected in both experiments if the (d)-type examples are grammatical. The results from the four target conditions from experiment 4a are plotted in Figure 4.10, and the results from the four target conditions from experiment 4b are plotted in Figure 4.11. The differences-in-differences score from experiment 4a was 0.10, and the differences-in-differences from the experiment 4b items was 0.09. Graphically, at least, both results appear to exhibit a trend in the expected direction if the (d)-type examples are ungrammatical. Though it is worth keeping in mind the scale of the *y*-axis, as these differences-in-differences scores are still quite small. Moreover, it is interesting to note that we continue to see somewhat reduced acceptability of the (a)- and (c)-type examples in experiment 4a. Indeed, the (c)-type examples in experiment 4a are actually rated as less acceptable than the (d)-type examples.

To explore the trends seen in the graphs, we fit linear mixed-effects models to the data from each

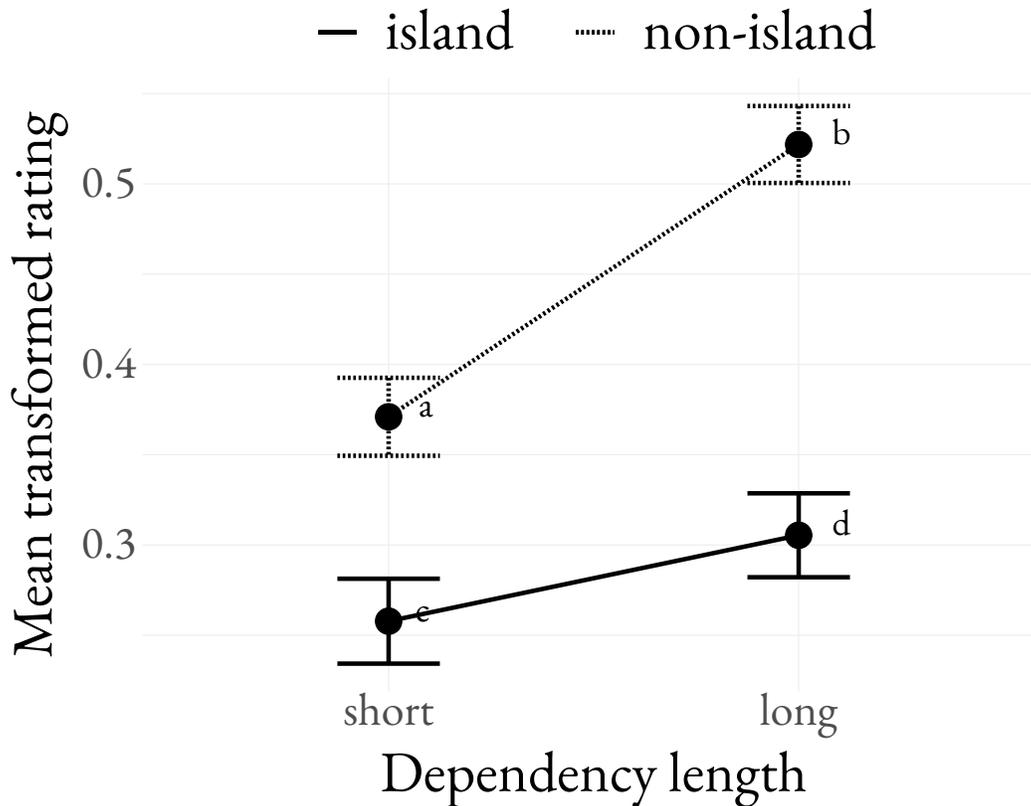


Figure 4.10: Results from the four target conditions from experiment 4a collapsed across lists, with mean z -score transformed acceptability ratings plotted on the y -axis; error bars indicate one standard error of the mean

experiment in the same manner described above for previous experiments. The response variable was the z -score transformed rating, and the models included fixed effects for structure, dependency length (or pronoun type in the case of experiment 4b), and their interaction, as well as random intercepts for participants and items. Table 4.7 shows the model details for the data from experiment 4a, and Table 4.8 shows the model details for the data from experiment 4b. As can be seen in both tables, neither of the

Fixed effect	Estimate	Std. Error	t -value	p -value	
Intercept	0.5217	0.0384	13.579	<2e-16	***
Structure – island	-0.2167	0.0516	-4.195	9.23e-5	***
Dep. Length – short	-0.1506	0.0516	-2.914	0.0050	**
Structure × Dep. Length	0.1037	0.0731	1.419	0.1612	

Table 4.7: Details of the linear mixed-effects model for the data from experiment 4a

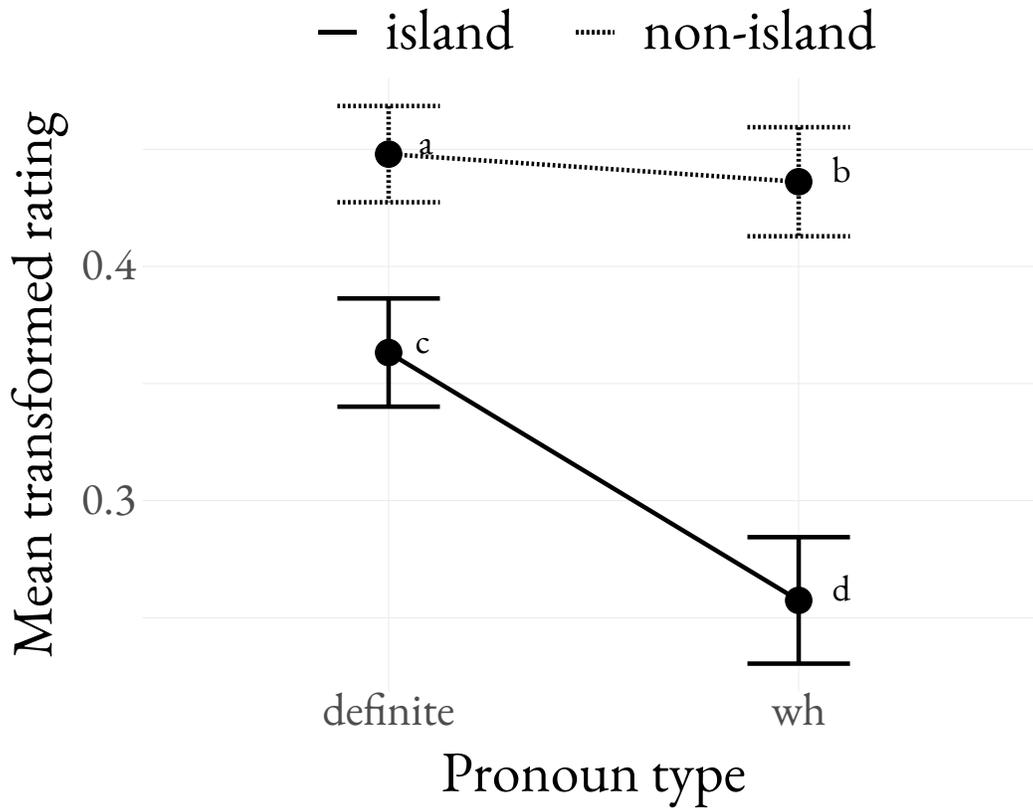


Figure 4.11: Results from the four target conditions from experiment 4b collapsed across lists, with mean z -score transformed acceptability ratings plotted on the y -axis; error bars indicate one standard error of the mean

interaction effects are significant. Such a result is most straightforwardly consistent with the (d)-type examples being grammatical.

Fixed effect	Estimate	Std. Error	t -value	p -value
Intercept	0.4364	0.0322	13.547	<2e-16 ***
Structure – island	-0.1789	0.0420	-4.264	7.41e-5 ***
Pronoun type – definite	0.0113	0.0420	0.269	0.7889
Structure × Pronoun type	0.0945	0.0593	1.593	0.1166

Table 4.8: Details of the linear mixed-effects model for the data from experiment 4b

4.2.4.5 Discussion

The results of these two experiments are most straightforwardly consistent with the idea that sluicing does repair island violations (*i.e.*, that the (d)-type examples are grammatical). Nonetheless, it's interesting that we see the results trending in the expected direction if the (d)-type examples were ungrammatical. This trend is a weak trend, but both experiments 4a and 4b show interaction effect sizes around 0.1, and these are comparable to the results from experiments 3a and 3b, although the differences-in-differences score from experiment 3b was closer to 0.06.

Moreover, it's interesting that we continue to see degraded acceptability of the (a)- and (c)-type examples in the first of these two most recent experiments, just like we saw in the first of the last two experiments. We assume that this is because there is something pragmatically odd about the information structure of these sentences. In the (b)- and (d)-type examples, the indefinite phrase is embedded inside of a belief report, so perhaps the uncertainty about the identity of the designer/reporter makes more sense in such a context. Again, however, given the subtraction logic of the 2×2 paradigm, so long as these differences are present in an appropriate two out of the four sentences, the impact on acceptability will subtract out in the differences-of-differences score (cf. fn. 55).

It's also interesting that we have not been able to replicate the significant interaction effect that we saw in experiment 2 for the subject island items when replacing *some* with *certain* in either experiment 3a or 4a. While making this switch from *some* to *certain* should have helped to facilitate the wide scope reading of the indefinite phrase outside of the island in the first clause in the (d)-type examples, it's really the second experiment in these sets of two experiments we've been reporting—where the factor of structure is crossed with the factor of pronoun type—that rules out the interpretation of an interaction effect as arising from the properties of the first clause and not the properties of the ellipsis site. As such, in the last set of experiments reported in this chapter, we return to using *some* instead of *certain* in order to see if we can replicate the finding from experiment 2 for subject islands in the context of sluicing, and, if so, to see what would happen in a complementary experiment where structure is crossed with pronoun type.

4.2.5 Experiments 5a and 5b

In this last set of experiments for the chapter, we return to using *some* instead of *certain* to see if we can replicate the significant interaction effect that we saw in experiment 2 for the subject island items, and we also compare this to a second experiment where we cross structure with pronoun type in order to attempt to rule out the possibility that a significant interaction effect in the first of the two experiments, if found, is driven by the inability of the indefinite to take scope over the island in the first clause of the (d)-type examples. The materials for these two experiments are described immediately below in §4.2.5.1.

4.2.5.1 Experimental design and materials

The materials that we designed for this last set of experiments are effectively the same as the materials used in experiments 4a and 4b, except that we replaced *certain* with *some*. In other words, we kept the additional simplifications that we had made in the previous two experiments in order to reduce the overall complexity of the examples (replacing the prepositional modifiers with specific nouns and eliminating the negative adjectives/adverbs). An example minimal quartet for experiment 5a is given in (97), and an example minimal quartet for experiment 5b is given in (98).

- (97)
- a. Some reporter thinks that the designer is worth a lot of money, but Mark couldn't determine who; ~~t_i thinks that the designer is worth a lot of money.~~
 - b. Miles thinks that some designer is worth a lot of money, but Mark couldn't determine who; ~~Miles thinks that t_i is worth a lot of money.~~
 - c. Some reporter thinks that the dress by the designer is worth a lot of money, but Mark couldn't determine who; ~~t_i thinks that the dress by the designer is worth a lot of money.~~
 - d. Miles thinks that the dress by some designer is worth a lot of money, but Mark couldn't determine who; ~~Miles thinks that the dress by t_i is worth a lot of money.~~
- (98)
- a. Miles thinks that some designer is worth a lot of money, but Mark couldn't determine her name.

- b. Miles thinks that some designer is worth a lot of money, but Mark couldn't determine who; Miles thinks that t_i is worth a lot of money.
- c. Miles thinks that the dress by some designer is worth a lot of money, but Mark couldn't determine her name.
- d. Miles thinks that the dress by some designer is worth a lot of money, but Mark couldn't determine who; Miles thinks that the dress by t_i is worth a lot of money.

As before, we also continued to include the basic yes/no comprehension questions as part of the experiment.

4.2.5.2 Methods

We elicited 4 judgments per condition per participant using a Likert scale that ranged from 1 to 7. We thus had 16 target items per participant, and we used the same appropriately balanced fillers from the previous two experiments, making for 32 items overall, with a 1:1 filler to target ratio. As before, 25% of all items (both target and filler) were followed by a basic yes/no comprehension question. Also like before, we constructed 4 different lists using a Latin square design and pseudorandomized the order of each list subject to the same constraints discussed above in §4.2.2.2. All materials, including the lists in their pseudorandomized order, can be found in Appendix B. These two experiments were also implemented using the PCIBex platform (Zehr & Schwarz 2018).

4.2.5.3 Participants

Participants were once again recruited on Amazon Mechanical Turk, and they were paid for their participation. In order to see the listing on Amazon Mechanical Turk, participants had to meet the same four eligibility criteria as discussed above in §4.2.3.3. We again aimed to collect data from 200 participants for each experiment. For experiment 5a, like with experiment 4b, we ended up getting data from 200 participants plus an extra 2 participants (see §4.2.4.3 for discussion of how this presumably happened). Of these 202 participants, 1 self-reported not being a native English speaker in the brief demographic survey before the start of the experiment, despite passing the English proficiency screener. Moreover, 1

participant rated 7 or more filler items in an anomalous way, leaving 200 participants in the final dataset for experiment 5a. There were 51 participants in list 1, 50 participants in lists 2 and 4, and 49 participants in list 3.

For experiment 5b, we collected data from 200 participants, and we ended up with data from some extra participants in this experiment, too. In this case, we got data from 3 extra participants. Of these 203 participants, 2 self-reported not being a native English speaker in the brief demographic survey before the start of the experiment, despite passing the English proficiency screener. Moreover, 1 participant rated 7 or more filler items in an anomalous way, leaving 200 participants in the final dataset for experiment 5b as well. There were 50 participants in list 1, 48 participants in list 2, and 51 participants each in lists 3 and 4.

4.2.5.4 Results

As always, we analyze z -score transformed ratings of the Likert scale judgments. The z -score transformations were done on a per-participant basis. The predictions are again the same. If the (d)-type examples are ungrammatical, we would expect to see significant interaction effects in both experiments, whereas the lack of an interaction effect is expected in both experiments if the (d)-type examples are grammatical. The results from the four target conditions from experiment 5a are plotted in Figure 4.12, and the results from the four target conditions from experiment 5b are plotted in Figure 4.13. The differences-in-differences score from experiment 5a was 0.14, and the differences-in-differences from the experiment 5b items was 0.03. Graphically, at least, it seems that the results from experiment 5a are trending in the direction of exhibiting an interaction effect, but the results from experiment 5b do not appear to be trending in that direction.

To explore these trends statistically, we fit linear mixed-effects models to the data from each experiment, like we have for each experiment prior to these two. The response variable in the model for each experiment were the z -score transformed ratings, and the models included fixed effects for structure, dependency length (or pronoun type in the case of experiment 5b), and their interaction, as well as random intercepts for participants and items. Table 4.9 shows the model details for the data from experiment 5a,

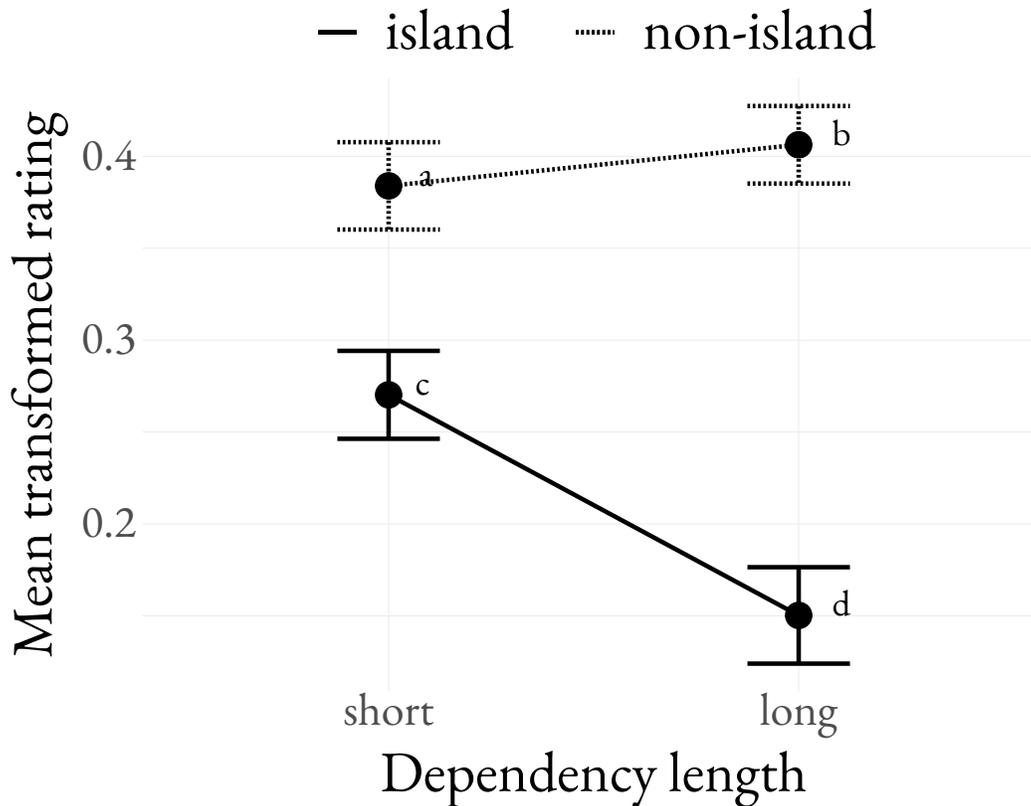


Figure 4.12: Results from the four target conditions from experiment 5a collapsed across lists, with mean z -score transformed acceptability ratings plotted on the y -axis; error bars indicate one standard error of the mean

and Table 4.10 shows the model details for the data from experiment 5b. As can be seen in the tables, the

Fixed effect	Estimate	Std. Error	t -value	p -value	
Intercept	0.4059	0.0394	10.292	6.81e-16	***
Structure – island	-0.2563	0.0524	-4.891	8.40e-6	***
Dep. Length – short	-0.0217	0.0524	-0.415	0.6800	
Structure × Dep. Length	0.1431	0.0741	1.931	0.0584	.

Table 4.9: Details of the linear mixed-effects model for the data from experiment 5a

interaction effect for experiment 5a was marginally significant, whereas the interaction effect for experiment 5b was not significant. Such a result is most straightforwardly consistent with the (d)-type example in experiment 5b being grammatical and the (d)-type example in experiment 5a being ungrammatical, but for reasons of failed scope parallelism and not for reasons having to do with the ellipsis site.

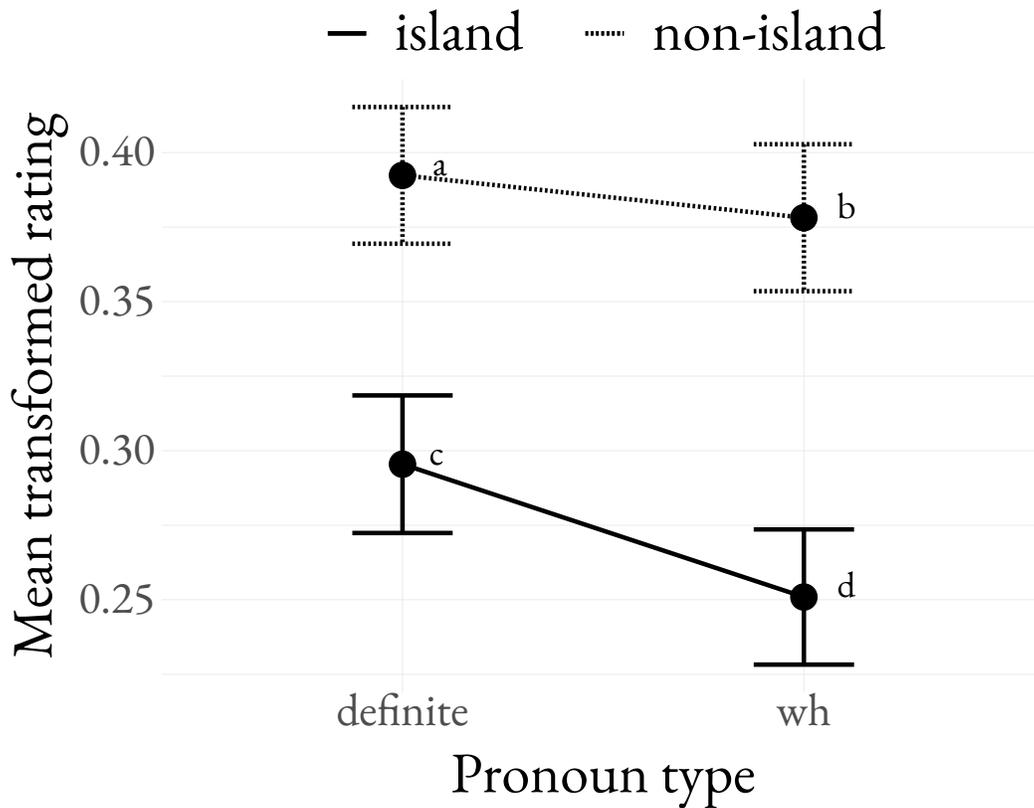


Figure 4.13: Results from the four target conditions from experiment 5b collapsed across lists, with mean z -score transformed acceptability ratings plotted on the y -axis; error bars indicate one standard error of the mean

Fixed effect	Estimate	Std. Error	t -value	p -value	
Intercept	0.3786	0.0415	9.132	1.72e-13	***
Structure – island	-0.1271	0.0565	-2.250	0.0282	*
Pronoun type – definite	0.0136	0.0565	0.240	0.8108	
Structure × Pronoun type	0.0300	0.0799	0.375	0.7089	

Table 4.10: Details of the linear mixed-effects model for the data from experiment 5b

4.2.5.5 Discussion

The results of these two experiments are most straightforwardly consistent with the idea that sluicing does repair islands and that we only see an interaction effect in the first of the two experiments because of the inability of the indefinite phrase to take scope outside of the island in the first clause of the (d)-type examples. While we did at least marginally replicate the significant interaction effect that we had seen in experiment 2 for subject islands in experiment 5a, we did not see a comparable interaction effect in experiment 5b.

Again, the most straight forward interpretation of the results from this chapter are that sluicing repairs island effects. Nonetheless, it is worth bearing in mind that these non-significant results across the experiments reported in this chapter are null effects, and there are always caveats that come with reasoning from a null result. Let us briefly summarize the results from the experiments reported in this chapter before further discussing their implications for the status of the island repair hypothesis under sluicing.

4.3 Summary and general discussion

The summary here will focus on our results for subject islands in the context of sluicing. Briefly, however, recall that in both experiments 1 and 2, we did not see significant interaction effects for the complex NP island items in the context of sluicing. Back in §4.2.2.5, we hypothesized that this was possibly because participants used the short source evasion strategy for complex NP islands (in which case the ellipsis site would not contain an island violation), despite the semantic anomaly that would result from such an interpretation, given how we designed our materials. We set this island type aside for future work, in order to focus on subject islands in the context of sluicing. Nonetheless, if subject islands do exhibit genuine island repair under sluicing, then this is presumably what was also going on with our complex NP island results.

While the most straightforward interpretation of our experimental results is indeed that subject islands exhibit genuine island repair under sluicing, it may not be as clear cut as it seems. First, let's summarize the results of experiments 2 through 5b. The differences-in-differences scores and their associated

p -values from experiments 2 through 5b are given in Table 4.11. As can be seen in this table, the effect

	structure × dep. length		structure × pronoun type	
	DD	p -value	DD	p -value
Experiment 2	0.176	0.0170	–	–
Experiments 3	0.114	0.1463	0.058	0.4916
Experiments 4	0.103	0.1612	0.094	0.1166
Experiments 5	0.142	0.0584	0.030	0.7089

Table 4.11: Summary of the differences-in-differences scores (DDs) and their associated p -values from experiments 2 through 5b, organized by manipulation (either structure × dep. length or structure × pronoun type)

sizes seen in experiments 3a through 5b are smaller than the effect size that we saw in experiment 2. In particular, the effect sizes are closer to 0.12 than to 0.17, and the power analysis that we did which led us to collect data from 200 participants was based on this larger effect size from experiment 2. In particular, the average effect size from experiments 3a, 4a, and 5a was 0.119. It’s still very much possible that there is no genuine interaction effect here. In other words, it’s possible that the effect sizes of experiments 2 and 5a are inflated just because they happened to give (marginally) significant results when there is no genuine effect. On the other hand, it’s possible that true effect size is closer to 0.119, and we did not have highly enough powered studies to detect this effect. Indeed, a power analysis based on an effect size of 0.119 with 4 judgments per condition per participant suggests that we only had about 48% power in our studies with 200 participants. Moreover, in order to actually achieve 80% power the sample would have to be prohibitively large.

Of course, if this is the correct way to understand our results, there are still two things that call into question whether this would constitute genuine evidence for island effects not being repaired by sluicing. One might worry that we should not take such a small effect size to indicate genuine ungrammaticality. To reiterate, this seems to be the concern in Kush, Lohndal, & Sprouse (2018) that motivates their by-participant analysis of their statistically significant Norwegian embedded question island results, ultimately leading them to conclude that there is no genuine embedded question island effect in Norwegian for the types of examples that they tested, despite the series of statistically significant interaction effects.

Again, however, as discussed above in §3.3.2.1, these concerns don't seem that well motivated and they actually undercut the logic of the 2×2 design without providing a concrete reason for doubting the logic of the design in their particular case.

Nonetheless, perhaps this worry is worth entertaining in this particular case given that a power analysis based on an effect size of 0.119 would require a prohibitively large sample in order to achieve 80% power in some study. However, this confuses the practical considerations with the theoretical considerations. Because we don't have fine grained enough theories, we don't have predictions about how big we would expect effect sizes to be in certain circumstances. As such, we have no theoretical grounds on which to rule out the possibility that there is an effect just because it would be practically difficult to detect in this circumstance. This does suggest, however, that we should probably not pursue further investigation of this empirical domain in this same manner. Instead, we might want to pursue other strategies for determining whether sluicing repairs island violations. One way one might do this is by trying to refine the examples in such a way so as to rule out all possible evasion strategies. Some attempts in this vein from Barros, Elliott, & Thoms (2014) are discussed below.

A second worry, however, is that even if there is a genuine effect to be found in experiments like our experiments 2, 3a, 4a, and 5a, and we just had too underpowered of studies to reliably detect such an effect, this effect is still arguably driven by the difficulty of getting the wide scope reading of the indefinite in the first clause of the (d)-type examples and not by properties of the ellipsis site. Indeed, the effect sizes that we saw in our experiments 3b, 4b, and 5b were, on average, smaller and closer to 0 than were the effect sizes seen in experiments 2, 3a, 4a, and 5a. They also exhibited more variability. So, this very well could be the case, but it could just as well be that these studies also happened to be too underpowered. This is indeed a distinct possibility and further suggests that this particular experimental approach may ultimately not be well suited to probing this empirical domain.

Given that this would seem to be the case, let's briefly consider some of the additional positive arguments in Barros, Elliott, & Thoms (2014) against island repair. In particular, let's briefly discuss two of their arguments. First, they point out that multiple sluicing examples do not seem to exhibit amelioration in acceptability when there is an island violation contained in the ellipsis site and that the nature of

multiple sluices is such that they rule out using an evasion strategy (for further elaboration of the details, see Barros, Elliott, & Thoms 2014:17–20). For example, an example like the one in (99) is decidedly unacceptable and thus presumed to also be ungrammatical.

- (99) * One of the panel members wants to hire someone who works on a Balkan language, but I don't know which panel member on which language.

They furthermore note that if both wh-dependencies are contained inside the relative clause island, a short source evasion strategy becomes possible again, and you do actually see improved acceptability of such examples, as shown in (100).⁸¹

- (100) They hired someone who teaches an infamous course every year at a famous university, but I forget [which course]_i she teaches ~~t_i~~ every year ~~t_j~~ at [which university]_j.

A second positive argument from Barros, Elliott, & Thoms (2014) against genuine island repair under sluicing is that island effects are seen with contrastive sluices, such as the one in (101).

- (101) * The radio played a song that RINGO wrote, but I don't know who_i ELSE the radio played a song that ~~t_i~~ wrote.

They argue that evasion strategies are ruled out by the contrastive nature of the sluice, and so this could constitute evidence in favor of the idea that sluicing does not repair islands; instead, it is just the availability of evasion strategies that gives sluicing the appearance of repairing island violations. Nonetheless, Merchant (2008b) and Griffiths & Lipták (2014) have given alternative analyses of examples like those in (101). In brief, they argue that examples like those in (101) are ungrammatical because the covert focus movement of the subject of the first clause cannot escape the VP, and so the two clauses do not have parallel scope. However, if this were the case, then one would expect examples like (102) to also be ungrammatical and unacceptable, as they would not be able to achieve parallel scope either.⁸²

⁸¹They adopt the analysis of multiple sluicing in English from Lasnik (2014) where the rightmost remnant is extraposed to a right-adjoined position of the second clause. Moreover, they also show that similar facts obtain in a language like Russian with multiple wh-movement where multiple sluicing is presumably not derived via rightward extraposition of the rightmost remnant (again, for the details, see Barros, Elliott, & Thoms 2014:17–20).

⁸²The actual example given in Barros, Elliott, & Thoms (2014) does not involve negation, which actually weakens the argument. In particular, if there were no negation in (102), then the short source interpretation of the ellipsis site would be available, in which case the two clauses would arguably have parallel scope. The addition of negation disallows the short source interpretation, yet the example with negation is still quite acceptable thus presumably also grammatical.

(102) He said he didn't talk to ABBY, but I don't know who ELSE ~~he said he didn't talk to~~ t_i .

That is to say, *Abby* in (102) would not be able to take scope outside of the VP headed by *talk*, but the *who else* in (102) would have scope over the entire clause that was ellided. Barros, Elliott, & Thoms (2014) therefore reason that these contrastive sluices are instead unacceptable (and presumed to be ungrammatical) because sluicing does not repair island violations (for the full details of the entire argument from contrastive sluicing, including similar arguments from contrastive sluicing in languages other than English, see Barros, Elliott, & Thoms 2014:20–24).

Given positive arguments like this against the idea that sluicing repairs islands, one is faced with one of two options: (i) take our experimental results at face value and explain away these positive arguments, concluding that sluicing does repair islands; or (ii) take these arguments at face value and explain away the lack of consistent significant interaction effects in our experiments, concluding that sluicing does *not* repair islands.⁸³ In other words, our experimental results were not as conclusive in either direction as one might have hoped. At this point, both of these positions seem like reasonable positions to take, though, for what it's worth (and as may have been clear throughout this chapter), I prefer the second option.

4.4 Conclusion

As noted, this seems to be a case where using the idea of the subtraction logic afforded by the minimal quartet design to try to get more directly at grammaticality did not yield as decisive of a result as one might have hoped. Indeed, barring further modification of the experimental materials in a way that might more effectively rule out evasion strategies, it's not clear this particular experimental paradigm will be all that useful for further investigation of island effects under sluicing. Moreover, making such modifications (*e.g.*, using multiple sluices or contrastively focused sluices) might make the experiment too difficult to run with a lay population, since these experiments are generally run without providing any context to the examples.

⁸³One possibility in the vein of this second option that is worth noting is that we may not have done as good of a job ruling out evasion strategies in our experimental stimuli as we had hoped. In particular, some people seem to find the cleft source interpretation of the ellipsis site acceptable even with the negative adverbs that we used to try to rule out such interpretations. If this is indeed possible, it could explain why we did not observe consistent interaction effects in our experiments.

If it does turn out to be the case that island repair is only apparent and that sluicing does not repair islands, we would be faced with some interesting questions about why the effect of ungrammaticality on acceptability is so small in this case but so large in the vast majority of other cases (see, *e.g.*, Sprouse & Almeida 2017). One speculative idea here is that the effect is so small for a combination of two reasons. On the one hand, perhaps some participants do adopt an evasion strategy and the semantic anomaly that results is not particularly evident. On the other hand, if a participant does not adopt an evasion strategy, perhaps the ability to recover an intended meaning, particularly when you don't have overt phonological material that forces you to immediately posit a certain syntactic (illicit) representation, can quite dramatically ameliorate acceptability even in the face of ungrammaticality.⁸⁴

Of course, this is just speculation. It could very well be that sluicing does indeed repair island violations. As noted above at the start of this chapter, this would be consistent with the interesting idea that island effects arise in natural language because of the linearization process at the syntax-PF interface (*e.g.*, Uriagereka 1999, 2012, Hornstein, Lasnik, & Uriagereka 2003, Fox & Pesetsky 2005), though see §5.2.5 in Chapter 5. If so, we would also be faced with some interesting questions. In particular, it's then not totally clear why island effects should reemerge with multiple sluices and contrastive sluicing, the analyses of contrastive sluicing in Merchant (2008a) and Griffiths & Lipták (2014) that we briefly discussed above notwithstanding.⁸⁵

⁸⁴This would contrast with cases like (i) which are quite unacceptable.

(i) * Amara seems sleeping.

In cases like (i), you do have overt phonological material that forces you to immediately posit an illicit syntactic representation, even though the intended meaning of (i) is quite clear.

⁸⁵Though, for multiple sluicing, see Lasnik (2014:18) for a proposal that would at least deal with the English facts.

Chapter 5 The Principle of Minimal Compliance: Competence or performance?

In this chapter, I'd like to turn from island violations and sluicing in English to island violations and multiple wh-movement in Bulgarian. Back in Chapter 1, we saw how the use of a well designed minimal-pair-type experiment can, in principle, allow one to more directly get at grammaticality even though we are just measuring acceptability when eliciting judgments. Furthermore, I noted that this kind of logic has been used in some recent experimental syntax work suggesting that some island-violating sentences which the field previously took to be grammatical in virtue of generally being reported as acceptable are instead plausibly ungrammatical. These studies were reviewed in §3.3, and we just further application of this logic in Chapter 4. In this chapter, we make use of this same kind of experiment in order to investigate Principle of Minimal Compliance (PMC) effects in Bulgarian.

The PMC, explained in more detail below in §5.1, is a syntactic principle that was proposed in order to account for the putative grammaticality of some island-violating sentences in Bulgarian involving multiple wh-movement, among other things (cf. Richards 1997, 1998, 2001). The relevant Bulgarian examples were taken to be grammatical in virtue of being judged as relatively acceptable. In this sense, these types of sentences in Bulgarian are plausibly like those island-violating sentences in Brazilian Portuguese, Italian, Norwegian, and Mandarin that have been argued to be ungrammatical on the basis of a version of the subtraction logic discussed in §1.1.2.4, despite being judged as relatively acceptable (cf. Almeida 2014, Sprouse et al. 2016, Kush, Lohndal, & Sprouse 2018, Lu, Thompson, & Yoshida 2020). This chapter will explore whether that is the case for these Bulgarian sentences, using the same kind of experimental design. The chapter proceeds as follows. In §5.1, I provide a brief overview of the PMC and the data that originally motivated this principle. Then, in §5.2, I discuss our experiment and its results

before concluding in §5.3.

5.1 The Principle of Minimal Compliance

The PMC was proposed in Richards (1997, 1998, 2001) as a syntactic principle which would provide explanations for why, in a variety of cases, we see amelioration in acceptability (and thus presumably also grammaticality) of examples with an ill-formed syntactic dependency that also contain a well-formed syntactic dependency of the same type. Such examples were noted to be more acceptable than their counterparts that contained only the ill-formed syntactic dependency and did not also contain the well-formed syntactic dependency of the same type. The evidence adduced in favor of such a principle included examples from the distribution of anaphors in Dutch, examples with weak crossover effects, examples from the distribution of bound variables inside ellipsis sites, examples with connectedness effects, and examples with Subjacency/island effects.

The relevant data from Subjacency/island effects included data from English, Japanese, and Bulgarian. Here, I focus on the Bulgarian data. First, it should be noted that Bulgarian is a language which allows multiple wh-movement. For example, in (103), we see that both *koj* ‘who’ and *kogo* ‘whom’ move to the edge of the matrix clause. This is unlike the English counterpart in (104).

- (103) *Koj kogo e vidjal?*
 who whom AUX seen
 ‘Who saw whom?’

 (Richards 1997:106, ex. (83a))

- (104) Who saw who?

Moreover, Bulgarian does exhibit island effects. For example, (105) shows a complex NP island effect in Bulgarian. *Koja kniga* ‘which book’ is the head of a wh-dependency that spans the complex NP *mâlvata če ...* ‘rumor that ...’.

- (105) * [*Koja kniga*]_i *razprostranjaše žurnalistât mâlvata če senatorât iska da zabrani t_i?*
 which book spread journalist rumor that senator wanted to ban

‘Which book did the journalist spread the rumor that the senator wanted to ban?’
 (Richards 1998:607, ex. (18a))

The sentence is reported as unacceptable, and so the field has taken it to be ungrammatical, just like in all the other languages that exhibit complex NP island effects. Interestingly, however, if we introduce another wh-dependency that doesn’t run afoul of an island violation into what would otherwise be the same example, we see amelioration in acceptability, as in (106).

(106) ? [Koj žurnalist]_j [koja kniga]_i t_j razprostranjaše málvata če senatorât iska da
 which journalist which book spread rumor that senator wanted to
 zabrani t_i?
 ban
 ‘Which journalist spread the rumor that the senator wanted to ban which book?’
 (Richards 1998:607, ex. (18b))

In (106), the wh-dependency headed by *koj žurnalist* ‘which journalist’ does not span an island, and we see that the sentence is judged as more acceptable (a ‘?’ instead of a ‘*’).

Data such as this from a variety of empirical domains lead Richards (1998:601) to formulate the PMC as in (107) and (108).⁸⁶

(107) For any dependency D that obeys constraint C, any elements that are relevant for determining whether D obeys C can be ignored for the rest of the derivation for purposes of determining whether any other dependency D’ obeys C.

(108) An element X is relevant to determining whether a dependency D with head A and tail B obeys constraint C if

- a. X is along the path of D (that is, X=A, X=B, or A c-commands X and X c-commands B), and
- b. X is a member of the class of elements to which C makes reference

In this chapter, the focus will be on the Bulgarian data like that in (106). Without a syntactic principle like the PMC, the grammaticality of examples like those in (106) is theoretically surprising, as they contain

⁸⁶There have been other formulations of the PMC as well (see, e.g., Richards 2001:199, Preminger 2019:27).

a wh-dependency that spans an island. One therefore might expect such examples to be ungrammatical. Thus, it seems worth exploring the grammaticality status of such examples using the 2×2 paradigm and the subtraction logic it affords, particularly since the examples are reported as marginally (and not fully) acceptable. If we arrive at the same conclusion that such examples are grammatical using the 2×2 experimental paradigm to investigate these examples, we can move forward with more confidence in what is otherwise a possibly surprising finding. Alternatively, such an experiment might provide evidence that such examples are ungrammatical, despite being judged as (somewhat) acceptable, just like the Romance, Norwegian, and Mandarin cases that we saw above. Let us now turn to such an experiment.

5.2 The experiment

In this experiment, we investigate the status of relative clause islands in Bulgarian with respect to the PMC. We conducted three subexperiments within the same experiment (*i.e.*, all manipulations were within participants). The three different subexperiments were designed to (i) allow us ascertain the size of the relative clause island effect in Bulgarian independent of multiple wh-movement; (ii) predict a significant interaction effect between structure and dependency length if sentences like (106) turn out to be ungrammatical, rather than grammatical; and (iii) predict a significant interaction effect between structure and number of wh-dependencies if sentences like (106) are indeed grammatical, respectively. Having these second and third subexperiments allows us to make positive predictions for both possible grammaticality statuses that (106) might have. This means we don't have to rely on interpreting the absence of an interaction effect as evidence for whatever we might conclude. The experimental design and these predictions are reviewed in much more explicit detail immediately below in §5.2.1.

5.2.1 Experimental design and materials

The overall experiment consisted of three different subexperiments, each of which constituted its own 2×2 experimental paradigm. This makes for 12 different conditions per participant (4 conditions per subexperiment \times 3 subexperiments). Each of these three subexperiments is described below.

5.2.1.1 Subexperiment 1

As mentioned above, in the first subexperiment, we constructed minimal quartets that allow us to ascertain the relative clause island effect size in Bulgarian independent of multiple wh-movement. This will give us a baseline of how big the effect size is, which will be helpful when looking at the data from the second and third subexperiments. As such, the materials for this minimal quartet should be familiar from the examples we've already seen in preceding chapters. We crossed dependency length (short vs. long) with structure (relative clause (*i.e.*, island) vs. complement clause (*i.e.*, non-island)). A sample minimal quartet is given in (109).⁸⁷

- (109) a. Kogo_i ubedi žurnalistät t_i, če glavnata redaktorka vi premesti v
whom convinced the-journalist.M that the-main.F editor.F you.PL moved in
drug ekip?
another team
'Who did the journalist convince that the editor-in-chief moved you to another team?'
- b. Kogo_i pojasni žurnalistät, če glavnata redaktorka pak premesti t_i v
whom clarified the-journalist.M that the-main.F editor.F again moved in
drug ekip?
another team
'Who did the journalist clarify that the editor-in-chief moved to another team again?'
- c. Kogo_i razkri žurnalistät t_i na sledovatelja, pri kogoto glavnata
whom revealed the-journalist.M to the-investigator.M to whom.M the-main.F
redaktorka vi izprati?
editor.F you.PL sent
'Who did the journalist reveal to the investigator that the editor-in-chief sent you to?'
- d. * Kogo_i pozväni žurnalistät na sledovatelja, pri kogoto glavnata
whom telephoned the-journalist.M to the-investigator.M to whom.M the-main.F
redaktorka pak izprati t_i?
editor.F again sent
'Who did the journalist call the investigator that the the editor-in-chief sent to again?'

The example of interest in (109d) has a wh-dependency that is headed by *kogo* 'whom' and spans a relative clause island, *sledovatelja, pri kogoto ...* 'the investigator to whom ...'. The other examples in the minimal

⁸⁷For a full list of the materials, see Appendix C. The materials in Appendix C also include the Cyrillic versions of the examples, not just the transliterations.

quartet involve changing the length of the wh-dependency from long to short, as in (109c), replacing the relative clause with a complement clause, as in (109b), or both, as in (109a).

The predictions for this subexperiment should thus be relatively straightforward since this is exactly the minimal quartet design that we discussed above in §3.2.2. We expect to see a significant interaction effect between structure and dependency length. Graphically, we expect results along the lines of those in Figure 5.1.

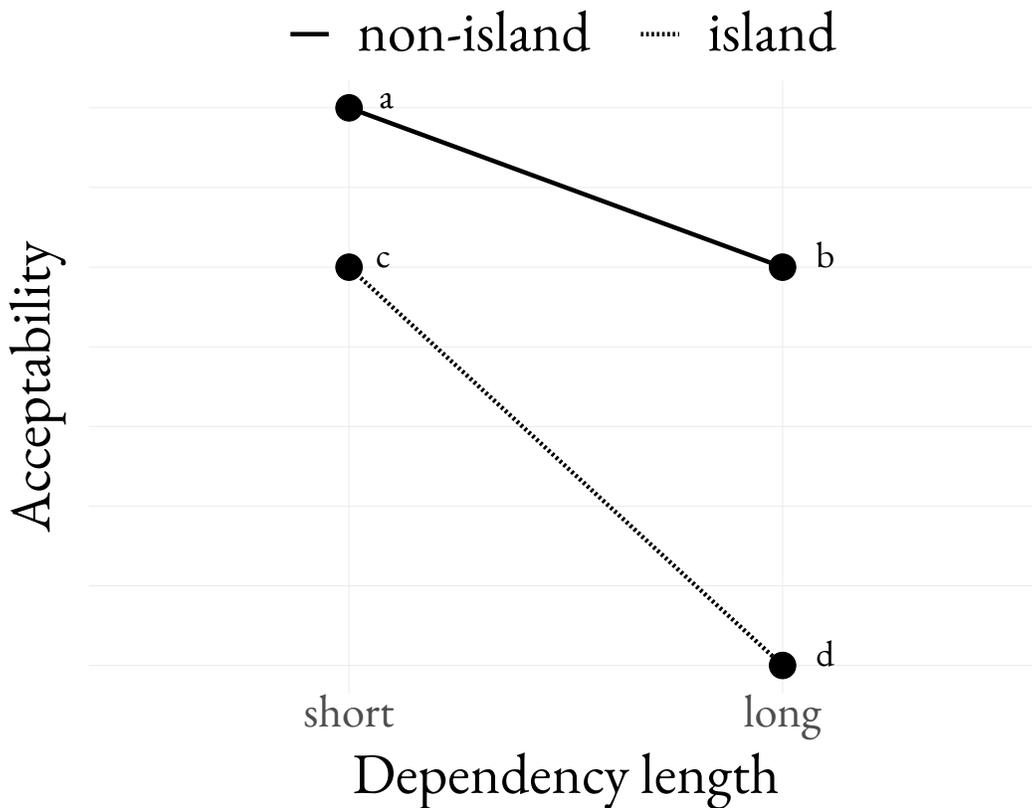


Figure 5.1: Predictions for the subexperiment 1 results

5.2.1.2 Subexperiment 2

Turning now to subexperiment 2, the idea was to take the same kinds of materials that were used in subexperiment 1, but add a second wh-dependency. This second wh-dependency should be one that does not run afoul of an island effect. Because this second wh-dependency doesn't run afoul of an island effect, the (d)-type example in the minimal quartet is expected to be grammatical under the PMC view.

On the other hand, because the (d)-type examples are reported as marginally acceptable, we might expect that they're actually ungrammatical, like the cases in Romance, Norwegian, and Mandarin that we saw above in §3.3.

In any event, an example minimal quartet is given in (110). All of the examples in (110) involve a wh-dependency between the first wh-phrase (in this case, *koj* 'who') and the subject position of the main verb in the matrix clause. The second wh-dependency has exactly the same properties as the wh-dependency in the corresponding examples from subexperiment 1 above. That is to say, the second wh-dependency in the example of interest, (110d), spans a relative clause island (in this case, the relative clause is *kmeta, pri kogoto...* 'the mayor to whom ...'). In the other examples in the minimal quartet paradigm, the second wh-dependency either is a short wh-dependency, as in (110c), spans a complement clause instead of a relative clause, as in (110b), or both, as in (110a).

- (110) a. *Koj_i kogo_j t_i uveri t_j, če novata služitelka vi prehvärl_i v druga specialnost?*
 who whom assured that the-new.F administrator.F you.PL moved in another specialty
 'Who assured whom that the new administrator moved you to another specialty track?'
- b. *Koj_i kogo_j t_i tvärdeše, če novata služitelka več_e prehvärl_i t_j v druga specialnost?*
 who whom claimed that the-new.F administrator.F already moved in another specialty
 'Who claimed that the new administrator already moved whom to another specialty track?'
- c. *Koj_i kogo_j t_i predstavi t_j na kmeta, pri kogoto novata služitelka vi pokani?*
 who whom introduce to the-mayor.M to whom.M the-new.F administrator.F you.PL invited
 'Who introduced whom to the mayor, to whom the new administrator invited you?'
- d. ? *Koj_i kogo_j t_i donosniči na kmeta, pri kogoto novata služitelka več_e pokani t_j?*
 who whom make-report to the-mayor.M to whom.M the-new.F administrator.F already invited

‘Who made a malicious report to the mayor, to whom the new administrator already invited whom?’

The predictions of this subexperiment are plotted in Figure 5.2. To reiterate, if examples like those in (106) or (110d) are grammatical, we would expect there to be no significant interaction effect because all four sentences in the minimal quartet have the same grammaticality status.⁸⁸ That is to say, everything would cancel out in the subtraction logic, and so we would expect the differences-in-differences score to be approximately 0. On the other hand, if such examples are ungrammatical, we would expect to see an interaction effect exactly like what we are expecting for the first subexperiment.

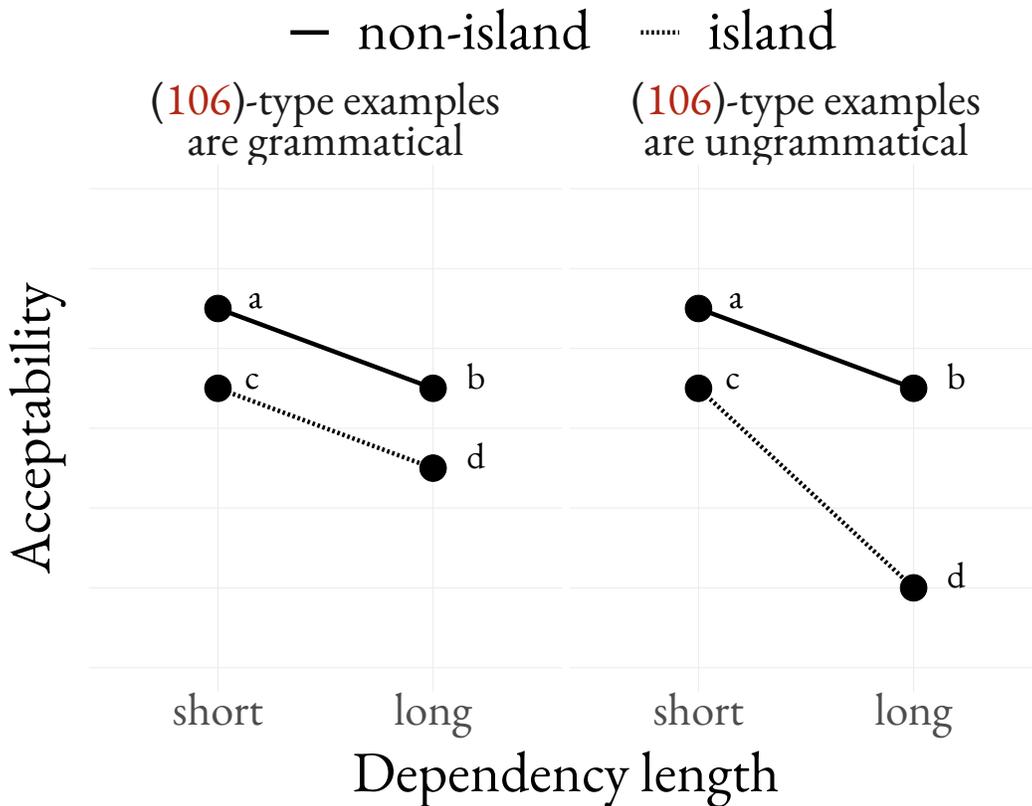


Figure 5.2: Predictions for the subexperiment 2 results, with the left panel showing what we would expect if (106)-type examples are grammatical, and the right panel showing what we would expect if they are not

⁸⁸This is of course a prediction of a null effect, and, ideally, we wouldn't want to have to reason from a null effect. Subexperiment 3 was designed to make a positive prediction in this case. See §5.2.1.3 below.

5.2.1.3 Subexperiment 3

Finally, in subexperiment 3, instead of crossing structure and dependency length as is standardly done for island effects in the minimal quartet paradigm, we crossed structure with the number of wh-dependencies (1 vs. 2). The idea here is that doing so allows us to make a positive prediction of a significant interaction effect in case examples like (106), (110d), and (111d) are grammatical, unlike was the case in subexperiment 2. In this kind of a minimal quartet, the example of interest is (111d), which has exactly the same structure as the (d)-type examples from subexperiment 2. That is to say, this is one of the examples that partly motivated the PMC. It has two wh-dependencies, one of which spans an island and one of which doesn't. The second wh-dependency in the example (in this case *kogo* 'whom') spans the relative clause island *fizioterapevta, pri kogoto ...* 'the physiotherapist to whom ...'. Now, however, the other examples vary by either eliminating the wh-dependency that does *not* span the island, as in (111c), replacing the relative clause island that the second wh-dependency spans with a complement clause instead, as in (111b), or both, as in (111a).

- (111) a. Kogo_i predpoloži doktorät, če medicinskata sestra pogrešno zapisa *t_i* za drug čas?
whom supposed the-doctor.M that the-medical.F sister.F by-mistake signed for drug čas?
another hour
'Who did the doctor think that the nurse signed up for another appointment by mistake?'
- b. Koj_i kogo_j *t_i* predpoloži, če medicinskata sestra pogrešno zapisa *t_j* za drug čas?
who whom supposed that the-medical.F sister.F by-mistake signed for another čas?
hour
'Who thought that the nurse signed whom up for another appointment by mistake?'
- c. * Kogo_i pomogna doktorät na fizioterapevta, pri kogoto medicinskata sestra pogrešno preprati *t_i*?
whom helped the-doctor.M to the-physiotherapist.M to whom.M the-medical.F sister.F by-mistake sent
'Who did the doctor help the physiotherapist, to whom the nurse sent by mistake?'

- d. ? Koj_i kogo_j t_i pomogla na fizioterapevta, pri kogoto medicinskata sestra
 who whom helped to the-physiotherapist.M to whom.M the-medical.F sister.F
 pogrešno preprati t_j?
 by-mistake sent
 ‘Who helped the physiotherapist, to whom the nurse sent whom by mistake?’

In this case, the principle of the subtraction logic that we saw above in §3.2.2 is the same, but it works out a bit differently. The difference in acceptability ratings between (111a) and (111b) quantifies the effect of having to parse two wh-dependencies instead of one. Then, the difference in acceptability ratings between (111a) and (111c) will consist of two different components. It will consist of whatever the difference in acceptability is that arises when having to parse a relative clause instead of a complement clause, but it will also consist of whatever the difference in acceptability is that arises when having a grammatical non-island-violating example in the one case and an ungrammatical island-violating example in the other case. This is because the example in (111c) is ungrammatical. Now, if we take the difference in acceptability between (111a) and (111d), we will get a quantity that consists of whatever differences in acceptability there are that arise from (i) having to parse a relative clause instead of a complement clause; (ii) having to parse two wh-dependencies instead of one; and (iii) whatever difference in grammaticality status (111a) and (111d) might have.

If we subtract the two previous differences that we calculated from the difference in acceptability between (111a) and (111d), we will be left with something that reflects the grammaticality status of (111d). This term will be approximately 0 in case (111c) and (111d) have the same grammaticality status. This is because the first and second components, (i) and (ii), in our third difference will subtract out when we subtract the two other differences from this third difference (the third difference is the difference between (111a) and (111d)). But our second difference that we’re subtracting from this third difference between (111a) and (111d) included the difference in acceptability that arises in virtue of (111a) being grammatical and (111c) being ungrammatical. This should be approximately the same as the third component of the difference in acceptability between (111a) and (111d), *just in case (111c) and (111d) have the same grammaticality status (i.e., just in case (111d) is ungrammatical)*. Thus, if (111d) is ungrammatical, our differences-in-differences score should be approximately 0.

On the other hand, if (111a) and (111d) have the same grammaticality status (which means that (111c) and (111d) would not have the same grammaticality status), the third component of their difference will be approximately 0. As a result, when we subtract the two differences from this third difference, we will end up with a term that is less than 0. Just like before, the first and second components of the difference between (111a) and (111d) will subtract out when we subtract these two other differences, but we will also be subtracting out the difference in grammaticality status between (111a) and (111c). In this case, this will not be balanced out by the third component of the difference between (111a) and (111d), as (111a) and (111d) have the same grammaticality status by hypothesis, and so this third component will be approximately 0. As a result, we will end up with a term that is less than 0.

In the previous applications that we've seen of this subtraction logic that the 2×2 experimental paradigm affords, we've seen super-additive effects. However, in this case, one of the possible predictions in the use of the subtraction logic for this third subexperiment is a *sub*-additive effect. That is to say, if (111d) is grammatical, as the PMC would have it, then we expect there to be a differences-in-differences score that is significantly less than 0. We thus have a positive prediction for this possible state of affairs, in contrast to the predicted lack of an interaction effect from subexperiment 2. However, we now predict a lack of an interaction effect if the other state of affairs obtains. That is to say, if (111d) is ungrammatical, we predict there to be no interaction effect in this third subexperiment. These predictions are summarized graphically in Figure 5.3. Let us now turn to the methods that we used in this experiment.

5.2.2 Methods

We used a Likert scale acceptability judgment task (with a scale from 1 to 7), and we elicited 2 judgments per condition per participant, for a total of 24 target items per participant as there were 12 conditions of interest across the 3 subexperiments. We included filler examples at a 2:1 filler to target ratio. The filler examples were constructed in such a way so as to have equal numbers of examples that were expected to be acceptable and examples that were expected to be unacceptable, across both target and filler items. This made for a total of 72 items for each participant.

We used a Latin square design to construct 4 different lists from the minimal quartets so that partici-

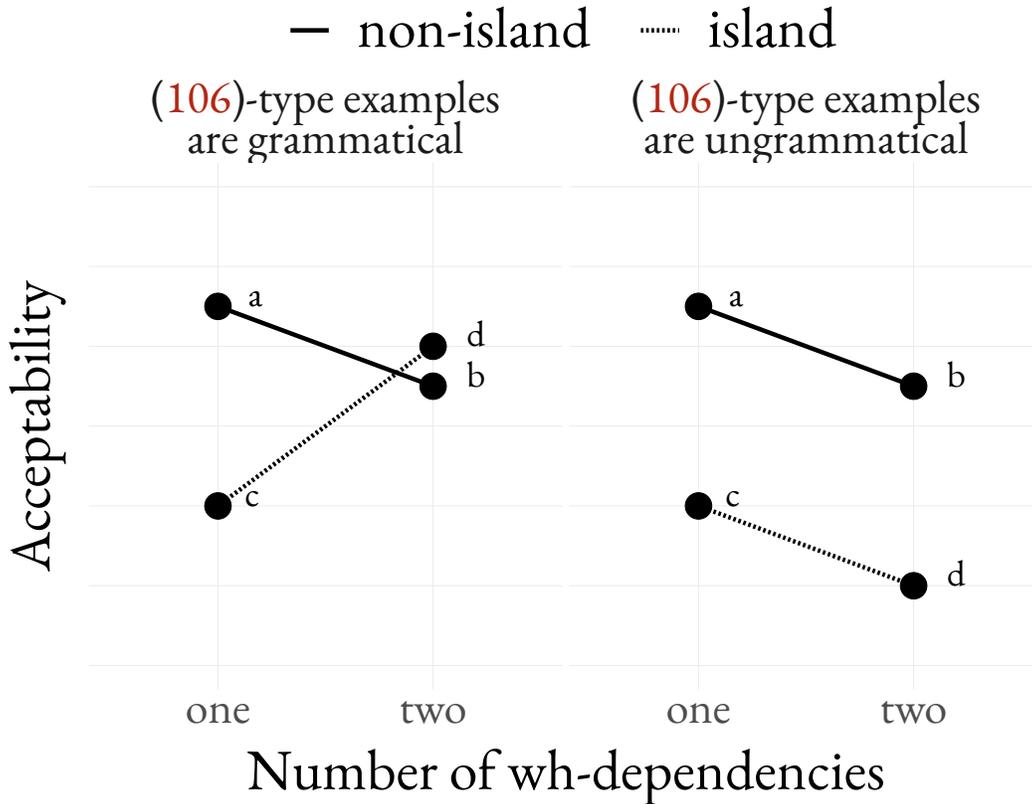


Figure 5.3: Predictions for the subexperiment 3 results, with the left panel showing what we would expect if (106)-type examples are grammatical, and the right panel showing what we would expect if they are not

pants weren't judging examples from the same quartet, as is standardly done in these sorts of experiments. The target and filler items assigned to each list were organized in a pseudorandom order for the purposes of presenting the examples to the participants. The only constraints placed on the pseudorandomization process were (i) that two of the filler items that we expected to be highly unacceptable had to occur before the first (d)-type examples from subexperiments 2 and 3; and (ii) that no more than two target items occurred in a row. The first condition was imposed on the pseudorandomization process in order to avoid possible floor effects that could conceivably obscure the effects of interest. All materials, including the lists in their pseudorandomized orders, can be found in Appendix C.

The experiment was implemented in the PCIBex platform (Zehr & Schwarz 2018) in order to collect judgments from participants online.

5.2.3 Participants

We recruited 102 participants to participate in this experiment. 33 of these 102 participants were recruited as volunteers by reaching out to Roumi Pancheva's colleagues in Bulgaria, and the remaining 69 participants were recruited via the online platform Prolific (www.prolific.co). Participants recruited via Prolific were paid for their participation. The 33 volunteer participants that were recruited via Roumi Pancheva's network were in classes at university in Bulgaria, and the 69 participants recruited via Prolific were screened for eligibility in the experiment on the basis of their native language, which is information that users of the Prolific platform make available to Prolific upon signing up for the platform. Nonetheless, 2 participants self-reported that they were not native speakers of Bulgarian in a brief demographic survey that was included before the acceptability judgment portion of the experiment. These 2 participants are excluded from our analysis.

Of the remaining 100 participants, 5 were excluded because of their performance on the filler items. An exclusion criterion was set before analyzing any of the data. We decided in advance that participants would be excluded if they rated more than 6 of the filler items in an anomalous way. An anomalous rating was defined as giving a z -score transformed rating more than 2 standard deviations above the mean z -score transformed rating for that item across all participants if it was an ungrammatical item. For the grammatical items, an anomalous rating was defined as giving a z -score transformed rating more than 2 standard deviations below the mean z -score transformed rating for that item across all participants. After removing these 5 participants because they had 7 or more anomalous ratings on the filler items, we are left with 95 participants whose data we analyze immediately below in §5.2.4. Lists 1, 3, and 4 had 24 participants each, and list 2 had 23 participants in our final dataset.

5.2.4 Results

5.2.4.1 Subexperiment 1 results

As is standardly done in these sorts of experiments, raw Likert scale judgments were z -score transformed on a per-participant basis. This was done so as to avoid scale bias. For example, one participant might

choose to only use a subset of the 7 point Likert scale, whereas another participant might use the full scale, and another participant still might use a different subset of the Likert scale. Transforming these ratings into z -scores on a per-participant basis gives individual ratings that are comparable across individuals, whatever part of the scale they used. These z -scores are what we plot and analyze below.

We first analyze the results from subexperiment 1. Recall from §5.2.1.1 above that this subexperiment investigates relative clause islands in Bulgarian with just a single wh-dependency. This was done to try to establish a baseline effect size for the relative clause island in Bulgarian independent of multiple wh-movement. We thus expect to see a significant interaction effect indicating an island violation. The results from the four conditions of subexperiment 1 are plotted in Figure 5.4. The results are trending

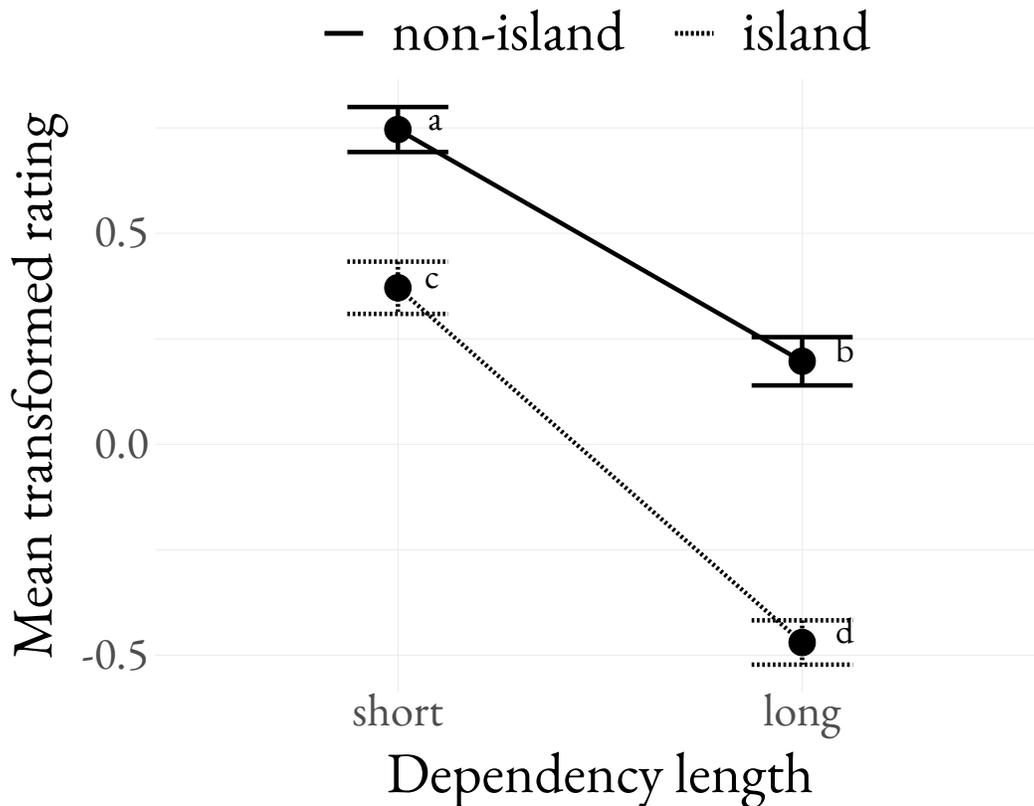


Figure 5.4: Results from subexperiment 1 collapsed across lists, with mean z -score transformed acceptability ratings plotted on the y -axis; error bars indicate one standard error of the mean

in the expected direction, as can be seen in Figure 5.4 by the fact that the lines aren't entirely parallel, but the trend doesn't seem to be as strong as one might have expected. Indeed, the differences-in-differences

score is 0.292, and while, as discussed above in §3.3.2.1, we don't have well enough articulated theories that would allow us to make numerical predictions about the size of an island effect, this differences-in-differences score is a bit lower than those that are usually reported for relative clause island effects across other languages (see, *e.g.*, Sprouse, Wagers, & Phillips 2012, Sprouse et al. 2016, Kush, Lohndal, & Sprouse 2018). To explore the results statistically, we fit a linear mixed-effects regression model to the data, with the z -score transformed rating as the response variable. We included fixed effects for structure, dependency length, and their interaction (fixed effects were treatment coded), and we included random intercepts for participant and item. This model and all subsequent models discussed in this chapter were fit with R (R Core Team 2017) using lme4's lmer function (Bates et al. 2015). The details of the fitted model can be found in Table 5.1.

Fixed effect	Estimate	Std. Error	t -value	p -value	
Intercept	0.1975	0.1052	1.877	0.0705	
Structure – island	-0.6692	0.1468	-4.558	9.34e-5	***
Dep. Length – short	0.5486	0.1468	3.737	0.0009	***
Structure × Dep. Length	0.2959	0.2076	1.425	0.1652	

Table 5.1: Details of the linear mixed-effects model for subexperiment 1 results

As can be seen in Table 5.1, the interaction effect between structure and dependency length is not significant, even if it does trend in the expected direction. This is an unexpected result. To our knowledge, there is no reason to think that Bulgarian doesn't exhibit relative clause island effects. So why might we be seeing this result in the data for subexperiment 1? One interesting thing to note is that the mean z -score rating of the (b)-type examples in the minimal quartet paradigm for this subexperiment is somewhat low. This is somewhat reminiscent of the apparent impossibility of a wh-dependency to span certain types of complement clauses in languages like Russian (*e.g.*, Ross 1967:464 ff., Comrie 1973, 1980, Pesetsky 1982:315 ff., Müller & Sternefeld 1993, Stepanov & Georgopoulos 1997, Szczegielniak 1999), Polish (*e.g.*, Giejgo 1981, Zabrocki 1990, Witkoś 1995, Szczegielniak 1999), and some varieties of German (*e.g.*, Fanselow & Weskott 2010).

For example, Stepanov & Georgopoulos (1997:276–277) report that a wh-dependency in Russian cannot span an indicative complement clause headed by *čto* 'that', as the unacceptability of the examples

in (112) shows.⁸⁹

- (112) a. *Kogo_i, ty думаеш', t_i что приведёт Елена t_i?
who you think that will-bring Elena
'Who do you think that Elena will bring?'
- b. *Kuda_i, ty сказал, t_i что пойдёт Елена t_i?
where you said that will-go Elena
'Where did you say that Elena would go?'

Examples like those in (112) stand in contrast to examples with the subjunctive complementizer, *čtoby*, as the acceptability of the examples in (113) shows, as well as to examples without an overt complementizer, as the acceptability of the examples in (114) shows.⁹⁰

- (113) a. Čto_i, ty хочеш' čtoby ja tebe prinēs t_i?
what you want that.SBJV I to-you brought
'What do you want me to bring to you?'

⁸⁹It should be noted that there appears to be some variability in these sorts of judgments. For example, Comrie (1973:303, endnote 2) says that "J. R. Payne tells me that one of his informants accepts movement out of *čto*-clauses, at least in some cases". Furthermore, Stepanov (2006:30) writes that "extraction of a wh-argument [is] degraded to various extent[s] for different speakers, subject also to lexical factors affecting the choice of the matrix predicate. Judgments are more homogenous [*sic*] in other standard contexts involving wh-movement, such as relativization [...] and degree comparatives".

⁹⁰At least in Bulgarian, the counterparts to (114) without the overt Bulgarian complementizer *če* appear to be monoclausal questions with a parenthetical "you think". For example, (ib), in contrast to (ia), shows that *če* is superficially optional. However, (iib), in contrast to (iia), shows that such examples cannot be embedded, suggesting that they aren't true multiclausal questions (Roumi Pancheva, p.c.).

- (i) a. Kogo_i misliš, če e vidjala t_i?
who you-think that is seen.F
'Who do you think that she saw?'
- b. Kogo_i, misliš, e vidjala t_i?
who you-think is seen.F
'Who do you think she saw?'
- (ii) a. Ivan ne znae kogo_i misliš, če e vidjala t_i.
Ivan not know who you-think that is seen.F
'Ivan doesn't know who you think that she saw.'
- b. *Ivan ne znae kogo_i misliš, e vidjala t_i.
Ivan not know who you-think is seen.F
'Ivan doesn't know who you think she saw.'

If the examples in (114) are also monoclausal, then the correct generalization about the facts could either be that wh-dependencies spanning indicative clauses are ungrammatical or that wh-dependencies spanning clauses headed by *čto* are ungrammatical. I remain neutral about this throughout this chapter but opt to talk in terms of wh-dependencies not being able to span clauses headed by *čto/če*.

- b. Kuda_i, Ivan skazal, čtoby deti šli t_i?
 where Ivan said that.SBJV children went
 ‘Where did Ivan tell the children to go?’
- (114) a. Kogo_i, ty думаеш’, privedët Elena t_i?
 who you think will-bring Elena
 ‘Who do you think Elena will bring?’
- b. Kuda_i, ty skazal, pojdët Elena t_i?
 where you said will-go Elena
 ‘Where did you say Elena would go?’

Now, recall from above in (109a) and (109b), that our examples used the Bulgarian complementizer *če* ‘that’. Is it possible that (some) Bulgarian speakers have a Russian-like grammar in this regard? There is some recent evidence from Stepanov & Krapova (2021) suggesting that the answer may be yes. Let’s take a brief detour to discuss their findings before returning the results from our own experiment.

5.2.4.2 A brief detour: Stepanov & Krapova (2021)

Stepanov & Krapova (2021:29–30) note how clausal complements in Bulgarian can be optionally preceded by a correlative head, *tova* ‘it/this’,⁹¹ just like in Russian and Polish. For example, the examples in (115) show that the verb *saobshti* ‘reported’ can take both a *tova* complement and a *če* complement.

- (115) a. Koj_i t_i saobshti, če studentat e posreshtnal rektora pred hotela?
 who reported that student is met rector in-front-of hotel
 ‘Who reported that the student met the rector in front of the hotel?’
- b. Koj_i t_i saobshti tova, če studentat e posreshtnal rektora pred hotela?
 who reported this that student is met rector in-front-of hotel
 ‘Who reported that the student met the rector in front of the hotel?’

Both of the examples in (115) involve a short wh-dependency between *koj* and *saobshti*, but if there were a long wh-dependency that spanned the complement clause in (115b), this would result in a complex NP island violation, as *tova* indicates the presence of an NP structure (see also Müller & Sternefeld 1995).

⁹¹The use of *tova*, however, is restricted to certain verbs and certain contexts.

But if (at least some) Bulgarian speakers are like Russian speakers, one would also expect such an example to result in ungrammaticality even in the absence of *tova*.

Stepanov & Krapova (2021) investigated this possibility using the 2×2 experimental paradigm from Sprouse (2007). Specifically, they crossed dependency length with the presence/absence of *tova*. The first two examples in an example minimal quartet from their experiment were thus those two examples above in (115). The next two examples involved the wh-dependency spanning the embedded clause, as in (116c) and (116d). The full paradigm is given in (116), with (115a) repeated as (116a) and (115b) repeated as (116b).

- (116)
- a. Koj_i t_i saobshti, če studentat e posreshtnal rektora pred hotela?
 who reported that student is met rector in-front-of hotel
 ‘Who reported that the student met the rector in front of the hotel?’
 - b. Koj_i t_i saobshti tova, če studentat e posreshtnal rektora pred hotela?
 who reported this that student is met rector in-front-of hotel
 ‘Who reported that the student met the rector in front of the hotel?’
 - c. Kogo_i rektorat saobshti, če studentat e posreshtnal t_i pred hotela?
 whom rector reported that student is met in-front-of hotel
 ‘Who did the rector report that the student met in front of the hotel?’
 - d. *Kogo_i rektorat saobshti tova, če studentat e posreshtnal t_i pred hotela?
 whom rector reported this that student is met in-front-of hotel
 ‘Who did the rector report that the student met in front of the hotel?’

Note that (116d) is ungrammatical because of the complex NP island effect induced by *tova*. The example of interest that is under investigation in this case is thus the example in (116c). The idea of the subtraction logic in this case is that if (116c) has the same grammaticality status as (116d), there will *not* be a significant interaction effect between the factors of dependency length and presence/absence of *tova*. This is because (116a) and (116b) have the same grammaticality status, and so whatever their grammaticality statuses contribute to their difference in acceptability ratings will cancel out. This would be the same for (116c) and (116d) if they do indeed have the same grammaticality status. So all differences would cancel out in the subtraction logic, and we would be left with a differences-in-differences score of approximately 0.

On the other hand, if (116c) is grammatical, then we would expect to see a significant interaction effect between dependency length and presence/absence of *tova*. This is because the only ungrammatical example in the paradigm would then be (116d), so we would expect to see a differences-in-differences score that is significantly greater than 0 because the contribution of (116d)'s ungrammaticality to its acceptability rating would not be canceled out by anything in the subtraction logic, just like in the standard subtraction logic for this paradigm discussed above in §3.2.2.

Stepanov & Krapova (2021) tested 37 Bulgarian speakers in a Likert scale acceptability judgment task, with the scale ranging from 1 to 5. They did not find an interaction effect between dependency length and presence/absence of *tova*, as would be expected if (at least some) Bulgarian speakers disallow extraction out of complement clauses headed by *če*, just like in Russian. Of course, it should be noted that this involves reasoning from the absence of an interaction effect, and reasoning from a null effect always comes with caveats, but the results they report do not even appear to be trending in the predicted direction if (116c)-type sentences were grammatical (see Stepanov & Krapova 2021:33, Figure 2).

5.2.4.3 Subexperiment 1 results revisited

In light of this result from Stepanov & Krapova (2021), we can return to the results from our experiment. Do their results allow us to make any better sense of our data? On the one hand, if it turns out that all Bulgarian speakers disallow wh-dependencies across complement clauses headed by *če*, it seems we wouldn't be able to investigate island effects in Bulgarian using the minimal quartet paradigms that we had constructed. This is because there would be a confound in the (109b)-type examples in virtue of their ungrammaticality.

On the other hand, it's possible that there are two populations of Bulgarian speakers: those who are like Russian speakers in disallowing wh-dependencies across complement clauses headed by *če* and those who are like English speakers in allowing wh-dependencies across complement clauses with an overt complementizer (modulo English's *that*-trace effects). There are two things suggesting this might indeed be the case. First, one of my collaborators for the work reported in this chapter, Roumi Pancheva, reports that some Bulgarian speakers that she knows find such wh-dependencies perfectly acceptable, while there

are others who find them to be highly unacceptable. Second, though our results from subexperiment 1 discussed above in §5.2.4.1 did not reach statistical significance, the results were nonetheless trending in the predicted direction. This could have arisen due to our sample really being a sample from these two different populations.⁹² We explore whether that might be the case.

To explore this, for each participant, we asked whether their data was more likely to have arisen from a model like \mathcal{M}_1 , in (117), with an interaction term between structure and dependency length or from a model like \mathcal{M}_2 , in (118), without such an interaction term.

$$(117) \quad y \sim \mathcal{N}(\alpha_{\text{participant}} + \alpha_{\text{item}} + \beta_0 + \beta_1 \times \text{structure} + \beta_2 \times \text{dependency length} + \beta_3 \times \text{structure} \times \text{dependency length}, \sigma^2)$$

$$(118) \quad y \sim \mathcal{N}(\alpha_{\text{participant}} + \alpha_{\text{item}} + \beta_0 + \beta_1 \times \text{structure} + \beta_2 \times \text{dependency length}, \sigma^2)$$

The model in (117) is just one way of representing the linear mixed-effects model with fixed effects for structure, dependency length, and their interaction that we fit to all of the data from subexperiment 1 in Table 5.1 above in §5.2.4.1. This model indicates that the acceptability judgment responses that were given, y , were drawn from a normal distribution whose mean is a combination of several random and fixed effects and whose variance is σ^2 . The model in (118) is the same kind of model, but without the interaction term. Now, if there are two populations of participants in our sample, we should be able to classify participants as belonging to one population or the other by asking which model is the model that was more likely to have generated their acceptability ratings.

We can determine which model was more likely to have generated a given participant's data, X_i , by calculating a Bayes Factor for each participant. Assuming the two models are equally probable, *a priori*, the Bayes Factor is just a ratio of the two marginal likelihoods, as in (119).

$$(119) \quad \text{BF}_{12} = \frac{p(X_i|\mathcal{M}_1)}{p(X_i|\mathcal{M}_2)}$$

These marginal likelihoods can be determined independently of particular parameter estimates by taking the integral of the likelihood over the prior probability of parameters, θ , given a model such as the one in

⁹²If there are indeed two populations of Bulgarian speakers, it seems that it must be the case that the majority of the 37 participants in the study reported in Stepanov & Krapova (2021) are in the population that disallow wh-dependencies across complement clauses headed by *če*.

(117) or (118). This is shown in (120).

$$(120) \quad p(X_i | M) = \int_{\theta} p(X_i | \theta) p(\theta | M) d\theta$$

Moreover, since these models are mixed-effects models, we can estimate this integral by using bridge sampling (cf. Gronau et al. 2017, Gronau, Singmann, & Wagenmakers 2020).

We used bridge sampling to calculate 10 different Bayes Factors for each participant, from which we then calculated an average Bayes Factor for each participant. While there is no “correct” way to interpret a Bayes Factor in every situation (just like there is no p -value threshold that is right for every situation), Bayes Factors that are greater than 3 are generally taken to indicate either positive or substantial evidence in favor of the model in the numerator of the expression for the Bayes Factor (*i.e.*, (119)) (see, *e.g.*, Jeffreys 1961, Raftery 1995, Jarosz & Wiley 2014). It should be noted, however, that a Bayes Factor which suggests that the model with the interaction term was more likely to have generated the participant’s data does not necessarily guarantee that the differences-in-differences score is trending in the direction that would be expected given an island violation effect (*i.e.*, is greater than 0). Again, we unfortunately don’t have well enough articulated theories to make a prediction about what kind of differences-in-differences scores we might expect for a given island violation in a given language, but previously reported differences-in-differences scores for various island types in various languages tend to range from ≈ 0.3 to ≈ 1.7 , with a mean and median both of ≈ 1 . These previously reported differences-in-differences scores are based on all of the participants’ data, whereas we’re looking at individual differences-in-differences scores to explore this question of whether there are two populations of Bulgarian speakers in our dataset. Because of this, we might not expect these individual differences-in-differences scores to be as robust of an estimate of the island effect. We therefore decided to see if there were participants in our dataset who had a differences-in-differences score greater than 0.6 and whose average Bayes Factor for the model with the interaction term, (117), over the model without the interaction term, (118), was greater than 3. We reasoned that such participants, if there are any, would be participants who do allow wh-dependencies to span complement clauses headed by *če* because their differences-in-differences score would be consistent with an island effect and because their acceptability ratings would be more likely to have been generated by a statistical model with an interaction term for structure and dependency length than by a statistical model without such a

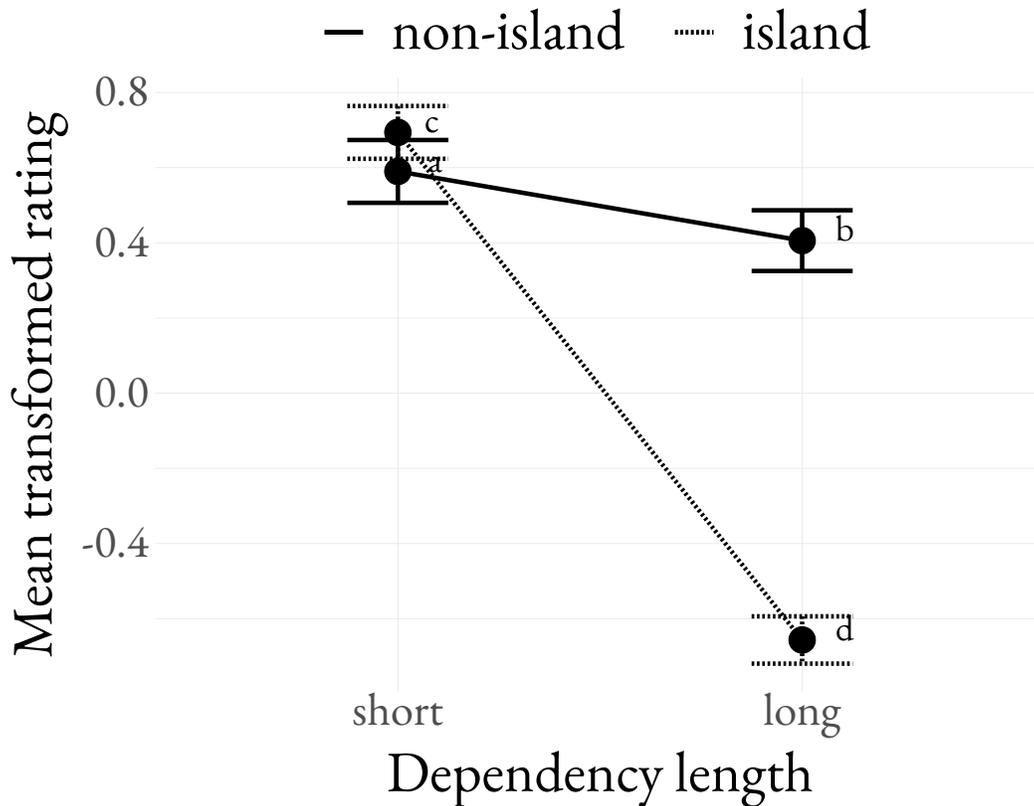


Figure 5.5: Results from subexperiment 1 for the 42 participants who exhibited a relative clause island effect, with mean z -score transformed acceptability ratings plotted on the y -axis; error bars indicate one standard error of the mean

term.

There are 42 out of the 95 participants in our dataset who meet these two criteria. That is to say, these 42 participants have an individual differences-in-differences score greater than 0.6 for the subexperiment 1 examples that they saw in their list, and they have an average Bayes Factor greater than 3, in favor of the model with the interaction term. The differences-in-differences score averaged across all 42 of these participants is 1.17, and the results from subexperiment 1 for these 42 participants are plotted in Figure 5.5. As can be seen, the lines are clearly non-parallel in the direction that would be expected if there were an island effect. Moreover, the presence of an island effect like this implies that these participants must have found the (109b)-type examples quite acceptable. This is indeed the case, as can be seen in Figure 5.5. These 42 participants' average z -score transformed rating for the (109b)-type examples was 0.41. Thus, for these 42 participants, it seems that wh-dependencies that span a complement clause headed by \check{c} are

grammatical (*i.e.*, the (109b)-type examples are grammatical). If such examples weren't grammatical for these participants, the subtraction logic would not work out as it did, because we have every independent reason to believe that the relative clause island violation (*i.e.*, the (109d)-type examples) is ungrammatical (for everyone) in Bulgarian. That is to say, if both (109b) and (109d) were ungrammatical, the contributions of their ungrammaticality to their respective acceptabilities would cancel out in the subtraction logic, and we'd be left with a differences-in-differences score of approximately 0. But this is not the case, as the differences-in-differences score is 1.17.

We can therefore proceed on the assumption that these 42 participants allow wh-dependencies that span complement clauses headed by *če*. As such, if we limit our analysis of the subexperiment 2 and 3 results to these 42 participants, we will still be in a position to draw reasonable inferences about the status of the types of Bulgarian examples that partially motivated the PMC. We next turn to the results from subexperiment 2.

5.2.4.4 Subexperiment 2 results

The results from subexperiment 2 for the 42 participants who allow wh-dependencies across complement clauses headed by *če* are plotted in Figure 5.6. Recall from §5.2.1.2 above that this subexperiment was effectively the same as subexperiment 1 except that we added an additional wh-dependency in the matrix clause. The subject of the matrix verb was always questioned in the stimuli for subexperiment 2, in addition to having the same wh-dependencies that the first subexperiment had. This second wh-dependency therefore introduced a Subjacency-obeying wh-dependency into the example. As such, syntactic theories that adopt the PMC would predict that the (110d)-type examples should be grammatical. Even though there is one wh-dependency in such examples that violates Subjacency (*i.e.*, the wh-dependency that spans the relative clause), there is a second wh-dependency that does not, so the PMC predicts that such sentences should be grammatical. If this is the case, we would expect to *not* see an interaction effect, as everything would cancel out in the subtraction logic. Graphically, this would look like parallel lines. As can be seen in Figure 5.6, this prediction would seem to be borne out. If anything, there appears to be a very slight sub-additive effect. Indeed, the differences-in-differences score across all of the data for these

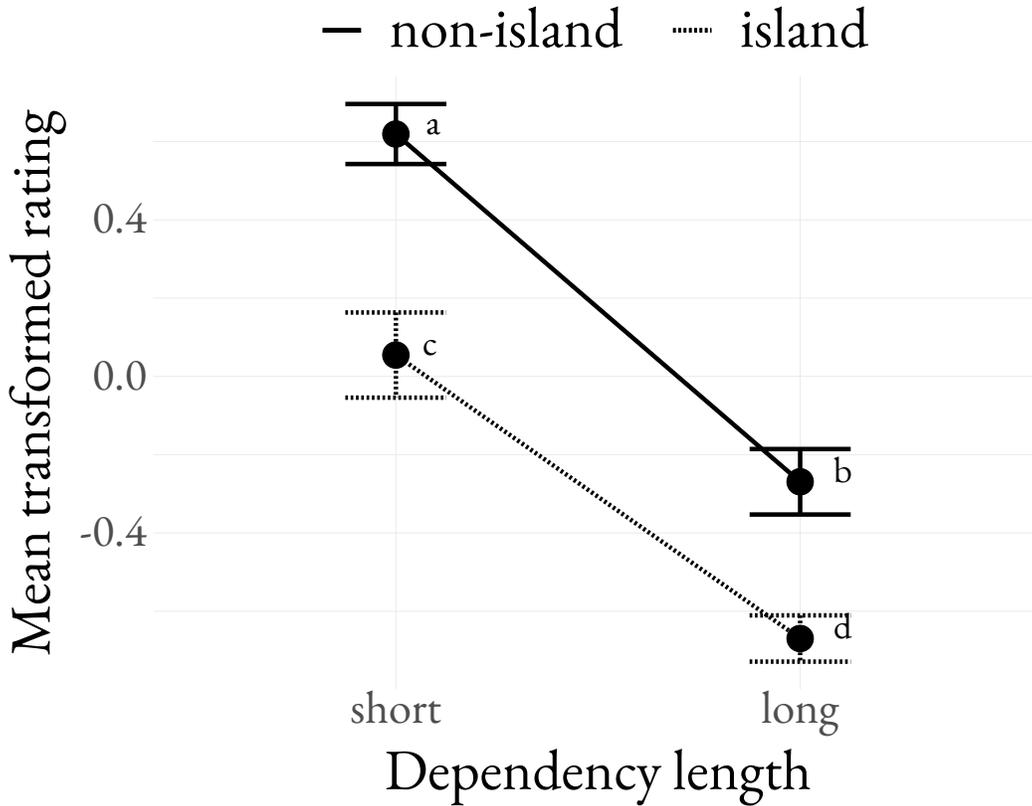


Figure 5.6: Results from subexperiment 2 for the 42 participants who allow wh-dependencies across complement clauses headed by $\check{c}e$, with mean z -score transformed acceptability ratings plotted on the y -axis; error bars indicate one standard error of the mean

42 participants' ratings for the subexperiment 2 items is -0.16 .

We also fit a linear mixed-effects model to the data from these 42 participants, just like we did above in §5.2.4.1 for the subexperiment 1 results. The model had the same random and fixed effects, and the fixed effects were coded in the same way (treatment coding). The details of this model can be seen in Table 5.2. As can be seen in the table, the interaction effect is indeed *not* significant, just as would be predicted

Fixed effect	Estimate	Std. Error	t -value	p -value	
Intercept	-0.2756	0.0960	-2.870	0.0074	**
Structure – island	0.3833	0.1256	-3.053	0.0057	**
Dep. Length – short	0.8990	0.1256	7.160	2.84e-7	***
Structure × Dep. Length	-0.1924	0.1776	-1.084	0.2898	

Table 5.2: Details of the linear mixed-effects model for subexperiment 2 results, for the 42 participants who allow wh-dependencies across complement clauses headed by $\check{c}e$

by syntactic theories that adopt the PMC as a syntactic principle. Of course, this is a null effect, and reasoning from a null effect comes with caveats. However, we designed the third subexperiment in such a way that a sub-additive interaction effect would be predicted if (110d)-type examples are grammatical, as the PMC would have it. Let us therefore turn to the results from subexperiment 3.

5.2.4.5 Subexperiment 3 results

Recall from above in §5.2.1.3 that in this subexperiment, we crossed structure with the number of wh-dependencies (1 vs. 2), instead of dependency length. In this case, the (111c)-type examples are ungrammatical because they have a single wh-dependency that spans a relative clause. However, the (111d)-type examples, which are the examples of interest, have two wh-dependencies. One of these is the same kind of wh-dependency that spans a relative clause, thereby violating Subjacency, but the other wh-dependency in the (111d)-type examples is a matrix wh-dependency that obeys Subjacency, just like the second wh-dependency that was introduced in all of the stimuli for subexperiment 2. As such, if (111d)-type examples are grammatical, as the PMC would have it, then we would expect there to be a sub-additive interaction effect. Graphically, this would look like non-parallel lines, albeit in the other direction because it's predicted to be sub-additive, rather than super-additive. This would be consistent with what we saw in the results for subexperiment 2. On the other hand, if the (111d)-type examples are ungrammatical, we would expect to see no interaction effect, as the contribution of the ungrammaticality of the (111c)-type and (111d)-type examples to their respective acceptabilities would cancel out in the subtraction logic. Graphically, this would look like parallel lines. It should be noted, however, that this would not be consistent with the results from subexperiment 2 and would make this overall dataset really difficult to interpret.

As can be seen in Figure 5.7, we do indeed seem to see evidence of the predicted sub-additive effect, as the PMC would have it. The lines appear to be non-parallel in a sub-additive manner. Indeed, the differences-in-differences score is -0.56 . These results would therefore seem to be consistent with the results from subexperiment 2. To confirm this, we explored the results statistically by fitting a linear mixed-effects model to the data from subexperiment 3 for the 42 participants who allow wh-dependencies across

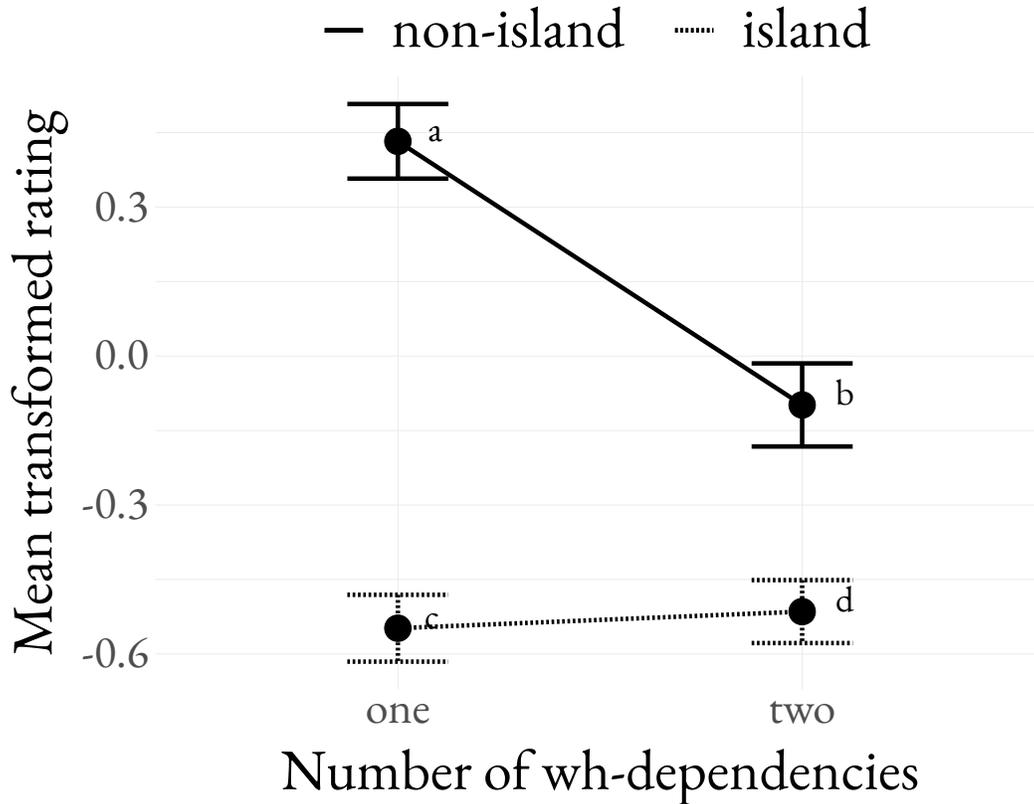


Figure 5.7: Results from subexperiment 3 for the 42 participants who allow wh-dependencies across complement clauses headed by $\check{c}e$, with mean z -score transformed acceptability ratings plotted on the y -axis; error bars indicate one standard error of the mean

complement clauses headed by $\check{c}e$, just like we did for the previous subexperiment. The model details were the same, except instead of a fixed effect for dependency length, we now have a fixed effect for the number of wh-dependencies. The details of this model can be seen in Table 5.3. As can be seen in the table, the

Fixed effect	Estimate	Std. Error	t -value	p -value	
Intercept	-0.1164	0.1070	-1.087	0.2859	
Structure – island	-0.3905	0.1498	-2.606	0.0145	*
Num. wh-dependencies – one	0.5389	0.1498	3.597	0.0012	**
Structure \times Num. wh-dependencies	-0.5879	0.2119	-2.775	0.0098	**

Table 5.3: Details of the linear mixed-effects model for subexperiment 3 results, for the 42 participants who allow wh-dependencies across complement clauses headed by $\check{c}e$

interaction effect is indeed significant, suggesting that the (111d)-type examples are grammatical.

5.2.5 Discussion

To recapitulate the results, in subexperiment 1 we initially saw a surprising lack of an island effect with the 2×2 experimental paradigm in Bulgarian for relative clause islands. It seemed like the lack of significant interaction effect was being driven by the relative unacceptability of the (109b)-type examples. Such examples being unacceptable (and thus maybe ungrammatical, at least for some Bulgarian speakers) is reminiscent of the ungrammaticality of wh-dependencies spanning complement clauses headed by *što* in Russian (see, *e.g.*, Stepanov & Georgopoulos 1997). Indeed, Stepanov & Krapova (2021) report evidence suggesting that wh-dependencies that span the Bulgarian complementizer, *če*, may be ungrammatical. However, we saw reason to believe that such examples are only ungrammatical for some Bulgarian speakers. That is to say, it seems there may be two populations of Bulgarian speakers, as a subset of our participants exhibited evidence of a relative clause island effect in the subtraction logic of the 2×2 paradigm, which implies that the (109b)-type examples—the ones with a wh-dependency that spans *če*—are grammatical for these participants. This is something that would be interesting to investigate further. If there are indeed two different Bulgarian grammars, it might be like the situation in Korean with V-to-T raising, where acquirers of Korean seemingly just pick whether their grammar has V-to-T raising in the absence of evidence one way or the other, as there are very few examples that would be informative for a learner, given certain idiosyncratic properties of Korean (cf. Han, Lidz, & Musolino 2007, Han, Musolino, & Lidz 2016). In the limited demographic data that we collected (age and the town that the participant grew up in), we did not see any correlation with whether the participant found the (109b)-type examples grammatical. Thus, if there really are two populations, it would be interesting to further explore what, if anything, leads learners to a grammar that prohibits wh-dependencies across *če* or to a grammar that doesn't.

At any rate, we then analyzed the data from those participants for whom wh-dependencies across complement clauses headed by the Bulgarian complementizer, *če*, seem to be grammatical. Focusing on just these results, we saw results in subexperiments 2 and 3 that are consistent with examples like those in (106), (110d), and (111d) being grammatical, which is exactly what is predicted by the PMC (cf. Richards 1997, 1998, 2001).

One thing worth noting, however, is that in the subset of data from subexperiments 2 and 3 for our 42 participants who did seemingly find the (109b)-type examples from subexperiment 1 grammatical, the (b)-type examples from subexperiments 2 and 3 were both rated as relatively unacceptable (cf. Figures 5.6 and 5.7). The (b)-type examples in subexperiments 2 and 3 both had two wh-dependencies and both involved one of those wh-dependencies spanning a complement clause headed by *čē*. It would be surprising if the participants who seemingly found such examples grammatical with just one wh-dependency found them to be ungrammatical with an additional wh-dependency, one that is also merely limited to the matrix clause. This is not something that would be straightforwardly accounted for under any syntactic theory. However, this is not to say that it's not possible. If such a thing were true of these participants' grammars, that would constitute a confound in the (b)-type examples that does not subtract out in the subtraction logic of the 2×2 experimental paradigm.

But, in our view, the better explanation is just that the relative unacceptability of the (b)-type examples in subexperiments 2 and 3 arises from the cost of having a multiple-wh question where the two wh-phrases originate in different clauses. That is to say, perhaps especially devoid of any supporting context, there is a relatively steep cost in acceptability to such questions. Nonetheless, in subexperiment 2, the acceptability rating of the (110d)-type examples appears as if it can be accounted for merely in virtue of the cost of having a relative clause instead of a complement clause plus this (steep) cost of having a multiple-wh question with wh-phrases originating in different clauses. That is to say, because there was no interaction effect in subexperiment 2, we don't have any evidence that the (110d)-type examples are ungrammatical. This lack of interaction effect is in line with the predictions of the PMC, as discussed above.

Similarly, in subexperiment 3, there is a steep cost for having a multiple-wh question with wh-phrases originating in different clauses, as can be seen by the rating of the (111b)-type examples in Figure 5.7. One might have therefore expected the (111d)-type examples to exhibit a degradation in acceptability relative to the (111c)-type examples that was just as steep as the degradation in acceptability from the (111a)-type examples to the (111b)-type examples. However, this is not the case, which is exactly as predicted if the PMC renders the (111d)-type examples grammatical, thereby greatly ameliorating the drop in ac-

ceptability that they otherwise might have had in virtue of being a multiple-wh question with wh-phrases originating in different clauses.

So while the relative unacceptability of the (b)-type examples in subexperiments 2 and 3 might initially have been a concern for our interpretation of our results, we do not think this is a genuine concern.

These results thus reaffirm the importance of ensuring that our syntactic theories correctly predict the grammaticality of the Bulgarian examples. In this regard, it should be noted that these results are not particularly compatible with the view that islands are a consequence of the linearization process at the syntax-PF interface (*e.g.*, Uriagereka 1999, 2012, Hornstein, Lasnik, & Uriagereka 2003, Fox & Pesetsky 2005). On some of these views, transfer of a phase to LF and PF renders everything inside the complement of the phase head unavailable to further syntactic computation. It would appear to be impossible to account for the Bulgarian facts discussed in this chapter on such views. That being said, one could perhaps imagine a version of the view from Fox & Pesetsky (2005) that could account for the data. Fox & Pesetsky (2005) argue for a theory where the completion of a phase in a derivation leads to the computation of a partial ordering between all of the lexical items in that phase. If the derivation could be made to proceed in such a way so that the wh-phrase contained in the island was not part of any partial ordering statements that required it to occur inside the phase just in case there was another Subjacency-obeying wh-phrase in a higher phase that c-commanded it, then it might be possible to account for these facts on their view. My rough sketch of such an account here, however, seems decidedly *ad hoc*. It's unclear whether there might be a version of this account that isn't as stipulative in nature; on the face of it, it seems unlikely.

5.3 Conclusion

To summarize, unlike in the cases that we saw above in §3.3 involving Romance (Almeida 2014, Sprouse et al. 2016), Norwegian (Kush, Lohndal, & Sprouse 2018), and Mandarin (Lu, Thompson, & Yoshida 2020), it appears that the type of examples from Bulgarian which partially motivated the PMC proposed in Richards (1997, 1998, 2001) are both (marginally) acceptable and grammatical. Such a result reaffirms

the importance of ensuring that our syntactic theories correctly predict the grammaticality of these Bulgarian examples, whether that's by ensuring that the PMC is adequately incorporated into our current theories or by replacing the PMC with some similar principle. Moreover, we must ensure that our theories don't actually preclude the ability to account for these examples, which, at least *prima facie*, would appear to be the case for the views that attribute island effects to the linearization process at the syntax-PF interface.

Finally, I hope this chapter has also served as an example of how the subtraction logic afforded by a minimal-quartet-type experiment can be used in different ways that don't always involve having to cross the factors of structure and dependency length (as was first done in Sprouse 2007). Indeed, in the results from Stepanov & Krapova (2021), we saw a use of this experimental paradigm that involved crossing the presence/absence of a correlative head with dependency length. In our third subexperiment, we saw a case where we crossed the number of wh-dependencies with structure. In all of these cases, the subtraction logic afforded by the paradigm and our linking hypothesis ((10) from Chapter 1) can be useful in allowing us to try to more directly get at grammaticality despite the fact that we're only measuring acceptability, at least as long as we make sure that all differences across the stimuli in the paradigm subtract out in the subtraction logic.

Chapter 6 Conclusion

To summarize, this dissertation has presented a series of case studies concerned with whether the signal in a given set of measurements reflects grammatical competence or performance factors. Chapter 1 introduced the nature of these considerations in the context of linguistic inquiry involving both adult and child grammars. With respect to adult grammars, we discussed the nature of acceptability judgments, which are a very common tool for linguistic inquiry in the domain of syntax. We discussed the linking hypothesis that most linguists adopt, either implicitly or explicitly, between acceptability (performance) and grammaticality (competence), and we discussed the fact that linguists often further just assume that these two things covary. Of course, we know that they don't covary, but this assumption seems to be justified in the vast majority of cases (see, *e.g.*, Sprouse & Almeida 2012, 2013, Sprouse, Schütze, & Almeida 2013). We also discussed the nature of the subtraction logic that a minimal-pair-type experiment affords and how this can allow one to more directly get at the grammaticality status of certain examples even though we are just measuring acceptability. Such subtraction logic can be useful in linguistic inquiry, particularly if one has any reason to suspect that one is dealing with a case in which acceptability and grammaticality might not covary.

With respect to child grammars, we discussed the fact that the assumption that performance and competence covary in children is a more tenuous assumption, particularly at ages where other cognitive skills are still developing (see, *e.g.*, Brown, Fraser, & Bellugi 1964, Shipley, Smith, & Gleitman 1969).

This discussion set the stage for the first case study of this dissertation in Chapter 2, an investigation into the nature of non-adult-like productions from English-acquiring children with a medial wh-phrase. On the basis of experimental data showing a correlation between an independent measure of cognitive inhibition and the production of such examples, we argued that the best explanation of these non-adult-like productions is that children fail to inhibit the pronunciation of the wh-copy at the intermediate

clause boundary and that children do have the target adult-like English grammar with respect to the formation of wh-dependencies (contra, *e.g.*, Thornton 1990, McDaniel, Chiu, & Maxfield 1995, de Villiers, de Villiers, & Roeper 2011). The upshot of such a view is that the theory of how non-adult-like linguistic behavior like that of medial wh-phrase production arises and then disappears in the repertoire an English-acquiring child reduces to a theory of how cognitive inhibition develops throughout childhood.

Then, in Chapter 3, we briefly discussed island effects, (syntactic) theories of such effects, and an experimental method that affords the same kind of subtraction logic for probing the grammaticality status of island effects that the minimal-pair-type experiment can provide in the general case. We saw how it is not possible to construct a minimal pair for an example with an island violation but that, with a minimal quartet, the same kind of subtraction logic can be achieved. Finally, we discussed several recent experimental studies that have put this kind of 2×2 experimental design to use in probing island effects (Almeida 2014, Sprouse et al. 2016, Kush, Lohndal, & Sprouse 2018, Lu, Thompson, & Yoshida 2020); in particular, we saw cases where the paradigm was used to argue that certain types of island-violating examples which were taken to be grammatical on the basis of being relatively acceptable are in fact ungrammatical. This chapter set the stage for the following two case studies of this dissertation, both of which dealt with island effects.

In Chapter 4, we attempted to use this 2×2 experimental paradigm to probe the status of island violations in the context of sluicing. Sluicing, a kind of elliptical phenomenon, has long been noted to ameliorate the acceptability of examples with island violations contained inside the ellipsis site (*e.g.*, Ross 1969). Some have argued that this amelioration constitutes genuine island repair and that such examples are grammatical (*e.g.*, Ross 1969, Chomsky 1972, Lasnik 2001, Fox & Lasnik 2003, Merchant 2005, 2008b, 2009, Temmerman 2013, Griffiths & Lipták 2014), whereas others have argued that the island repair is only apparent due to the use of various evasion strategies (*e.g.*, Barros 2014a, Barros, Elliott, & Thoms 2014, 2015). In a series of 8 experiments, we attempted to use the minimal quartet experimental design to investigate whether sluicing does render island-violating sluices grammatical when evasion strategies are ruled out. We mostly failed to find evidence that would indicate such examples are ungrammatical, though this could have been due to our studies being underpowered. We also briefly considered

some positive arguments from Barros, Elliott, & Thoms (2014) in favor of the view that sluicing does not repair island violations. Nonetheless, the results from this chapter were not as conclusive as one might have hoped. If anything, the main takeaway from this chapter might be a methodological one. That is, in cases where there is a reasonable expectation of a relatively small effect size, large-scale experimental methods might be less useful than targeted acceptability judgments which manipulate potentially confounding factors. Such acceptability judgments often become convoluted and can be hard to do at scale, particularly since the most straightforward way to do these kinds of large-scale acceptability judgments involves presenting the examples to the participants without any supporting context.

Finally, in Chapter 5, we used this same 2×2 experimental paradigm to probe another empirical domain involving island effects. In particular, we looked at examples in Bulgarian involving multiple wh-dependencies where one wh-dependency violates an island constraint and one does not. Such examples have been reported as relatively acceptable and have been taken to be grammatical (Richards 1997, 1998, 2001). Moreover, on the basis of data like this from Bulgarian (and other data), Richards proposed the PMC, a syntactic principle which allows for syntactic constraints to be violated in certain contexts where there is another relevant dependency that satisfies the constraint. Such examples, however, could conceivably be acceptable but ungrammatical, like some of the island violations that were investigated in the studies reviewed in Chapter 3 (Almeida 2014, Sprouse et al. 2016, Kush, Lohndal, & Sprouse 2018, Lu, Thompson, & Yoshida 2020). However, our results from Chapter 5 suggested that such examples are indeed grammatical. Such a finding underscores the importance for ensuring that our syntactic theories have the ability to account for the grammaticality of such examples. We also discussed how this finding is, on the face of it, incompatible with the view that island effects arise because of the nature of the linearization process at the syntax-PF interface.

It is my hope the case studies reported in this dissertation will encourage more direct engagement with considerations that arise when making inferences from measurements to targets of explanation that are of theoretical interest. Again, there is no one-size-fits-all approach to such considerations, as the contrasting utility of the 2×2 experimental paradigm from Chapter 4 to Chapter 5 makes plain. Nonetheless, direct engagement with such considerations can help facilitate advancement in linguistic inquiry. The

distinction between performance and competence continues to be as important to linguistic inquiry as it has ever been. If anything, I suspect that this distinction will perhaps be more important in the decades of research to come, given that a lot of the low hanging fruit involving cases where performance and competence do obviously and robustly covary has already been analyzed and theorized, with great success. In cases where linking hypotheses lead to noisier data and involve more potentially confounding factors (such as underdeveloped executive functioning abilities in children) and in cases involving judgments about examples with high degrees of complexity and subtle distinctions (as in some domains of linguistic inquiry into adult grammars), careful consideration of the ways in which performance might fail to transparently reflect competence will likely be key to making theoretical advancements.

Appendix A Elicited production materials for experiment in

Chapter 2

The materials for the elicited production task are reported in this appendix. There were 6 videos that the child and experimenter watched together from the Brazilian animated cartoon show, *Turma da Mônica* (“Monica’s Gang”). The clips lacked dialogue. In what follows, we briefly describe the contents of each clip before giving the prompts for the questions we tried to elicit after each clip.

The first video involved a top hat that was moving around on the ground. A boy went to investigate what was causing the top hat to move. After picking it up, it is revealed that Mônica was under the top hat (and she was holding a bunny stuffed animal). She then kisses the boy on the cheek. The following prompts were used to elicit the following three intended questions.

(121) Prompt: We know that it was a girl under the top hat, but let’s ask Snuggles what he thinks.

Intended: What do you think was under the top hat?

(122) Prompt: We know that it was a bunny that the girl was holding, but let’s ask Snuggles what he thinks.

Intended: What do you think the girl was holding?

(123) Prompt: We know that it was the girl that kissed the boy, but let’s ask Snuggles who he thinks.

Intended: Who do you think kissed the boy?

The second video involved Mônica and a friend eating watermelon together. A boy in yellow steals Mônica’s bunny and runs away, with Mônica chasing him. He proceeds to kick the bunny into the air, where it is caught by a boy in green, floating by on balloons. Mônica’s friend spits watermelon seeds at

the balloons, popping them, the boy in green falls to the ground, and Mônica retrieves her bunny. The following prompts were used to elicit the following four intended questions.

(124) Prompt: We know that it was the watermelon that the girls were eating, but let's ask Snuggles what he thinks.

Intended: What do you think the girls were eating?

(125) Prompt: We know that it was the bunny that the yellow boy kicked, but let's ask Snuggles what he thinks.

Intended: What do you think the yellow boy kicked?

(126) Prompt: We know that it was with balloons that the green boy flew, but let's ask Snuggles how he thinks.

Intended: How do you think the boy flew?

(127) Prompt: We know that it was with watermelon seeds that the girl popped the balloon, but let's ask Snuggles how he thinks.

Intended: How do you think the girl popped the balloons?

The third video involved the boy in green and the boy in yellow fleeing from Mônica, who is chasing them across a tightrope because they have stolen her bunny. The boys reach the platform at the end of the tightrope before Mônica, where they proceed to use a pair of scissors to cut the tightrope, which would putatively cause Mônica to fall to the ground. They cut the rope, but it turns out that the platform falls to the ground, while the rope remains suspended in the air. As the boys fall the ground, Mônica grabs her bunny back from them. The following prompts were used to elicit the following four intended questions.

(128) Prompt: We know that it was on the rope that the kids were walking, but let's ask Snuggles where he thinks.

Intended: Where do you think the kids were walking?

(129) Prompt: We know that it was the girl that was chasing the boys, but let's ask Snuggles who he thinks.

- Intended: Who do you think was chasing the boys?
- (130) Prompt: We know that it was with scissors that the boys cut the rope, but let's ask Snuggles how he thinks.
- Intended: How do you think the boys cut the rope?
- (131) Prompt: We know that it was the boys that fell, but let's ask Snuggles which kids he thinks.
- Intended: Which kids do you think fell?

The fourth video involved Mônica chasing the boy in green and the boy in yellow. She chases them to the edge of a cliff with water below. The boy in yellow grabs Mônica's bunny from her and whips it around like a propeller in order to fly away and escape. The boy in green jumps into the water below in order to hide from Mônica, but Mônica gets a fishing pole and fishes him out of the water. Mônica walks away with the boy in green hanging on the fishing line, and the boy in yellow is seen flying in the sky above with her bunny as the clip ends. The following four prompts were used to elicit the following four intended questions.

- (132) Prompt: We know that it was the yellow boy that flew in the sky, but let's ask Snuggles who he thinks.
- Intended: Who do you think flew in the sky?
- (133) Prompt: We know that it was in the water that the green boy tried to hide, but let's ask Snuggles where he thinks.
- Intended: Where do you think the green boy tried to hide?
- (134) Prompt: We know that it was the green boy that jumped in the water, but let's ask Snuggles which kid he thinks.
- Intended: Which kid do you think jumped in the water?
- (135) Prompt: We know that it was the girl that got the green boy out of the water, but let's ask Snuggles which kid he thinks.

Intended: Which kid do you think got the green boy out of the water?

The fifth video involved the boy in green and the boy in yellow playing together with a soccer ball. Mônica tries to join them, but the two boys don't want to let her play. Mônica ends up stealing the ball from them and demonstrating that she is really good at soccer, much better than the two of them. The clip ends with Mônica kicking the ball and hitting the boy in green with the ball. The following four prompts were used to elicit the following four intended questions.

(136) Prompt: We know that it was a ball that the boys were playing with, but let's ask Snuggles which toy he thinks.

Intended: Which toy do you think the boys were playing with?

(137) Prompt: We know that it was soccer that the boys were playing, but let's ask Snuggles which game he thinks.

Intended: Which game do you think the boys were playing?

(138) Prompt: We know that it was the girl that was really good at soccer, but let's ask Snuggles who he thinks.

Intended: Who do you think was really good at soccer?

(139) Prompt: We know that it was the green boy that the girl hit, but let's ask Snuggles which boy he thinks.

Intended: Which boy do you think the girl hit?

The sixth video involved a boy looking through a hole in a fence. He sees something that he thinks is funny. It is revealed that Mônica was behind the fence, as she knocks over the fence on top of the boy and walks away. The following two prompts were used to elicit the following two intended questions.

(140) Prompt: We know that it was a girl that the boy saw, but let's ask Snuggles who he thinks.

Intended: Who do you think the boy saw?

(141) Prompt: We know that the it was behind the fence that the boy saw the girl, but let's ask Snuggles where he thinks

Intended: Where do you think the boy saw the girl?

Appendix B English materials for all experiments in Chapter 4

B.1 Materials for Experiment 1

B.1.1 Experiment 1: All target items

B.1.1.1 Subject island items

(142) Subject island, Quartet 1

- a. Someone falsely stated that the representative scared the citizens, and Vanessa asked who.
- b. Jane falsely stated that some representative scared the citizens, and Vanessa asked who.
- c. Someone falsely stated that the announcement from the representative scared the citizens, and Vanessa asked who.
- d. ? Jane falsely stated that the announcement from some representative scared the citizens, and Vanessa asked who.

(143) Subject island, Quartet 2

- a. Someone wrongly thinks that the designer is worth a lot of money, but Lisa isn't sure who.
- b. Maddie wrongly thinks that some designer is worth a lot of money, but Lisa isn't sure who.
- c. Someone wrongly thinks that the dress by the designer is worth a lot of money, but Lisa isn't sure who.

- d. ? Maddie wrongly thinks that the dress by some designer is worth a lot of money, but Lisa isn't sure who.

(144) Subject island, Quartet 3

- a. Someone untruthfully said that the architect won an award, and Brynn is trying to confirm who.
- b. Phoebe untruthfully said that some architect won an award, and Brynn is trying to confirm who.
- c. Someone untruthfully said that the building by the architect won an award, and Brynn is trying to confirm who.
- d. ? Phoebe untruthfully said that the building by some architect won an award, and Brynn is trying to confirm who.

(145) Subject island, Quartet 4

- a. Someone incorrectly reported that the inventor changed society for the better, and Blair wanted to determine who.
- b. Shelby incorrectly reported that some inventor changed society for the better, and Blair wanted to determine who.
- c. Someone incorrectly reported that the patent of the inventor changed society for the better, and Blair wanted to determine who.
- d. ? Shelby incorrectly reported that the patent of some inventor changed society for the better, and Blair wanted to determine who.

(146) Subject island, Quartet 5

- a. Someone wrongly declared that the judge caused civil unrest, and Carter was trying to discover who.
- b. Steve wrongly declared that some judge caused civil unrest, and Carter was trying to discover who.

- c. Someone wrongly declared that the proclamation from the judge caused civil unrest, and Carter was trying to discover who.
- d. ? Steve wrongly declared that the proclamation from some judge caused civil unrest, and Carter was trying to discover who.

(147) Subject island, Quartet 6

- a. Someone incorrectly announced that the author sold millions of copies, and Cynthia wants to find out who.
- b. Diane incorrectly announced that some author sold millions of copies, and Cynthia wants to find out who.
- c. Someone incorrectly announced that the book by the author sold millions of copies, and Cynthia wants to find out who.
- d. ? Diane incorrectly announced that the book by some author sold millions of copies, and Cynthia wants to find out who.

(148) Subject island, Quartet 7

- a. Someone falsely proclaimed that the scientist would cure cancer, but Annie forgot who.
- b. Julie falsely proclaimed that some scientist would cure cancer, but Annie forgot who.
- c. Someone falsely proclaimed that the discovery by the scientist would cure cancer, but Annie forgot who.
- d. ? Julie falsely proclaimed that the discovery by some scientist would cure cancer, but Annie forgot who.

(149) Subject island, Quartet 8

- a. Someone wrongly declared that the CEO caused all stock prices to plummet, and Macie was trying to guess who.

- b. Ashley wrongly declared that some CEO caused all stock prices to plummet, and Macie was trying to guess who.
- c. Someone wrongly declared that the announcement from the CEO caused all stock prices to plummet, and Macie was trying to guess who.
- d. ? Ashley wrongly declared that the announcement from some CEO caused all stock prices to plummet, and Macie was trying to guess who.

(150) Subject island, Quartet 9

- a. Someone inaccurately stated that the famous chef caused the customer to throw up, but Kristin doesn't know who.
- b. Morgan inaccurately stated that some famous chef caused the customer to throw up, but Kristin doesn't know who.
- c. Someone inaccurately stated that the dish by the famous chef caused the customer to throw up, but Kristin doesn't know who.
- d. ? Morgan inaccurately stated that the dish by some famous chef caused the customer to throw up, but Kristin doesn't know who.

(151) Subject island, Quartet 10

- a. Someone falsely believed that the senator destroyed the political union, but Amy cannot recall who.
- b. Brie falsely believed that some senator destroyed the political union, but Amy cannot recall who.
- c. Someone falsely believed that the meeting with the senator destroyed the political union, but Amy cannot recall who.
- d. ? Brie falsely believed that the meeting with some senator destroyed the political union, but Amy cannot recall who.

(152) Subject island, Quartet 11

- a. Someone falsely claimed that the journalist undermined the government, but Luke couldn't remember who.
- b. Mary falsely claimed that some journalist undermined the government, but Luke couldn't remember who.
- c. Someone falsely claimed that the news report by the journalist undermined the government, but Luke couldn't remember who.
- d. ? Mary falsely claimed that the news report by some journalist undermined the government, but Luke couldn't remember who.

(153) Subject island, Quartet 12

- a. Someone inaccurately asserted that the famous actor was widely despised, and Lacey was trying to verify who.
- b. Kari inaccurately asserted that some famous actor was widely despised, and Lacey was trying to verify who.
- c. Someone inaccurately asserted that the episode with the famous actor was widely despised, and Lacey was trying to verify who.
- d. ? Kari inaccurately asserted that the episode with some famous actor was widely despised, and Lacey was trying to verify who.

(154) Subject island, Quartet 13

- a. Someone incorrectly declared that the famous astronaut was boring, and Jessie asked who.
- b. Paula incorrectly declared that some famous astronaut was boring, and Jessie asked who.
- c. Someone incorrectly declared that the interview with the famous astronaut was boring, and Jessie asked who.
- d. ? Paula incorrectly declared that the interview with some famous astronaut was boring, and Jessie asked who.

(155) Subject island, Quartet 14

- a. Someone wrongly said that the athlete praised the other team, but Linda isn't sure who.
- b. Martha wrongly said that some athlete praised the other team, but Linda isn't sure who.
- c. Someone wrongly said that the statement from the athlete praised the other team, but Linda isn't sure who.
- d. ? Martha wrongly said that the statement from some athlete praised the other team, but Linda isn't sure who.

(156) Subject island, Quartet 15

- a. Someone inaccurately said that the engineer didn't change anybody's mind, and Valerie was trying to confirm who.
- b. Danny inaccurately said that some engineer didn't change anybody's mind, and Valerie was trying to confirm who.
- c. Someone inaccurately said that the assessment from the engineer didn't change anybody's mind, and Valerie was trying to confirm who.
- d. ? Danny inaccurately said that the assessment from some engineer didn't change anybody's mind, and Valerie was trying to confirm who.

(157) Subject island, Quartet 16

- a. Someone falsely said that the teacher expressed doubts about the student, and Jordan wanted to determine who.
- b. Casey falsely said that some teacher expressed doubts about the student, and Jordan wanted to determine who.
- c. Someone falsely said that the note from the teacher expressed doubts about the student, and Jordan wanted to determine who.
- d. ? Casey falsely said that the note from some teacher expressed doubts about the student, and Jordan wanted to determine who.

- (158) Subject island, Quartet 17
- a. Someone mistakenly thought that the lawyer threatened a lawsuit against the company, and Joanna was trying to discover who.
 - b. Mike mistakenly thought that some lawyer threatened a lawsuit against the company, and Joanna was trying to discover who.
 - c. Someone mistakenly thought that the notice from the lawyer threatened a lawsuit against the company, and Joanna was trying to discover who.
 - d. ? Mike mistakenly thought that the notice from some lawyer threatened a lawsuit against the company, and Joanna was trying to discover who.

- (159) Subject island, Quartet 18
- a. Someone falsely alleged that the social media influencer was deceitful, and Curtis wanted to find out who.
 - b. Albert falsely alleged that some social media influencer was deceitful, and Curtis wanted to find out who.
 - c. Someone falsely alleged that the post from the social media influencer was deceitful, and Curtis wanted to find out who.
 - d. ? Albert falsely alleged that the post from some social media influencer was deceitful, and Curtis wanted to find out who.

- (160) Subject island, Quartet 19
- a. Someone incorrectly reported that the famous director lost a bunch of money, and Jake forgot who.
 - b. Harry incorrectly reported that some famous director lost a bunch of money, and Jake forgot who.
 - c. Someone incorrectly reported that the movie by the famous director lost a bunch of money, and Jake forgot who.

- d. ? Harry incorrectly reported that the movie by some famous director lost a bunch of money, and Jake forgot who.

(161) Subject island, Quartet 20

- a. Someone wrongly stated that the famous artist was inconsequential, and Ellen was trying to guess who.
- b. Zach wrongly stated that some famous artist was inconsequential, and Ellen was trying to guess who.
- c. Someone wrongly stated that the painting by the famous artist was inconsequential, and Ellen was trying to guess who.
- d. ? Zach wrongly stated that the painting by some famous artist was inconsequential, and Ellen was trying to guess who.

(162) Subject island, Quartet 21

- a. Someone mistakenly thought that the mailman was late, but Patrick didn't know who.
- b. Robin mistakenly thought that some mailman was late, but Patrick didn't know who.
- c. Someone mistakenly thought that the delivery by the mailman was late, but Patrick didn't know who.
- d. ? Robin mistakenly thought that the delivery by some mailman was late, but Patrick didn't know who.

(163) Subject island, Quartet 22

- a. Someone inaccurately declared that the famous artist was inspired by nature, but Taylor couldn't recall who.
- b. Caroline inaccurately declared that some famous artist was inspired by nature, but Taylor couldn't recall who.
- c. Someone inaccurately declared that the design by the famous artist was inspired by nature, but Taylor couldn't recall who.

- d. ? Caroline inaccurately declared that the design by some famous artist was inspired by nature, but Taylor couldn't recall who.

(164) Subject island, Quartet 23

- a. Someone falsely proclaimed that the general was missing, but Tyler cannot remember who.
- b. Kristi falsely proclaimed that some general was missing, but Tyler cannot remember who.
- c. Someone falsely proclaimed that the picture of the general was missing, but Tyler cannot remember who.
- d. ? Kristi falsely proclaimed that the picture of some general was missing, but Tyler cannot remember who.

(165) Subject island, Quartet 24

- a. Someone mistakenly believed that the billionaire was last seen in Hong Kong, and Ian was trying to verify who.
- b. Vince mistakenly believed that some billionaire was last seen in Hong Kong, and Ian was trying to verify who.
- c. Someone mistakenly believed that the clone of the billionaire was last seen in Hong Kong, and Ian was trying to verify who.
- d. ? Vince mistakenly believed that the clone of some billionaire was last seen in Hong Kong, and Ian was trying to verify who.

B.1.1.2 Complex NP island items

(166) Complex NP island, Quartet 1

- a. Someone incorrectly stated that the general attacked the civilian, and Becca asked who.
- b. Alexa incorrectly stated that the general attacked some civilian, and Becca asked who.

- c. Someone accepted the false proclamation that the general attacked the civilian, and Becca asked who.
- d. ? Alexa accepted the false proclamation that the general attacked some civilian, and Becca asked who.

(167) Complex NP island, Quartet 2

- a. Someone wrongly alleged that the financial advisor took advantage of the old man, but Melissa isn't sure who.
- b. Rebecca wrongly alleged that the financial advisor took advantage of some old man, but Melissa isn't sure who.
- c. Someone made the incorrect allegation that the financial advisor took advantage of the old man, but Melissa isn't sure who.
- d. ? Rebecca made the incorrect allegation that the financial advisor took advantage of some old man, but Melissa isn't sure who.

(168) Complex NP island, Quartet 3

- a. Someone wrongly asserted that the actor despised the director, and Lyla was trying to confirm who.
- b. Elaine wrongly asserted that the actor despised some director, and Lyla was trying to confirm who.
- c. Someone reiterated the false assertion that the actor despised the director, and Lyla was trying to confirm who.
- d. ? Elaine reiterated the false assertion that the actor despised some director, and Lyla was trying to confirm who.

(169) Complex NP island, Quartet 4

- a. Someone wrongly alleged that the museum curator hates the wealthy patron, and Angie wants to determine who.

- b. Marlene wrongly alleged that the museum curator hates some wealthy patron, and Angie wants to determine who.
- c. Someone repeated the false accusation that the museum curator hated the wealthy patron, and Angie wants to determine who.
- d. ? Marlene repeated the false accusation that the museum curator hated some wealthy patron, and Angie wants to determine who.

(170) Complex NP island, Quartet 5

- a. Someone falsely reported that Rose bribed the official, and Ivy wanted to discover who.
- b. Juliette falsely reported that Rose bribed some official, and Ivy wanted to discover who.
- c. Someone restated the falsehood that Rose bribed the official, and Ivy wanted to discover who.
- d. ? Juliette restated the falsehood that Rose bribed some official, and Ivy wanted to discover who.

(171) Complex NP island, Quartet 6

- a. Someone falsely testified that the defendant stole from the doctor, and Lauren wants to find out who.
- b. Katie falsely testified that the defendant stole from some doctor, and Lauren wants to find out who.
- c. Someone gave the false testimony that the defendant stole from the doctor, and Lauren wants to find out who.
- d. ? Katie gave the false testimony that the defendant stole from some doctor, and Lauren wants to find out who.

(172) Complex NP island, Quartet 7

- a. Someone inaccurately replied that Diane married the famous actor, but Emma forgot who.

- b. Francesca inaccurately replied that Diane married some famous actor, but Emma forgot who.
- c. Someone gave the inaccurate reply that Diane married the famous actor, but Emma forgot who.
- d. ? Francesca gave the inaccurate reply that Diane married some famous actor, but Emma forgot who.

(173) Complex NP island, Quartet 8

- a. Someone incorrectly announced that the store owner swindled the customer, and Daisy was trying to guess who.
- b. Cassandra incorrectly announced that the store owner swindled some customer, and Daisy was trying to guess who.
- c. Someone repeated the untrue announcement that the store owner swindled the customer, and Daisy was trying to guess who.
- d. ? Cassandra repeated the untrue announcement that the store owner swindled some customer, and Daisy was trying to guess who.

(174) Complex NP island, Quartet 9

- a. Someone mistakenly claimed that Carly met Oprah, but Deb doesn't know who.
- b. Elizabeth mistakenly claimed that Carly met some celebrity, but Deb doesn't know who.
- c. Someone reported the false claim that Carly met Oprah, but Deb doesn't know who.
- d. ? Elizabeth reported the false claim that Carly met some celebrity, but Deb doesn't know who.

(175) Complex NP island, Quartet 10

- a. Someone wrongly reported that Amy discovered the famous model, but Nancy cannot recall who.

- b. Olivia wrongly reported that Amy discovered some famous model, but Nancy cannot recall who.
- c. Someone agreed with the false report that Amy discovered the famous model, but Nancy cannot recall who.
- d. ? Olivia agreed with the false report that Amy discovered some famous model, but Nancy cannot recall who.

(176) Complex NP island, Quartet 11

- a. Someone dishonestly said that the high school quarterback lied to the teacher, but Nikki doesn't remember who.
- b. Olga dishonestly said that the high school quarterback lied to some teacher, but Nikki doesn't remember who.
- c. Someone spread the false rumor that the high school quarterback lied to the teacher, but Nikki doesn't remember who.
- d. ? Olga spread the false rumor that the high school quarterback lied to some teacher, but Nikki doesn't remember who.

(177) Complex NP island, Quartet 12

- a. Someone inaccurately believed that the prime minister despised the member of parliament, and Norah was determined to verify who.
- b. Karla inaccurately believed that the prime minister despised some member of parliament, and Norah was determined to verify who.
- c. Someone propagated the untrue belief that the prime minister despised the member of parliament, and Norah was determined to verify who.
- d. ? Karla propagated the untrue belief that the prime minister despised some member of parliament, and Norah was determined to verify who.

(178) Complex NP island, Quartet 13

- a. Someone falsely alleged that the business fired the employee, and Betty asked who.
- b. Nina falsely alleged that the business fired some employee, and Betty asked who.
- c. Someone parroted the false allegation that the business fired the employee, and Betty asked who.
- d. ? Nina parroted the false allegation that the business fired some employee, and Betty asked who.

(179) Complex NP island, Quartet 14

- a. Someone wrongly asserted that the dentist overcharged the patient, but Clarissa isn't sure who.
- b. Heidi wrongly asserted that the dentist overcharged some patient, but Clarissa isn't sure who.
- c. Someone regurgitated the false assertion that the dentist overcharged the patient, but Clarissa isn't sure who.
- d. ? Heidi regurgitated the false assertion that the dentist overcharged some patient, but Clarissa isn't sure who.

(180) Complex NP island, Quartet 15

- a. Someone wrongfully alleged that Brian swindled the millionaire, and Jen was trying to confirm who.
- b. Wendy wrongfully alleged that Brian swindled some millionaire, and Jen was trying to confirm who.
- c. Someone restated the wrongful accusation that Brian swindled the millionaire, and Jen was trying to confirm who.
- d. ? Wendy restated the wrongful accusation that Brian swindled some millionaire, and Jen was trying to confirm who.

(181) Complex NP island, Quartet 16

- a. Someone untruthfully reported that Amanda paid off the mob boss, and Bethany was trying to determine who.
- b. Hillary untruthfully reported that Amanda paid off some mob boss, and Bethany was trying to determine who.
- c. Someone spread the falsehood that Amanda paid off the mob boss, and Bethany was trying to determine who.
- d. ? Hillary spread the falsehood that Amanda paid off some mob boss, and Bethany was trying to determine who.

(182) Complex NP island, Quartet 17

- a. Someone falsely testified that Abigail robbed the professor, and Ingrid was trying to discover who.
- b. Howard falsely testified that Abigail robbed some professor, and Ingrid was trying to discover who.
- c. Someone gave the untrue testimony that Abigail robbed the professor, and Ingrid was trying to discover who.
- d. ? Howard gave the untrue testimony that Abigail robbed some professor, and Ingrid was trying to discover who.

(183) Complex NP island, Quartet 18

- a. Someone wrongly replied that Ron congratulated the contestant, and Lexi wants to find out who.
- b. Helen wrongly replied that Ron congratulated some contestant, and Lexi wants to find out who.
- c. Someone gave the false reply that Ron congratulated the contestant, and Lexi wants to find out who.
- d. ? Helen gave the false reply that Ron congratulated some contestant, and Lexi wants to find out who.

(184) Complex NP island, Quartet 19

- a. Someone wrongly announced that Nike would sponsor the famous athlete, but Amelia forgot who.
- b. Sophie wrongly announced that Nike would sponsor some famous athlete, but Amelia forgot who.
- c. Someone repeated the incorrect announcement that Nike would sponsor the famous athlete, but Amelia forgot who.
- d. ? Sophie repeated the incorrect announcement that Nike would sponsor some famous athlete, but Amelia forgot who.

(185) Complex NP island, Quartet 20

- a. Someone untruthfully claimed that the alligator ate the famous golfer, and Chloe was trying to guess who.
- b. Evelyn untruthfully claimed that the alligator ate some famous golfer, and Chloe was trying to guess who.
- c. Someone parroted the untrue claim that the alligator ate the famous golfer, and Chloe was trying to guess who.
- d. ? Evelyn parroted the untrue claim that the alligator ate some famous golfer, and Chloe was trying to guess who.

(186) Complex NP island, Quartet 21

- a. Someone inaccurately reported that the lion mauled the tourist, but Claire didn't know who.
- b. Audrey inaccurately reported that the lion mauled some tourist, but Claire didn't know who.
- c. Someone gave the inaccurate report that the lion mauled the tourist, but Claire didn't know who.

- d. ? Audrey gave the inaccurate report that the lion mauled some tourist, but Claire didn't know who.

(187) Complex NP island, Quartet 22

- a. Someone dishonestly said that Chuck deceived the university administrator, but Riley couldn't recall who.
- b. Mackenzie dishonestly said that Chuck deceived some university administrator, but Riley couldn't recall who.
- c. Someone propagated the untruthful rumor that Chuck deceived the university administrator, but Riley couldn't recall who.
- d. ? Mackenzie propagated the untruthful rumor that Chuck deceived some university administrator, but Riley couldn't recall who.

(188) Complex NP island, Quartet 23

- a. Someone falsely believed that Ryan hated the famous actor, but Molly couldn't remember who.
- b. Cecilia falsely believed that Ryan hated some famous actor, but Molly couldn't remember who.
- c. Someone held the false belief that Ryan hated the famous actor, but Molly couldn't remember who.
- d. ? Cecilia held the false belief that Ryan hated some famous actor, but Molly couldn't remember who.

(189) Complex NP island, Quartet 24

- a. Someone falsely proclaimed that the mayor physically attacked the city council member, and Tess was trying to verify who.
- b. Alana falsely proclaimed that the mayor physically attacked some city council member, and Tess was trying to verify who.

- c. Someone regurgitated the false proclamation that the mayor physically attacked the city council member, and Tess was trying to verify who.
- d. ? Alana regurgitated the false proclamation that the mayor physically attacked some city council member, and Tess was trying to verify who.

B.1.2 Experiment 1: Lists with fillers in pseudorandomized order

B.1.2.1 List 1

(190) * The electrician incorrectly installed a new light fixture, and the carpenter has did so the black cabinet as well.

Filler (ungrammatical)

(191) Victor sincerely believed that the team would win the championship, but what he didn't know was that they planned to lose the game on purpose.

Filler (grammatical)

(192) * Naomi was very worried that the acrobat would fall from the trapeze, but the acrobat didn't seem to been.

Filler (ungrammatical)

(193) Casey falsely said that some teacher expressed doubts about the student, and Jordan wanted to determine who.

Target (long × non-island)

(194) Someone dishonestly said that Chuck deceived the university administrator, but Riley couldn't recall who.

Target (short × non-island)

(195) ? Audrey gave the inaccurate report that the lion mauled some tourist, but Claire didn't know who.

Target (long × island)

- (196) * Steve was wrong to suggest that the gorilla in the zoo looked like it wanted to escape of the cage.
- Filler (ungrammatical)
- (197) Jeremy rightly thinks that the CEO was committing fraud, and Angela is investigating what kind of fraud it was.
- Filler (grammatical)
- (198) Someone inaccurately said that the assessment from the engineer didn't change anybody's mind, and Valerie was trying to confirm who.
- Target (short × island)
- (199) Someone falsely testified that the defendant stole from the doctor, and Lauren wants to find out who.
- Target (short × non-island)
- (200) * Jack deftly manipulated the city council to get them to do what he wanted for them to will do.
- Filler (ungrammatical)
- (201) ? Morgan inaccurately stated that the dish by some famous chef caused the customer to throw up, but Kristin doesn't know who.
- Target (long × island)
- (202) * The thing about the candidate's campaign is that it was doomed to be failure because everyone hated the candidate.
- Filler (ungrammatical)
- (203) * The student was hoping that the answer to the exam problems were all 'c' because that would make the test really easy.
- Filler (ungrammatical)
- (204) * The game show host said that all of the contestants had a chance to win as long as they follow the rules by the game.

Filler (ungrammatical)

(205) Someone falsely believed that the senator destroyed the political union, but Amy cannot recall who.

Target (short × non-island)

(206) * The vacation destination that nobody wanted to go to has any chance of becoming famous.

Filler (ungrammatical)

(207) Someone spread the false rumor that the high school quarterback lied to the teacher, but Nikki doesn't remember who.

Target (short × island)

(208) Megan steadfastly refused to be peer pressured into trying drugs, even though all of her friends were doing drugs.

Filler (grammatical)

(209) Someone falsely proclaimed that the discovery by the scientist would cure cancer, but Annie forgot who.

Target (short × island)

(210) * Alyssa and her friend doesn't often go out to eat together, but when she does, they get happy.

Filler (ungrammatical)

(211) ? Steve wrongly declared that the proclamation from some judge caused civil unrest, and Carter was trying to discover who.

Target (long × island)

(212) The infant desperately wanted to get someone's attention because he was hungry, but his parents were sound asleep and couldn't hear him crying.

Filler (grammatical)

(213) * Clarissa urgently tried to call dentist because tooth had been chipped when she fell and tripped.

Filler (ungrammatical)

(214) Ashley wrongly declared that some CEO caused all stock prices to plummet, and Macie was trying to guess who.

Target (long × non-island)

(215) The hair stylist truly believed that the customer would look better with brunette hair, but she decided to die her hair blonde despite what her hair stylist thought.

Filler (grammatical)

(216) * The customers were quite upset because they could have had been eating dessert by now, but service was really slow.

Filler (ungrammatical)

(217) * The basketball coach accurately evaluated the strategy of the other team, but the players wasn't able to take advantage in this knowledge.

Filler (ungrammatical)

(218) Karla inaccurately believed that the prime minister despised some member of parliament, and Norah was determined to verify who.

Target (long × non-island)

(219) The plumber correctly determined that the leak was caused by the loose pipe fitting, but the home owner didn't want to pay to have it fixed.

Filler (grammatical)

(220) Someone incorrectly reported that the movie by the famous director lost a bunch of money, and Jake forgot who.

Target (short × island)

(221) Someone wrongly reported that Amy discovered the famous model, but Nancy cannot recall who.

Target (short × non-island)

(222) The construction worker hopelessly tried to convince the manager that his way of installing the window would work better, but the manager adamantly disagreed.

Filler (grammatical)

(223) ? Paula incorrectly declared that the interview with some famous astronaut was boring, and Jessie asked who.

Target (long × island)

(224) * Each soldier bravely surrounded the enemy's defenses even though they were outnumbered.

Filler (ungrammatical)

(225) Shelby incorrectly reported that some inventor changed society for the better, and Blair wanted to determine who.

Target (long × non-island)

(226) Someone wrongly replied that Ron congratulated the contestant, and Lexi wants to find out who.

Target (short × non-island)

(227) Someone repeated the incorrect announcement that Nike would sponsor the famous athlete, but Amelia forgot who.

Target (short × island)

(228) * Justin was wondering where the key to the cabinets are, and Andy was refusing to tell him.

Filler (ungrammatical)

(229) Someone incorrectly announced that the author sold millions of copies, and Cynthia wants to find out who.

Target (short × non-island)

(230) * The bird that Jackie could see it through the window looked like it were really cold.

Filler (ungrammatical)

(231) * The parents of each child seemed to think that every child except for their own child would have any chance of winning the school contest.

Filler (ungrammatical)

(232) Vince mistakenly believed that some billionaire was last seen in Hong Kong, and Ian was trying to verify who.

Target (long × non-island)

(233) Someone inaccurately declared that the famous artist was inspired by nature, but Taylor couldn't recall who.

Target (short × non-island)

(234) The janitor was wearily mopping up someone's vomit on the floor when he got a call saying that somebody else just threw up, too.

Filler (grammatical)

(235) Hillary untruthfully reported that Amanda paid off some mob boss, and Bethany was trying to determine who.

Target (long × non-island)

(236) Meredith snuck back into her house quietly so that her parents wouldn't know she had been out all night, but her parents heard her opening the door.

Filler (grammatical)

(237) Someone restated the wrongful accusation that Brian swindled the millionaire, and Jen was trying to confirm who.

Target (short × island)

(238) ? Elizabeth reported the false claim that Carly met some celebrity, but Deb doesn't know who.

Target (long × island)

(239) Zach wrongly stated that some famous artist was inconsequential, and Ellen was trying to guess who.

Target (long × non-island)

(240) * The black dog was very friendly even though it had a traumatic experience growing up as a stray living at the streets.

Filler (ungrammatical)

(241) ? Juliette restated the falsehood that Rose bribed some official, and Ivy wanted to discover who.

Target (long × island)

(242) ? Alexa accepted the false proclamation that the general attacked some civilian, and Becca asked who.

Target (long × island)

(243) * The toy that the boy bought the clock and was surprisingly affordable.

Filler (ungrammatical)

(244) ? Robin mistakenly thought that the delivery by some mailman was late, but Patrick didn't know who.

Target (long × island)

(245) ? Mike mistakenly thought that the notice from some lawyer threatened a lawsuit against the company, and Joanna was trying to discover who.

Target (long × island)

(246) ? Nina parroted the false allegation that the business fired some employee, and Betty asked who.

Target (long × island)

(247) * Barbara correctly predicted that the company would go out of business even though they had a new product to sell at customers.

Filler (ungrammatical)

(248) Someone wrongly said that the athlete praised the other team, but Linda isn't sure who.

Target (short × non-island)

(249) * All of the animals in the forest were right to be terrified from the logging company, even the ones that live underground.

Filler (ungrammatical)

(250) Someone gave the inaccurate reply that Diane married the famous actor, but Emma forgot who.

Target (short × island)

(251) Someone falsely proclaimed that the picture of the general was missing, but Tyler cannot remember who.

Target (short × island)

(252) Someone wrongly thinks that the designer is worth a lot of money, but Lisa isn't sure who.

Target (short × non-island)

(253) * The zebra that the lion failed to eat it was very happy to have gotten away, but the lion was sad because it was still hungry.

Filler (ungrammatical)

(254) The assistant placed the mail in the correct mailbox, but the director complained that the assistant got it wrong anyway.

Filler (grammatical)

(255) * Even though everyone complains about dealing with the leaves in the fall, the tree in the edge of the neighbor's yard provides lots of shade of the house.

Filler (ungrammatical)

(256) * Every designer desperately wanted the chance to showcase their work, but any designer could has.

Filler (ungrammatical)

(257) Someone falsely alleged that the social media influencer was deceitful, and Curtis wanted to find out who.

Target (short × non-island)

(258) * The bill that no senator justifiably voted for has ever become law.

Filler (ungrammatical)

(259) James truthfully told his parents that he had not eaten any of the cookies, but he did lie when he said that he hadn't eaten any of the candy.

Filler (grammatical)

(260) * The engineer correctly designed the bridge right materials, but the construction crew much wrong materials used.

Filler (ungrammatical)

(261) * Even though only one of them will win, it seems abundantly clear to the men that each other will win the race.

Filler (ungrammatical)

(262) Cassandra incorrectly announced that the store owner swindled some customer, and Daisy was trying to guess who.

Target (long × non-island)

(263) Someone wrongly asserted that the dentist overcharged the patient, but Clarissa isn't sure who.

Target (short × non-island)

(264) * Anybody didn't repeat the false claim that the judge didn't convict the suspected criminal.

Filler (ungrammatical)

(265) Evelyn untruthfully claimed that the alligator ate some famous golfer, and Chloe was trying to guess who.

Target (long × non-island)

(266) * Alex timidly asked what the person who already bought was still doing in the store.

Filler (ungrammatical)

(267) * William was a hard worker, and he tried to complete that homework on time each time it was due.

Filler (ungrammatical)

(268) Marlene wrongly alleged that the museum curator hates some wealthy patron, and Angie wants to determine who.

Target (long × non-island)

- (269) * The store clerk sneakily charged the customer many extra money the warranty the computer.
Filler (ungrammatical)
- (270) Kari inaccurately asserted that some famous actor was widely despised, and Lacey was trying to verify who.
Target (long × non-island)
- (271) Someone held the false belief that Ryan hated the famous actor, but Molly couldn't remember who.
Target (short × island)
- (272) Someone untruthfully said that the building by the architect won an award, and Brynn is trying to confirm who.
Target (short × island)
- (273) * Jessica correctly determined that the answer to the problem was ten, and Bill has too.
Filler (ungrammatical)
- (274) Someone falsely claimed that the news report by the journalist undermined the government, but Luke couldn't remember who.
Target (short × island)
- (275) * Helen desperately wanted to be astronaut when she grew up, but her parents hasn't liked the idea because they wanted her to be doctor.
Filler (ungrammatical)
- (276) The postal worker justifiably wondered whether she could deliver all of the mail by the end of the day.
Filler (grammatical)
- (277) * Michaela correctly identified the toxin in the water that would has caused many deaths that could has been avoided.
Filler (ungrammatical)

(278) * The chef ate the leftover food, and the waitress has too even though the manager said they couldn't do so.

Filler (ungrammatical)

(279) * Only the residents of the county can voted on the ballot proposition the county.

Filler (ungrammatical)

(280) ? Jane falsely stated that the announcement from some representative scared the citizens, and Vanessa asked who.

Target (long × island)

(281) Someone reiterated the false assertion that the actor despised the director, and Lyla was trying to confirm who.

Target (short × island)

(282) * Charlie thought that the cheese would go better with plain crackers, but Kevin said it would do so better with flavored crackers.

Filler (ungrammatical)

(283) Someone wrongly alleged that the financial advisor took advantage of the old man, but Melissa isn't sure who.

Target (short × non-island)

(284) Alana falsely proclaimed that the mayor physically attacked some city council member, and Tess was trying to verify who.

Target (long × non-island)

(285) ? Howard gave the untrue testimony that Abigail robbed some professor, and Ingrid was trying to discover who.

Target (long × island)

B.1.2.2 List 2

(286) Someone regurgitated the false proclamation that the mayor physically attacked the city council member, and Tess was trying to verify who.

Target (short × island)

(287) Victor sincerely believed that the team would win the championship, but what he didn't know was that they planned to lose the game on purpose.

Filler (grammatical)

(288) Someone wrongly announced that Nike would sponsor the famous athlete, but Amelia forgot who.

Target (short × non-island)

(289) * The bird that Jackie could see it through the window looked like it were really cold.

Filler (ungrammatical)

(290) * The electrician incorrectly installed a new light fixture, and the carpenter has did so the black cabinet as well.

Filler (ungrammatical)

(291) Someone inaccurately said that the engineer didn't change anybody's mind, and Valerie was trying to confirm who.

Target (short × non-island)

(292) Paula incorrectly declared that some famous astronaut was boring, and Jessie asked who.

Target (long × non-island)

(293) Mike mistakenly thought that some lawyer threatened a lawsuit against the company, and Joanna was trying to discover who.

Target (long × non-island)

(294) * The basketball coach accurately evaluated the strategy of the other team, but the players wasn't able to take advantage in this knowledge.

Filler (ungrammatical)

(295) Morgan inaccurately stated that some famous chef caused the customer to throw up, but Kristin doesn't know who.

Target (long × non-island)

(296) ? Martha wrongly said that the statement from some athlete praised the other team, but Linda isn't sure who.

Target (long × island)

(297) Nina falsely alleged that the business fired some employee, and Betty asked who.

Target (long × non-island)

(298) * Every designer desperately wanted the chance to showcase their work, but any designer could has.

Filler (ungrammatical)

(299) * The game show host said that all of the contestants had a chance to win as long as they follow the rules by the game.

Filler (ungrammatical)

(300) The plumber correctly determined that the leak was caused by the loose pipe fitting, but the home owner didn't want to pay to have it fixed.

Filler (grammatical)

(301) * Only the residents of the county can voted on the ballot proposition the county.

Filler (ungrammatical)

(302) * Naomi was very worried that the acrobat would fall from the trapeze, but the acrobat didn't seem to been.

Filler (ungrammatical)

(303) ? Albert falsely alleged that the post from some social media influencer was deceitful, and Curtis wanted to find out who.

Target (long × island)

(304) * The thing about the candidate's campaign is that it was doomed to be failure because everyone hated the candidate.

Filler (ungrammatical)

(305) Someone wrongly asserted that the actor despised the director, and Lyla was trying to confirm who.

Target (short × non-island)

(306) * Barbara correctly predicted that the company would go out of business even though they had a new product to sell at customers.

Filler (ungrammatical)

(307) Someone falsely proclaimed that the general was missing, but Tyler cannot remember who.

Target (short × non-island)

(308) Someone falsely claimed that the journalist undermined the government, but Luke couldn't remember who.

Target (short × non-island)

(309) Someone wrongly declared that the announcement from the CEO caused all stock prices to plummet, and Macie was trying to guess who.

Target (short × island)

(310) * The customers were quite upset because they could have had been eating dessert by now, but service was really slow.

Filler (ungrammatical)

(311) ? Brie falsely believed that the meeting with some senator destroyed the political union, but Amy cannot recall who.

Target (long × island)

(312) Jeremy rightly thinks that the CEO was committing fraud, and Angela is investigating what kind of fraud it was.

Filler (grammatical)

- (313) * Jessica correctly determined that the answer to the problem was ten, and Bill has too.
Filler (ungrammatical)
- (314) Someone inaccurately replied that Diane married the famous actor, but Emma forgot who.
Target (short × non-island)
- (315) * The bill that no senator justifiably voted for has ever become law.
Filler (ungrammatical)
- (316) The janitor was wearily mopping up someone's vomit on the floor when he got a call saying that somebody else just threw up, too.
Filler (grammatical)
- (317) * The toy that the boy bought the clock and was surprisingly affordable.
Filler (ungrammatical)
- (318) ? Mackenzie propagated the untruthful rumor that Chuck deceived some university administrator, but Riley couldn't recall who.
Target (long × island)
- (319) ? Katie gave the false testimony that the defendant stole from some doctor, and Lauren wants to find out who.
Target (long × island)
- (320) * Michaela correctly identified the toxin in the water that would have caused many deaths that could have been avoided.
Filler (ungrammatical)
- (321) * The zebra that the lion failed to eat it was very happy to have gotten away, but the lion was sad because it was still hungry.
Filler (ungrammatical)
- (322) Someone parroted the untrue claim that the alligator ate the famous golfer, and Chloe was trying to guess who.
Target (short × island)

(323) The postal worker justifiably wondered whether she could deliver all of the mail by the end of the day.

Filler (grammatical)

(324) ? Maddie wrongly thinks that the dress by some designer is worth a lot of money, but Lisa isn't sure who.

Target (long × island)

(325) * The engineer correctly designed the bridge right materials, but the construction crew much wrong materials used.

Filler (ungrammatical)

(326) * The parents of each child seemed to think that every child except for their own child would have any chance of winning the school contest.

Filler (ungrammatical)

(327) Jane falsely stated that some representative scared the citizens, and Vanessa asked who.

Target (long × non-island)

(328) * Jack deftly manipulated the city council to get them to do what he wanted for them to will do.

Filler (ungrammatical)

(329) Steve wrongly declared that some judge caused civil unrest, and Carter was trying to discover who.

Target (long × non-island)

(330) Someone spread the falsehood that Amanda paid off the mob boss, and Bethany was trying to determine who.

Target (short × island)

(331) Meredith snuck back into her house quietly so that her parents wouldn't know she had been out all night, but her parents heard her opening the door.

Filler (grammatical)

(332) Juliette falsely reported that Rose bribed some official, and Ivy wanted to discover who.

Target (long × non-island)

(333) * Even though only one of them will win, it seems abundantly clear to the men that each other will win the race.

Filler (ungrammatical)

(334) * Charlie thought that the cheese would go better with plain crackers, but Kevin said it would do so better with flavored crackers.

Filler (ungrammatical)

(335) Elizabeth mistakenly claimed that Carly met some celebrity, but Deb doesn't know who.

Target (long × non-island)

(336) * Alyssa and her friend doesn't often go out to eat together, but when she does, they get happy.

Filler (ungrammatical)

(337) Audrey inaccurately reported that the lion mauled some tourist, but Claire didn't know who.

Target (long × non-island)

(338) Someone repeated the untrue announcement that the store owner swindled the customer, and Daisy was trying to guess who.

Target (short × island)

(339) * Even though everyone complains about dealing with the leaves in the fall, the tree in the edge of the neighbor's yard provides lots of shade of the house.

Filler (ungrammatical)

(340) * William was a hard worker, and he tried to complete that homework on time each time it was due.

Filler (ungrammatical)

(341) Alexa incorrectly stated that the general attacked some civilian, and Becca asked who.

Target (long × non-island)

- (342) Someone falsely proclaimed that the scientist would cure cancer, but Annie forgot who.
Target (short × non-island)
- (343) ? Diane incorrectly announced that the book by some author sold millions of copies, and Cynthia wants to find out who.
Target (long × island)
- (344) * Helen desperately wanted to be astronaut when she grew up, but her parents hasn't liked the idea because they wanted her to be doctor.
Filler (ungrammatical)
- (345) * The store clerk sneakily charged the customer many extra money the warranty the computer.
Filler (ungrammatical)
- (346) Someone incorrectly reported that the famous director lost a bunch of money, and Jake forgot who.
Target (short × non-island)
- (347) Someone wrongfully alleged that Brian swindled the millionaire, and Jen was trying to confirm who.
Target (short × non-island)
- (348) * The black dog was very friendly even though it had a traumatic experience growing up as a stray living at the streets.
Filler (ungrammatical)
- (349) Someone incorrectly reported that the patent of the inventor changed society for the better, and Blair wanted to determine who.
Target (short × island)
- (350) * The vacation destination that nobody wanted to go to has any chance of becoming famous.
Filler (ungrammatical)
- (351) Howard falsely testified that Abigail robbed some professor, and Ingrid was trying to discover who.

Target (long × non-island)

- (352) The construction worker hopelessly tried to convince the manager that his way of installing the window would work better, but the manager adamantly disagreed.

Filler (grammatical)

- (353) ? Rebecca made the incorrect allegation that the financial advisor took advantage of some old man, but Melissa isn't sure who.

Target (long × island)

- (354) * All of the animals in the forest were right to be terrified from the logging company, even the ones that live underground.

Filler (ungrammatical)

- (355) Someone falsely said that the note from the teacher expressed doubts about the student, and Jordan wanted to determine who.

Target (short × island)

- (356) Someone repeated the false accusation that the museum curator hated the wealthy patron, and Angie wants to determine who.

Target (short × island)

- (357) * The chef ate the leftover food, and the waitress has too even though the manager said they couldn't do so.

Filler (ungrammatical)

- (358) Someone untruthfully said that the architect won an award, and Brynn is trying to confirm who.

Target (short × non-island)

- (359) * Clarissa urgently tried to call dentist because tooth had been chipped when she fell and tripped.

Filler (ungrammatical)

(360) Someone inaccurately asserted that the episode with the famous actor was widely despised, and Lacey was trying to verify who.

Target (short × island)

(361) ? Caroline inaccurately declared that the design by some famous artist was inspired by nature, but Taylor couldn't recall who.

Target (long × island)

(362) * Steve was wrong to suggest that the gorilla in the zoo looked like it wanted to escape of the cage.

Filler (ungrammatical)

(363) The infant desperately wanted to get someone's attention because he was hungry, but his parents were sound asleep and couldn't hear him crying.

Filler (grammatical)

(364) Someone propagated the untrue belief that the prime minister despised the member of parliament, and Norah was determined to verify who.

Target (short × island)

(365) Someone falsely believed that Ryan hated the famous actor, but Molly couldn't remember who.

Target (short × non-island)

(366) * Anybody didn't repeat the false claim that the judge didn't convict the suspected criminal.

Filler (ungrammatical)

(367) * The student was hoping that the answer to the exam problems were all 'c' because that would make the test really easy.

Filler (ungrammatical)

(368) ? Heidi regurgitated the false assertion that the dentist overcharged some patient, but Clarissa isn't sure who.

Target (long × island)

(369) The assistant placed the mail in the correct mailbox, but the director complained that the assistant got it wrong anyway.

Filler (grammatical)

(370) Megan steadfastly refused to be peer pressured into trying drugs, even though all of her friends were doing drugs.

Filler (grammatical)

(371) ? Olivia agreed with the false report that Amy discovered some famous model, but Nancy cannot recall who.

Target (long × island)

(372) Someone dishonestly said that the high school quarterback lied to the teacher, but Nikki doesn't remember who.

Target (short × non-island)

(373) * Each soldier bravely surrounded the enemy's defenses even though they were outnumbered.

Filler (ungrammatical)

(374) ? Helen gave the false reply that Ron congratulated some contestant, and Lexi wants to find out who.

Target (long × island)

(375) * Justin was wondering where the key to the cabinets are, and Andy was refusing to tell him.

Filler (ungrammatical)

(376) James truthfully told his parents that he had not eaten any of the cookies, but he did lie when he said that he hadn't eaten any of the candy.

Filler (grammatical)

(377) Someone wrongly stated that the painting by the famous artist was inconsequential, and Ellen was trying to guess who.

Target (short × island)

(378) Someone mistakenly believed that the clone of the billionaire was last seen in Hong Kong, and Ian was trying to verify who.

Target (short × island)

(379) Robin mistakenly thought that some mailman was late, but Patrick didn't know who.

Target (long × non-island)

(380) The hair stylist truly believed that the customer would look better with brunette hair, but she decided to dye her hair blonde despite what her hair stylist thought.

Filler (grammatical)

(381) * Alex timidly asked what the person who already bought was still doing in the store.

Filler (ungrammatical)

B.1.2.3 List 3

(382) * Steve was wrong to suggest that the gorilla in the zoo looked like it wanted to escape of the cage.

Filler (ungrammatical)

(383) Someone accepted the false proclamation that the general attacked the civilian, and Becca asked who.

Target (short × island)

(384) * Justin was wondering where the key to the cabinets are, and Andy was refusing to tell him.

Filler (ungrammatical)

(385) Helen wrongly replied that Ron congratulated some contestant, and Lexi wants to find out who.

Target (long × non-island)

(386) * Helen desperately wanted to be astronaut when she grew up, but her parents hasn't liked the idea because they wanted her to be doctor.

Filler (ungrammatical)

(387) Someone inaccurately believed that the prime minister despised the member of parliament, and Norah was determined to verify who.

Target (short × non-island)

(388) * Michaela correctly identified the toxin in the water that would have caused many deaths that could have been avoided.

Filler (ungrammatical)

(389) The hair stylist truly believed that the customer would look better with brunette hair, but she decided to dye her hair blonde despite what her hair stylist thought.

Filler (grammatical)

(390) Caroline inaccurately declared that some famous artist was inspired by nature, but Taylor couldn't recall who.

Target (long × non-island)

(391) Someone wrongly declared that the proclamation from the judge caused civil unrest, and Carter was trying to discover who.

Target (short × island)

(392) * All of the animals in the forest were right to be terrified from the logging company, even the ones that live underground.

Filler (ungrammatical)

(393) * Alyssa and her friend doesn't often go out to eat together, but when she does, they get happy.

Filler (ungrammatical)

(394) ? Danny inaccurately said that the assessment from some engineer didn't change anybody's mind, and Valerie was trying to confirm who.

Target (long × island)

(395) The janitor was wearily mopping up someone's vomit on the floor when he got a call saying that somebody else just threw up, too.

Filler (grammatical)

(396) Victor sincerely believed that the team would win the championship, but what he didn't know was that they planned to lose the game on purpose.

Filler (grammatical)

(397) ? Harry incorrectly reported that the movie by some famous director lost a bunch of money, and Jake forgot who.

Target (long × island)

(398) ? Kristi falsely proclaimed that the picture of some general was missing, but Tyler cannot remember who.

Target (long × island)

(399) The construction worker hopelessly tried to convince the manager that his way of installing the window would work better, but the manager adamantly disagreed.

Filler (grammatical)

(400) * Even though only one of them will win, it seems abundantly clear to the men that each other will win the race.

Filler (ungrammatical)

(401) Someone falsely said that the teacher expressed doubts about the student, and Jordan wanted to determine who.

Target (short × non-island)

(402) Jeremy rightly thinks that the CEO was committing fraud, and Angela is investigating what kind of fraud it was.

Filler (grammatical)

(403) ? Olga spread the false rumor that the high school quarterback lied to some teacher, but Nikki doesn't remember who.

Target (long × island)

(404) * Clarissa urgently tried to call dentist because tooth had been chipped when she fell and tripped.

Filler (ungrammatical)

(405) Maddie wrongly thinks that some designer is worth a lot of money, but Lisa isn't sure who.

Target (long × non-island)

(406) * The parents of each child seemed to think that every child except for their own child would have any chance of winning the school contest.

Filler (ungrammatical)

(407) * The customers were quite upset because they could have had been eating dessert by now, but service was really slow.

Filler (ungrammatical)

(408) * The vacation destination that nobody wanted to go to has any chance of becoming famous.

Filler (ungrammatical)

(409) Someone inaccurately stated that the dish by the famous chef caused the customer to throw up, but Kristin doesn't know who.

Target (short × island)

(410) Someone mistakenly thought that the notice from the lawyer threatened a lawsuit against the company, and Joanna was trying to discover who.

Target (short × island)

(411) Someone mistakenly believed that the billionaire was last seen in Hong Kong, and Ian was trying to verify who.

Target (short × non-island)

(412) * Each soldier bravely surrounded the enemy's defenses even though they were outnumbered.

Filler (ungrammatical)

(413) * Even though everyone complains about dealing with the leaves in the fall, the tree in the edge of the neighbor's yard provides lots of shade of the house.

Filler (ungrammatical)

(414) * Jessica correctly determined that the answer to the problem was ten, and Bill has too.

Filler (ungrammatical)

(415) Someone falsely stated that the announcement from the representative scared the citizens, and Vanessa asked who.

Target (short × island)

(416) ? Elaine reiterated the false assertion that the actor despised some director, and Lyla was trying to confirm who.

Target (long × island)

(417) Katie falsely testified that the defendant stole from some doctor, and Lauren wants to find out who.

Target (long × non-island)

(418) The assistant placed the mail in the correct mailbox, but the director complained that the assistant got it wrong anyway.

Filler (grammatical)

(419) Rebecca wrongly alleged that the financial advisor took advantage of some old man, but Melissa isn't sure who.

Target (long × non-island)

(420) * The bird that Jackie could see it through the window looked like it were really cold.

Filler (ungrammatical)

(421) Someone reported the false claim that Carly met Oprah, but Deb doesn't know who.

Target (short × island)

(422) ? Cecilia held the false belief that Ryan hated some famous actor, but Molly couldn't remember who.

Target (long × island)

(423) * Charlie thought that the cheese would go better with plain crackers, but Kevin said it would do so better with flavored crackers.

Filler (ungrammatical)

(424) Someone restated the falsehood that Rose bribed the official, and Ivy wanted to discover who.

Target (short × island)

(425) Someone wrongly declared that the CEO caused all stock prices to plummet, and Macie was trying to guess who.

Target (short × non-island)

(426) * The store clerk sneakily charged the customer many extra money the warranty the computer.

Filler (ungrammatical)

(427) * Alex timidly asked what the person who already bought was still doing in the store.

Filler (ungrammatical)

(428) Someone gave the inaccurate report that the lion mauled the tourist, but Claire didn't know who.

Target (short × island)

(429) Someone incorrectly declared that the interview with the famous astronaut was boring, and Jessie asked who.

Target (short × island)

(430) * The game show host said that all of the contestants had a chance to win as long as they follow the rules by the game.

Filler (ungrammatical)

(431) * Jack deftly manipulated the city council to get them to do what he wanted for them to will do.

Filler (ungrammatical)

(432) * The black dog was very friendly even though it had a traumatic experience growing up as a stray living at the streets.

Filler (ungrammatical)

(433) Brie falsely believed that some senator destroyed the political union, but Amy cannot recall who.

Target (long × non-island)

(434) Someone untruthfully reported that Amanda paid off the mob boss, and Bethany was trying to determine who.

Target (short × non-island)

(435) Someone gave the untrue testimony that Abigail robbed the professor, and Ingrid was trying to discover who.

Target (short × island)

(436) * The engineer correctly designed the bridge right materials, but the construction crew much wrong materials used.

Filler (ungrammatical)

(437) Mackenzie dishonestly said that Chuck deceived some university administrator, but Riley couldn't recall who.

Target (long × non-island)

(438) The postal worker justifiably wondered whether she could deliver all of the mail by the end of the day.

Filler (grammatical)

(439) Megan steadfastly refused to be peer pressured into trying drugs, even though all of her friends were doing drugs.

Filler (grammatical)

(440) * William was a hard worker, and he tried to complete that homework on time each time it was due.

Filler (ungrammatical)

(441) * The zebra that the lion failed to eat it was very happy to have gotten away, but the lion was sad because it was still hungry.

Filler (ungrammatical)

(442) Someone wrongly stated that the famous artist was inconsequential, and Ellen was trying to guess who.

Target (short × non-island)

(443) ? Francesca gave the inaccurate reply that Diane married some famous actor, but Emma forgot who.

Target (long × island)

(444) * The student was hoping that the answer to the exam problems were all 'c' because that would make the test really easy.

Filler (ungrammatical)

(445) Diane incorrectly announced that some author sold millions of copies, and Cynthia wants to find out who.

Target (long × non-island)

(446) Albert falsely alleged that some social media influencer was deceitful, and Curtis wanted to find out who.

Target (long × non-island)

(447) * The bill that no senator justifiably voted for has ever become law.

Filler (ungrammatical)

(448) Martha wrongly said that some athlete praised the other team, but Linda isn't sure who.

Target (long × non-island)

(449) * The electrician incorrectly installed a new light fixture, and the carpenter has did so the black cabinet as well.

Filler (ungrammatical)

(450) * Barbara correctly predicted that the company would go out of business even though they had a new product to sell at customers.

Filler (ungrammatical)

- (451) * The toy that the boy bought the clock and was surprisingly affordable.
Filler (ungrammatical)
- (452) Heidi wrongly asserted that the dentist overcharged some patient, but Clarissa isn't sure who.
Target (long × non-island)
- (453) Someone mistakenly thought that the delivery by the mailman was late, but Patrick didn't know who.
Target (short × island)
- (454) * The thing about the candidate's campaign is that it was doomed to be failure because everyone hated the candidate.
Filler (ungrammatical)
- (455) Someone inaccurately asserted that the famous actor was widely despised, and Lacey was trying to verify who.
Target (short × non-island)
- (456) The infant desperately wanted to get someone's attention because he was hungry, but his parents were sound asleep and couldn't hear him crying.
Filler (grammatical)
- (457) Someone parroted the false allegation that the business fired the employee, and Betty asked who.
Target (short × island)
- (458) Someone incorrectly reported that the inventor changed society for the better, and Blair wanted to determine who.
Target (short × non-island)
- (459) * Every designer desperately wanted the chance to showcase their work, but any designer could has.
Filler (ungrammatical)

(460) ? Mary falsely claimed that the news report by some journalist undermined the government, but Luke couldn't remember who.

Target (long × island)

(461) Someone incorrectly announced that the store owner swindled the customer, and Daisy was trying to guess who.

Target (short × non-island)

(462) ? Wendy restated the wrongful accusation that Brian swindled some millionaire, and Jen was trying to confirm who.

Target (long × island)

(463) * The basketball coach accurately evaluated the strategy of the other team, but the players wasn't able to take advantage in this knowledge.

Filler (ungrammatical)

(464) Someone falsely proclaimed that the mayor physically attacked the city council member, and Tess was trying to verify who.

Target (short × non-island)

(465) Someone wrongly alleged that the museum curator hates the wealthy patron, and Angie wants to determine who.

Target (short × non-island)

(466) James truthfully told his parents that he had not eaten any of the cookies, but he did lie when he said that he hadn't eaten any of the candy.

Filler (grammatical)

(467) Olivia wrongly reported that Amy discovered some famous model, but Nancy cannot recall who.

Target (long × non-island)

(468) * Naomi was very worried that the acrobat would fall from the trapeze, but the acrobat didn't seem to be.

Filler (ungrammatical)

(469) ? Phoebe untruthfully said that the building by some architect won an award, and Brynn is trying to confirm who.

Target (long × island)

(470) * Only the residents of the county can voted on the ballot proposition the county.

Filler (ungrammatical)

(471) * Anybody didn't repeat the false claim that the judge didn't convict the suspected criminal.

Filler (ungrammatical)

(472) ? Julie falsely proclaimed that the discovery by some scientist would cure cancer, but Annie forgot who.

Target (long × island)

(473) ? Sophie repeated the incorrect announcement that Nike would sponsor some famous athlete, but Amelia forgot who.

Target (long × island)

(474) Meredith snuck back into her house quietly so that her parents wouldn't know she had been out all night, but her parents heard her opening the door.

Filler (grammatical)

(475) Someone untruthfully claimed that the alligator ate the famous golfer, and Chloe was trying to guess who.

Target (short × non-island)

(476) * The chef ate the leftover food, and the waitress has too even though the manager said they couldn't do so.

Filler (ungrammatical)

(477) The plumber correctly determined that the leak was caused by the loose pipe fitting, but the home owner didn't want to pay to have it fixed.

Filler (grammatical)

B.1.2.4 List 4

(478) * The parents of each child seemed to think that every child except for their own child would have any chance of winning the school contest.

Filler (ungrammatical)

(479) * Only the residents of the county can voted on the ballot proposition the county.

Filler (ungrammatical)

(480) * Michaela correctly identified the toxin in the water that would has caused many deaths that could has been avoided.

Filler (ungrammatical)

(481) Someone made the incorrect allegation that the financial advisor took advantage of the old man, but Melissa isn't sure who.

Target (short × island)

(482) The assistant placed the mail in the correct mailbox, but the director complained that the assistant got it wrong anyway.

Filler (grammatical)

(483) ? Hillary spread the falsehood that Amanda paid off some mob boss, and Bethany was trying to determine who.

Target (long × island)

(484) The construction worker hopelessly tried to convince the manager that his way of installing the window would work better, but the manager adamantly disagreed.

Filler (grammatical)

(485) ? Kari inaccurately asserted that the episode with some famous actor was widely despised, and Lacey was trying to verify who.

Target (long × island)

(486) ? Vince mistakenly believed that the clone of some billionaire was last seen in Hong Kong, and Ian was trying to verify who.

Target (long × island)

(487) Someone wrongly said that the statement from the athlete praised the other team, but Linda isn't sure who.

Target (short × island)

(488) * The electrician incorrectly installed a new light fixture, and the carpenter has did so the black cabinet as well.

Filler (ungrammatical)

(489) ? Cassandra repeated the untrue announcement that the store owner swindled some customer, and Daisy was trying to guess who.

Target (long × island)

(490) * The chef ate the leftover food, and the waitress has too even though the manager said they couldn't do so.

Filler (ungrammatical)

(491) * The bill that no senator justifiably voted for has ever become law.

Filler (ungrammatical)

(492) Someone mistakenly thought that the mailman was late, but Patrick didn't know who.

Target (short × non-island)

(493) ? Zach wrongly stated that the painting by some famous artist was inconsequential, and Ellen was trying to guess who.

Target (long × island)

(494) Someone regurgitated the false assertion that the dentist overcharged the patient, but Clarissa isn't sure who.

Target (short × island)

(495) Jeremy rightly thinks that the CEO was committing fraud, and Angela is investigating what kind of fraud it was.

Filler (grammatical)

(496) * Alex timidly asked what the person who already bought was still doing in the store.

Filler (ungrammatical)

(497) * Even though everyone complains about dealing with the leaves in the fall, the tree in the edge of the neighbor's yard provides lots of shade of the house.

Filler (ungrammatical)

(498) * Clarissa urgently tried to call dentist because tooth had been chipped when she fell and tripped.

Filler (ungrammatical)

(499) ? Alana regurgitated the false proclamation that the mayor physically attacked some city council member, and Tess was trying to verify who.

Target (long × island)

(500) The hair stylist truly believed that the customer would look better with brunette hair, but she decided to die her hair blonde despite what her hair stylist thought.

Filler (grammatical)

(501) Harry incorrectly reported that some famous director lost a bunch of money, and Jake forgot who.

Target (long × non-island)

(502) Cecilia falsely believed that Ryan hated some famous actor, but Molly couldn't remember who.

Target (long × non-island)

(503) * Steve was wrong to suggest that the gorilla in the zoo looked like it wanted to escape of the cage.

Filler (ungrammatical)

(504) James truthfully told his parents that he had not eaten any of the cookies, but he did lie when he said that he hadn't eaten any of the candy.

Filler (grammatical)

(505) * The customers were quite upset because they could have had been eating dessert by now, but service was really slow.

Filler (ungrammatical)

(506) Someone gave the false testimony that the defendant stole from the doctor, and Lauren wants to find out who.

Target (short × island)

(507) Olga dishonestly said that the high school quarterback lied to some teacher, but Nikki doesn't remember who.

Target (long × non-island)

(508) Someone falsely alleged that the business fired the employee, and Betty asked who.

Target (short × non-island)

(509) * Alyssa and her friend doesn't often go out to eat together, but when she does, they get happy.

Filler (ungrammatical)

(510) ? Karla propagated the untrue belief that the prime minister despised some member of parliament, and Norah was determined to verify who.

Target (long × island)

(511) ? Ashley wrongly declared that the announcement from some CEO caused all stock prices to plummet, and Macie was trying to guess who.

Target (long × island)

(512) Someone falsely believed that the meeting with the senator destroyed the political union, but Amy cannot recall who.

Target (short × island)

(513) * Helen desperately wanted to be astronaut when she grew up, but her parents hasn't liked the idea because they wanted her to be doctor.

Filler (ungrammatical)

(514) * Jack deftly manipulated the city council to get them to do what he wanted for them to will do.

Filler (ungrammatical)

(515) * The bird that Jackie could see it through the window looked like it were really cold.

Filler (ungrammatical)

(516) Someone inaccurately declared that the design by the famous artist was inspired by nature, but Taylor couldn't recall who.

Target (short × island)

(517) The postal worker justifiably wondered whether she could deliver all of the mail by the end of the day.

Filler (grammatical)

(518) Someone incorrectly stated that the general attacked the civilian, and Becca asked who.

Target (short × non-island)

(519) Sophie wrongly announced that Nike would sponsor some famous athlete, but Amelia forgot who.

Target (long × non-island)

(520) * Naomi was very worried that the acrobat would fall from the trapeze, but the acrobat didn't seem to been.

Filler (ungrammatical)

(521) * The student was hoping that the answer to the exam problems were all 'c' because that would make the test really easy.

Filler (ungrammatical)

(522) ? Evelyn parroted the untrue claim that the alligator ate some famous golfer, and Chloe was trying to guess who.

Target (long × island)

(523) Phoebe untruthfully said that some architect won an award, and Brynn is trying to confirm who.

Target (long × non-island)

(524) Someone mistakenly thought that the lawyer threatened a lawsuit against the company, and Joanna was trying to discover who.

Target (short × non-island)

(525) Victor sincerely believed that the team would win the championship, but what he didn't know was that they planned to lose the game on purpose.

Filler (grammatical)

(526) ? Shelby incorrectly reported that the patent of some inventor changed society for the better, and Blair wanted to determine who.

Target (long × island)

(527) * The game show host said that all of the contestants had a chance to win as long as they follow the rules by the game.

Filler (ungrammatical)

(528) Someone agreed with the false report that Amy discovered the famous model, but Nancy cannot recall who.

Target (short × island)

(529) * Charlie thought that the cheese would go better with plain crackers, but Kevin said it would do so better with flavored crackers.

Filler (ungrammatical)

(530) * Each soldier bravely surrounded the enemy's defenses even though they were outnumbered.

Filler (ungrammatical)

(531) Someone inaccurately stated that the famous chef caused the customer to throw up, but Kristin doesn't know who.

Target (short × non-island)

(532) Someone wrongly declared that the judge caused civil unrest, and Carter was trying to discover who.

Target (short × non-island)

(533) * Jessica correctly determined that the answer to the problem was ten, and Bill has too.

Filler (ungrammatical)

(534) Someone incorrectly declared that the famous astronaut was boring, and Jessie asked who.

Target (short × non-island)

(535) ? Marlene repeated the false accusation that the museum curator hated some wealthy patron, and Angie wants to determine who.

Target (long × island)

(536) * All of the animals in the forest were right to be terrified from the logging company, even the ones that live underground.

Filler (ungrammatical)

(537) ? Casey falsely said that the note from some teacher expressed doubts about the student, and Jordan wanted to determine who.

Target (long × island)

(538) Someone falsely reported that Rose bribed the official, and Ivy wanted to discover who.

Target (short × non-island)

(539) The infant desperately wanted to get someone's attention because he was hungry, but his parents were sound asleep and couldn't hear him crying.

Filler (grammatical)

(540) Someone falsely alleged that the post from the social media influencer was deceitful, and Curtis wanted to find out who.

Target (short × island)

(541) Julie falsely proclaimed that some scientist would cure cancer, but Annie forgot who.

Target (long × non-island)

(542) * Anybody didn't repeat the false claim that the judge didn't convict the suspected criminal.

Filler (ungrammatical)

(543) * The zebra that the lion failed to eat it was very happy to have gotten away, but the lion was sad because it was still hungry.

Filler (ungrammatical)

(544) Meredith snuck back into her house quietly so that her parents wouldn't know she had been out all night, but her parents heard her opening the door.

Filler (grammatical)

(545) Someone falsely stated that the representative scared the citizens, and Vanessa asked who.

Target (short × non-island)

(546) * The black dog was very friendly even though it had a traumatic experience growing up as a stray living at the streets.

Filler (ungrammatical)

(547) Someone incorrectly announced that the book by the author sold millions of copies, and Cynthia wants to find out who.

Target (short × island)

(548) * The vacation destination that nobody wanted to go to has any chance of becoming famous.

Filler (ungrammatical)

(549) Danny inaccurately said that some engineer didn't change anybody's mind, and Valerie was trying to confirm who.

Target (long × non-island)

(550) * The basketball coach accurately evaluated the strategy of the other team, but the players wasn't able to take advantage in this knowledge.

Filler (ungrammatical)

(551) Megan steadfastly refused to be peer pressured into trying drugs, even though all of her friends were doing drugs.

Filler (grammatical)

(552) Someone falsely testified that Abigail robbed the professor, and Ingrid was trying to discover who.

Target (short × non-island)

(553) * Barbara correctly predicted that the company would go out of business even though they had a new product to sell at customers.

Filler (ungrammatical)

(554) Kristi falsely proclaimed that some general was missing, but Tyler cannot remember who.

Target (long × non-island)

(555) Someone mistakenly claimed that Carly met Oprah, but Deb doesn't know who.

Target (short × non-island)

(556) Francesca inaccurately replied that Diane married some famous actor, but Emma forgot who.

Target (long × non-island)

(557) * The store clerk sneakily charged the customer many extra money the warranty the computer.

Filler (ungrammatical)

(558) The janitor was wearily mopping up someone's vomit on the floor when he got a call saying that somebody else just threw up, too.

Filler (grammatical)

(559) Someone propagated the untruthful rumor that Chuck deceived the university administrator, but Riley couldn't recall who.

Target (short × island)

(560) Someone wrongly thinks that the dress by the designer is worth a lot of money, but Lisa isn't sure who.

Target (short × island)

(561) Wendy wrongfully alleged that Brian swindled some millionaire, and Jen was trying to confirm who.

Target (long × non-island)

(562) The plumber correctly determined that the leak was caused by the loose pipe fitting, but the home owner didn't want to pay to have it fixed.

Filler (grammatical)

(563) * The thing about the candidate's campaign is that it was doomed to be failure because everyone hated the candidate.

Filler (ungrammatical)

(564) * The toy that the boy bought the clock and was surprisingly affordable.

Filler (ungrammatical)

(565) Someone inaccurately reported that the lion mauled the tourist, but Claire didn't know who.

Target (short × non-island)

(566) * The engineer correctly designed the bridge right materials, but the construction crew much wrong materials used.

Filler (ungrammatical)

(567) * Even though only one of them will win, it seems abundantly clear to the men that each other will win the race.

Filler (ungrammatical)

(568) * Justin was wondering where the key to the cabinets are, and Andy was refusing to tell him.

Filler (ungrammatical)

(569) * Every designer desperately wanted the chance to showcase their work, but any designer could has.

Filler (ungrammatical)

(570) Someone gave the false reply that Ron congratulated the contestant, and Lexi wants to find out who.

Target (short × island)

(571) Mary falsely claimed that some journalist undermined the government, but Luke couldn't remember who.

Target (long × non-island)

(572) * William was a hard worker, and he tried to complete that homework on time each time it was due.

Filler (ungrammatical)

(573) Elaine wrongly asserted that the actor despised some director, and Lyla was trying to confirm who.

Target (long × non-island)

B.2 Materials for Experiment 2

B.2.1 Experiment 2: All target items

B.2.1.1 Subject island items

(574) Subject island, Quartet 1

- a. Someone with lots of social media followers falsely stated that the representative scared the citizens, and Vanessa asked who.
- b. Jane falsely stated that some representative with lots of social media followers scared the citizens, and Vanessa asked who.
- c. Someone with lots of social media followers falsely stated that the announcement from the representative scared the citizens, and Vanessa asked who.

- d. ? Jane falsely stated that the announcement from some representative with lots of social media followers scared the citizens, and Vanessa asked who.

(575) Subject island, Quartet 2

- a. Someone from Sweden wrongly thinks that the designer is worth a lot of money, but Lisa isn't sure who.
- b. Maddie wrongly thinks that some designer from Sweden is worth a lot of money, but Lisa isn't sure who.
- c. Someone from Sweden wrongly thinks that the dress by the designer is worth a lot of money, but Lisa isn't sure who.
- d. ? Maddie wrongly thinks that the dress by some designer from Sweden is worth a lot of money, but Lisa isn't sure who.

(576) Subject island, Quartet 3

- a. Someone from France untruthfully said that the architect won an award, and Brynn is trying to confirm who.
- b. Phoebe untruthfully said that some architect from France won an award, and Brynn is trying to confirm who.
- c. Someone from France untruthfully said that the building by the architect won an award, and Brynn is trying to confirm who.
- d. ? Phoebe untruthfully said that the building by some architect from France won an award, and Brynn is trying to confirm who.

(577) Subject island, Quartet 4

- a. Someone from her high school incorrectly reported that the inventor changed society for the better, and Blair wanted to determine who.
- b. Shelby incorrectly reported that some inventor from her high school changed society for the better, and Blair wanted to determine who.

- c. Someone from her high school incorrectly reported that the patent of the inventor changed society for the better, and Blair wanted to determine who.
- d. ? Shelby incorrectly reported that the patent of some inventor from her high school changed society for the better, and Blair wanted to determine who.

(578) Subject island, Quartet 5

- a. Someone from Harvard wrongly declared that the judge caused civil unrest, and Carter was trying to discover who.
- b. Steve wrongly declared that some judge from Harvard caused civil unrest, and Carter was trying to discover who.
- c. Someone from Harvard wrongly declared that the proclamation from the judge caused civil unrest, and Carter was trying to discover who.
- d. ? Steve wrongly declared that the proclamation from some judge from Harvard caused civil unrest, and Carter was trying to discover who.

(579) Subject island, Quartet 6

- a. Someone from Wisconsin incorrectly announced that the author sold millions of copies, and Cynthia wants to find out who.
- b. Diane incorrectly announced that some author from Wisconsin sold millions of copies, and Cynthia wants to find out who.
- c. Someone from Wisconsin incorrectly announced that the book by the author sold millions of copies, and Cynthia wants to find out who.
- d. ? Diane incorrectly announced that the book by some author from Wisconsin sold millions of copies, and Cynthia wants to find out who.

(580) Subject island, Quartet 7

- a. Someone from Yale falsely proclaimed that the scientist cured cancer, but Annie forgot who.

- b. Julie falsely proclaimed that some scientist from Yale cured cancer, but Annie forgot who.
- c. Someone from Yale falsely proclaimed that the discovery by the scientist cured cancer, but Annie forgot who.
- d. ? Julie falsely proclaimed that the discovery by some scientist from Yale cured cancer, but Annie forgot who.

(581) Subject island, Quartet 8

- a. Someone with lots of Twitter followers wrongly declared that the CEO caused all stock prices to plummet, and Macie was trying to guess who.
- b. Ashley wrongly declared that some CEO with lots of Twitter followers caused all stock prices to plummet, and Macie was trying to guess who.
- c. Someone with lots of Twitter followers wrongly declared that the announcement from the CEO caused all stock prices to plummet, and Macie was trying to guess who.
- d. ? Ashley wrongly declared that the announcement from some CEO with lots of Twitter followers caused all stock prices to plummet, and Macie was trying to guess who.

(582) Subject island, Quartet 9

- a. Someone from Florida inaccurately stated that the famous chef caused the customer to throw up, but Kristin doesn't know who.
- b. Morgan inaccurately stated that some famous chef from Florida caused the customer to throw up, but Kristin doesn't know who.
- c. Someone from Florida inaccurately stated that the dish by the famous chef caused the customer to throw up, but Kristin doesn't know who.
- d. ? Morgan inaccurately stated that the dish by some famous chef from Florida caused the customer to throw up, but Kristin doesn't know who.

(583) Subject island, Quartet 10

- a. Someone from rural America falsely believed that the senator destroyed the political union, but Amy cannot recall who.
- b. Brie falsely believed that some senator from rural America destroyed the political union, but Amy cannot recall who.
- c. Someone from rural America falsely believed that the meeting with the senator destroyed the political union, but Amy cannot recall who.
- d. ? Brie falsely believed that the meeting with some senator from rural America destroyed the political union, but Amy cannot recall who.

(584) Subject island, Quartet 11

- a. Someone from the east coast falsely claimed that the journalist undermined the government, but Luke couldn't remember who.
- b. Mary falsely claimed that some journalist from the east coast undermined the government, but Luke couldn't remember who.
- c. Someone from the east coast falsely claimed that the news report by the journalist undermined the government, but Luke couldn't remember who.
- d. ? Mary falsely claimed that the news report by some journalist from the east coast undermined the government, but Luke couldn't remember who.

(585) Subject island, Quartet 12

- a. Someone from Los Angeles inaccurately asserted that the famous actor was widely despised, and Lacey was trying to verify who.
- b. Kari inaccurately asserted that some famous actor from Los Angeles was widely despised, and Lacey was trying to verify who.
- c. Someone from Los Angeles inaccurately asserted that the episode with the famous actor was widely despised, and Lacey was trying to verify who.
- d. ? Kari inaccurately asserted that the episode with some famous actor from Los Angeles was widely despised, and Lacey was trying to verify who.

(586) Subject island, Quartet 13

- a. Someone from NASA incorrectly declared that the famous astronaut was boring, and Jessie asked who.
- b. Paula incorrectly declared that some famous astronaut from NASA was boring, and Jessie asked who.
- c. Someone from NASA incorrectly declared that the interview with the famous astronaut was boring, and Jessie asked who.
- d. ? Paula incorrectly declared that the interview with some famous astronaut from NASA was boring, and Jessie asked who.

(587) Subject island, Quartet 14

- a. Someone from Spain falsely said that the teacher expressed doubts about the student, and Jordan wanted to determine who.
- b. Casey falsely said that some teacher from Spain expressed doubts about the student, and Jordan wanted to determine who.
- c. Someone from Spain falsely said that the note from the teacher expressed doubts about the student, and Jordan wanted to determine who.
- d. ? Casey falsely said that the note from some teacher from Spain expressed doubts about the student, and Jordan wanted to determine who.

(588) Subject island, Quartet 15

- a. Someone with lots of connections mistakenly thought that the lawyer threatened a lawsuit against the company, and Joanna was trying to discover who.
- b. Mike mistakenly thought that some lawyer with lots of connections threatened a lawsuit against the company, and Joanna was trying to discover who.
- c. Someone with lots of connections mistakenly thought that the notice from the lawyer threatened a lawsuit against the company, and Joanna was trying to discover who.

- d. ? Mike mistakenly thought that the notice from some lawyer with lots of connections threatened a lawsuit against the company, and Joanna was trying to discover who.

(589) Subject island, Quartet 16

- a. Someone from San Francisco falsely alleged that the social media influencer was deceitful, and Curtis wanted to find out who.
- b. Albert falsely alleged that some social media influencer from San Francisco was deceitful, and Curtis wanted to find out who.
- c. Someone from San Francisco falsely alleged that the post from the social media influencer was deceitful, and Curtis wanted to find out who.
- d. ? Albert falsely alleged that the post from some social media influencer from San Francisco was deceitful, and Curtis wanted to find out who.

B.2.1.2 Complex NP island items

(590) Complex NP island, Quartet 1

- a. Someone from her town incorrectly stated that the general attacked the civilian, and Becca will try to ask who.
- b. Alexa incorrectly stated that the general attacked some civilian from the town, and Becca will try to ask who.
- c. Someone from her town accepted the false proclamation that the general attacked the civilian, and Becca will try to ask who.
- d. ? Alexa accepted the false proclamation that the general attacked some civilian from the town, and Becca will try to ask who.

(591) Complex NP island, Quartet 2

- a. Someone from her city wrongly alleged that the financial advisor took advantage of the old man, and Melissa will want to confirm who.

- b. Rebecca wrongly alleged that the financial advisor took advantage of some old man from the city, and Melissa will want to confirm who.
- c. Someone from her city made the incorrect allegation that the financial advisor took advantage of the old man, and Melissa will want to confirm who.
- d. ? Rebecca made the incorrect allegation that the financial advisor took advantage of some old man from the city, and Melissa will want to confirm who.

(592) Complex NP island, Quartet 3

- a. Someone from California wrongly asserted that the actor despised the director, and Lyla will attempt to determine who.
- b. Elaine wrongly asserted that the actor despised some director from California, and Lyla will attempt to determine who.
- c. Someone from California reiterated the false assertion that the actor despised the director, and Lyla will attempt to determine who.
- d. ? Elaine reiterated the false assertion that the actor despised some director from California, and Lyla will attempt to determine who.

(593) Complex NP island, Quartet 4

- a. Someone from New York wrongly alleged that the museum curator hates the wealthy patron, and Angie will try to discover who.
- b. Marlene wrongly alleged that the museum curator hates some wealthy patron from New York, and Angie will try to discover who.
- c. Someone from New York repeated the false accusation that the museum curator hated the wealthy patron, and Angie will try to discover who.
- d. ? Marlene repeated the false accusation that the museum curator hated some wealthy patron from New York, and Angie will try to discover who.

(594) Complex NP island, Quartet 5

- a. Someone in the government falsely reported that Rose bribed the official, and Ivy will want to find out who.
- b. Juliette falsely reported that Rose bribed some official in the government, and Ivy will want to find out who.
- c. Someone in the government restated the falsehood that Rose bribed the official, and Ivy will want to find out who.
- d. ? Juliette restated the falsehood that Rose bribed some official in the government, and Ivy will want to find out who.

(595) Complex NP island, Quartet 6

- a. Someone in the town falsely testified that the defendant stole from the doctor, and Lauren will try to remember who.
- b. Katie falsely testified that the defendant stole from some doctor in the town, and Lauren will try to remember who.
- c. Someone in the town gave the false testimony that the defendant stole from the doctor, and Lauren will try to remember who.
- d. ? Katie gave the false testimony that the defendant stole from some doctor in the town, and Lauren will try to remember who.

(596) Complex NP island, Quartet 7

- a. Someone from New Jersey inaccurately replied that Diane married the famous actor, and Emma will try to guess who.
- b. Francesca inaccurately replied that Diane married some famous actor from New Jersey, and Emma will try to guess who.
- c. Someone from New Jersey gave the inaccurate reply that Diane married the famous actor, and Emma will try to guess who.
- d. ? Francesca gave the inaccurate reply that Diane married some famous actor from New Jersey, and Emma will try to guess who.

(597) Complex NP island, Quartet 8

- a. Someone from out of town incorrectly announced that the store owner swindled the customer, and Daisy will try to verify who.
- b. Cassandra incorrectly announced that the store owner swindled some customer from out of town, and Daisy will try to verify who.
- c. Someone from out of town repeated the untrue announcement that the store owner swindled the customer, and Daisy will try to verify who.
- d. ? Cassandra repeated the untrue announcement that the store owner swindled some customer from out of town, and Daisy will try to verify who.

(598) Complex NP island, Quartet 9

- a. Someone from Hawaii mistakenly claimed that Carly met Oprah, and Deb will want to ask who.
- b. Elizabeth mistakenly claimed that Carly met some celebrity from Hawaii, and Deb will want to ask who.
- c. Someone from Hawaii reported the false claim that Carly met Oprah, and Deb will want to ask who.
- d. ? Elizabeth reported the false claim that Carly met some celebrity from Hawaii, and Deb will want to ask who.

(599) Complex NP island, Quartet 10

- a. Someone from Germany wrongly reported that Amy discovered the famous model, and Nancy will want to confirm who.
- b. Olivia wrongly reported that Amy discovered some famous model from Germany, and Nancy will want to confirm who.
- c. Someone from Germany agreed with the false report that Amy discovered the famous model, and Nancy will want to confirm who.

- d. ? Olivia agreed with the false report that Amy discovered some famous model from Germany, and Nancy will want to confirm who.

(600) Complex NP island, Quartet 11

- a. Someone from her town dishonestly said that the high school quarterback lied to the teacher, and Nikki will want to determine who.
- b. Olga dishonestly said that the high school quarterback lied to some teacher from the town, and Nikki will want to determine who.
- c. Someone from her town spread the false rumor that the high school quarterback lied to the teacher, and Nikki will want to determine who.
- d. ? Olga spread the false rumor that the high school quarterback lied to some teacher from the town, and Nikki will want to determine who.

(601) Complex NP island, Quartet 12

- a. Someone from her city inaccurately believed that the prime minister despised the member of parliament, and Norah will try to discover who.
- b. Karla inaccurately believed that the prime minister despised some member of parliament from the city, and Norah will try to discover who.
- c. Someone from her city propagated the untrue belief that the prime minister despised the member of parliament, and Norah will try to discover who.
- d. ? Karla propagated the untrue belief that the prime minister despised some member of parliament from the city, and Norah will try to discover who.

(602) Complex NP island, Quartet 13

- a. Someone from her village falsely alleged that the business fired the employee, and Betty will want to find out who.
- b. Nina falsely alleged that the business fired some employee from the village, and Betty will want to find out who.

- c. Someone from her village parroted the false allegation that the business fired the employee, and Betty will want to find out who.
- d. ? Nina parroted the false allegation that the business fired some employee from the village, and Betty will want to find out who.

(603) Complex NP island, Quartet 14

- a. Someone from the suburbs wrongly asserted that the dentist overcharged the patient, and Clarissa will try to remember who.
- b. Heidi wrongly asserted that the dentist overcharged some patient from the suburbs, and Clarissa will try to remember who.
- c. Someone from the suburbs regurgitated the false assertion that the dentist overcharged the patient, and Clarissa will try to remember who.
- d. ? Heidi regurgitated the false assertion that the dentist overcharged some patient from the suburbs, and Clarissa will try to remember who.

(604) Complex NP island, Quartet 15

- a. Someone from Canada wrongfully alleged that Brian swindled the millionaire, and Jen will try to guess who.
- b. Wendy wrongfully alleged that Brian swindled some millionaire from Canada, and Jen will try to guess who.
- c. Someone from Canada restated the wrongful accusation that Brian swindled the millionaire, and Jen will try to guess who.
- d. ? Wendy restated the wrongful accusation that Brian swindled some millionaire from Canada, and Jen will try to guess who.

(605) Complex NP island, Quartet 16

- a. Someone from Italy untruthfully reported that Amanda paid off the mob boss, and Bethany will try to verify who.

- b. Hillary untruthfully reported that Amanda paid off some mob boss from Italy, and Bethany will try to verify who.
- c. Someone from Italy spread the falsehood that Amanda paid off the mob boss, and Bethany will try to verify who.
- d. ? Hillary spread the falsehood that Amanda paid off some mob boss from Italy, and Bethany will try to verify who.

B.2.2 Experiment 2: Lists with fillers in pseudorandomized order

B.2.2.1 List 1

(606) * The engineer correctly designed the bridge right materials, but the construction crew much wrong materials used.

Filler (ungrammatical)

(607) * Alyssa and her friend doesn't often go out to eat together, but when she does, they get happy.

Filler (ungrammatical)

(608) Someone from her town spread the false rumor that the high school quarterback lied to the teacher, and Nikki will want to determine who.

Target (short × island)

(609) Someone from the suburbs wrongly asserted that the dentist overcharged the patient, and Clarissa will try to remember who.

Question: Did the dentist overcharge the patient?

Expected answer: No

Target (short × non-island)

(610) Someone from Canada restated the wrongful accusation that Brian swindled the millionaire, and Jen will try to guess who.

Target (short × island)

(611) * Even though everyone complains about dealing with the leaves in the fall, the tree in the edge of the neighbor's yard provides lots of shade of the house.

Filler (ungrammatical)

(612) ? Paula incorrectly declared that the interview with some famous astronaut from NASA was boring, and Jessie asked who.

Target (long × island)

(613) * The store clerk sneakily charged the customer many extra money the warranty the computer.

Question: Did the store clerk charge charge the customer the fair amount?

Expected answer: No

Filler (ungrammatical)

(614) Someone in the town falsely testified that the defendant stole from the doctor, and Lauren will try to remember who.

Target (short × non-island)

(615) Ashley wrongly declared that some CEO with lots of Twitter followers caused all stock prices to plummet, and Macie was trying to guess who.

Target (long × non-island)

(616) James truthfully told his parents that he had not eaten any of the cookies, but he did lie when he said that he hadn't eaten any of the candy.

Filler (grammatical)

(617) * All of the animals in the forest were right to be terrified from the logging company, even the ones that live underground.

Filler (ungrammatical)

(618) Karla inaccurately believed that the prime minister despised some member of parliament from the city, and Norah will try to discover who.

Target (long × non-island)

(619) Albert falsely alleged that some social media influencer from San Francisco was deceitful, and Curtis wanted to find out who.

Target (long × non-island)

(620) The postal worker justifiably wondered whether she could deliver all of the mail by the end of the day.

Question: Was the postal worker worried about delivering all of the mail?

Expected answer: Yes

Filler (grammatical)

(621) Someone with lots of connections mistakenly thought that the notice from the lawyer threatened a lawsuit against the company, and Joanna was trying to discover who.

Target (short × island)

(622) Someone from rural America falsely believed that the senator destroyed the political union, but Amy cannot recall who.

Target (short × non-island)

(623) * Even though only one of them will win, it seems abundantly clear to the men that each other will win the race.

Filler (ungrammatical)

(624) ? Alexa accepted the false proclamation that the general attacked some civilian from the town, and Becca will try to ask who.

Question: Did Alexa accept the false proclamation?

Expected answer: Yes

Target (long × island)

(625) Jeremy rightly thinks that the CEO was committing fraud, and Angela is investigating what kind of fraud it was.

Filler (grammatical)

(626) Someone from France untruthfully said that the building by the architect won an award, and Brynn is trying to confirm who.

Question: Did someone say that the building won an award?

Expected answer: Yes

Target (short × island)

(627) ? Nina parroted the false allegation that the business fired some employee from the village, and Betty will want to find out who.

Target (long × island)

(628) * The thing about the candidate's campaign is that it was doomed to be failure because everyone hated the candidate.

Filler (ungrammatical)

(629) Cassandra incorrectly announced that the store owner swindled some customer from out of town, and Daisy will try to verify who.

Target (long × non-island)

(630) The hair stylist truly believed that the customer would look better with brunette hair, but she decided to die her hair blonde despite what her hair stylist thought.

Filler (grammatical)

(631) Hillary untruthfully reported that Amanda paid off some mob boss from Italy, and Bethany will try to verify who.

Question: Did Hillary say that Amanda paid off the mob boss?

Expected answer: Yes

Target (long × non-island)

(632) Someone from Yale falsely proclaimed that the discovery by the scientist cured cancer, but Annie forgot who.

Target (short × island)

(633) The construction worker hopelessly tried to convince the manager that his way of installing the window would work better, but the manager adamantly disagreed.

Filler (grammatical)

(634) * Alex timidly asked what the person who already bought was still doing in the store.

Filler (ungrammatical)

(635) Someone from California reiterated the false assertion that the actor despised the director, and Lyla will attempt to determine who.

Question: Did the actor despise the director?

Expected answer: No

Target (short × island)

(636) * Naomi was very worried that the acrobat would fall from the trapeze, but the acrobat didn't seem to be.

Filler (ungrammatical)

(637) * The customers were quite upset because they could have had been eating dessert by now, but service was really slow.

Filler (ungrammatical)

(638) Someone from Sweden wrongly thinks that the designer is worth a lot of money, but Lisa isn't sure who.

Question: Does someone think the designer is worth a lot of money?

Expected answer: Yes

Target (short × non-island)

(639) * Barbara correctly predicted that the company would go out of business even though they had a new product to sell at customers.

Question: Did the company stay in business?

Expected answer: No

Filler (ungrammatical)

(640) ? Juliette restated the falsehood that Rose bribed some official in the government, and Ivy will want to find out who.

Target (long × island)

(641) * The game show host said that all of the contestants had a chance to win as long as they follow the rules by the game.

Filler (ungrammatical)

(642) Someone from her city wrongly alleged that the financial advisor took advantage of the old man, and Melissa will want to confirm who.

Target (short × non-island)

(643) * The electrician incorrectly installed a new light fixture, and the carpenter has did so the black cabinet as well.

Filler (ungrammatical)

(644) Victor sincerely believed that the team would win the championship, but what he didn't know was that they planned to lose the game on purpose.

Question: Did Victor think the team would lose the championship?

Expected answer: No

Filler (grammatical)

(645) * The bill that no senator justifiably voted for has ever become law.

Filler (ungrammatical)

(646) * The vacation destination that nobody wanted to go to has any chance of becoming famous.

Filler (ungrammatical)

(647) * The basketball coach accurately evaluated the strategy of the other team, but the players wasn't able to take advantage in this knowledge.

Filler (ungrammatical)

(648) Someone from New Jersey gave the inaccurate reply that Diane married the famous actor, and Emma will try to guess who.

Target (short × island)

(649) Someone from Germany wrongly reported that Amy discovered the famous model, and Nancy will want to confirm who.

Target (short × non-island)

(650) Shelby incorrectly reported that some inventor from her high school changed society for the better, and Blair wanted to determine who.

Question: Did the inventor change society for the better?

Expected answer: No

Target (long × non-island)

(651) * Only the residents of the county can voted on the ballot proposition the county.

Filler (ungrammatical)

(652) ? Steve wrongly declared that the proclamation from some judge from Harvard caused civil unrest, and Carter was trying to discover who.

Target (long × island)

(653) ? Elizabeth reported the false claim that Carly met some celebrity from Hawaii, and Deb will want to ask who.

Target (long × island)

(654) * Helen desperately wanted to be astronaut when she grew up, but her parents hasn't liked the idea because they wanted her to be doctor.

Question: Did Helen's parents want her to be an astronaut?

Expected answer: Yes

Filler (ungrammatical)

(655) Someone from the east coast falsely claimed that the news report by the journalist undermined the government, but Luke couldn't remember who.

Target (short × island)

(656) * Clarissa urgently tried to call dentist because tooth had been chipped when she fell and tripped.

Question: Did Clarissa call a nurse?

Expected answer: No

Filler (ungrammatical)

(657) The assistant placed the mail in the correct mailbox, but the director complained that the assistant got it wrong anyway.

Filler (grammatical)

(658) Kari inaccurately asserted that some famous actor from Los Angeles was widely despised, and Lacey was trying to verify who.

Target (long × non-island)

(659) * The parents of each child seemed to think that every child except for their own child would have any chance of winning the school contest.

Filler (ungrammatical)

(660) Someone from Wisconsin incorrectly announced that the author sold millions of copies, and Cynthia wants to find out who.

Target (short × non-island)

(661) ? Jane falsely stated that the announcement from some representative with lots of social media followers scared the citizens, and Vanessa asked who.

Question: Did the announcement scare the citizens?

Expected answer: No

Target (long × island)

(662) * Anybody didn't repeat the false claim that the judge didn't convict the suspected criminal.

Filler (ungrammatical)

(663) * Every designer desperately wanted the chance to showcase their work, but any designer could has.

Filler (ungrammatical)

(664) ? Morgan inaccurately stated that the dish by some famous chef from Florida caused the customer to throw up, but Kristin doesn't know who.

Target (long × island)

(665) Marlene wrongly alleged that the museum curator hates some wealthy patron from New York, and Angie will try to discover who.

Target (long × non-island)

(666) Someone from Spain falsely said that the teacher expressed doubts about the student, and Jordan wanted to determine who.

Target (short × non-island)

(667) * The chef ate the leftover food, and the waitress has too even though the manager said they couldn't do so.

Question: Did the chef eat the food?

Expected answer: Yes

Filler (ungrammatical)

(668) * William was a hard worker, and he tried to complete that homework on time each time it was due.

Question: Was William a hard worker?

Expected answer: Yes

Filler (ungrammatical)

(669) The plumber correctly determined that the leak was caused by the loose pipe fitting, but the home owner didn't want to pay to have it fixed.

Filler (grammatical)

B.2.2.2 List 2

(670) * The game show host said that all of the contestants had a chance to win as long as they follow the rules by the game.

Filler (ungrammatical)

(671) * The store clerk sneakily charged the customer many extra money the warranty the computer.

Question: Did the store clerk charge charge the customer the fair amount?

Expected answer: No

Filler (ungrammatical)

(672) Victor sincerely believed that the team would win the championship, but what he didn't know was that they planned to lose the game on purpose.

Question: Did Victor think the team would lose the championship?

Expected answer: No

Filler (grammatical)

(673) * The electrician incorrectly installed a new light fixture, and the carpenter has did so the black cabinet as well.

Filler (ungrammatical)

(674) * All of the animals in the forest were right to be terrified from the logging company, even the ones that live underground.

Filler (ungrammatical)

(675) Someone from France untruthfully said that the architect won an award, and Brynn is trying to confirm who.

Target (short × non-island)

(676) Someone from Canada wrongfully alleged that Brian swindled the millionaire, and Jen will try to guess who.

- Question: Did someone allege that Brian swindled the millionaire? Expected answer: Yes
Target (short × non-island)
- (677) * The bill that no senator justifiably voted for has ever become law.
Filler (ungrammatical)
- (678) The hair stylist truly believed that the customer would look better with brunette hair, but she decided to die her hair blonde despite what her hair stylist thought.
Filler (grammatical)
- (679) Alexa incorrectly stated that the general attacked some civilian from the town, and Becca will try to ask who.
Target (long × non-island)
- (680) Someone from her high school incorrectly reported that the patent of the inventor changed society for the better, and Blair wanted to determine who.
Target (short × island)
- (681) Jeremy rightly thinks that the CEO was committing fraud, and Angela is investigating what kind of fraud it was.
Filler (grammatical)
- (682) * Clarissa urgently tried to call dentist because tooth had been chipped when she fell and tripped.
Question: Did Clarissa call a nurse? Expected answer: No
Filler (ungrammatical)
- (683) ? Olivia agreed with the false report that Amy discovered some famous model from Germany, and Nancy will want to confirm who.
Target (long × island)
- (684) * Only the residents of the county can voted on the ballot proposition the county.
Filler (ungrammatical)

(685) Someone from Italy spread the falsehood that Amanda paid off the mob boss, and Bethany will try to verify who.

Target (short × island)

(686) * Naomi was very worried that the acrobat would fall from the trapeze, but the acrobat didn't seem to be.

Filler (ungrammatical)

(687) The plumber correctly determined that the leak was caused by the loose pipe fitting, but the home owner didn't want to pay to have it fixed.

Filler (grammatical)

(688) The postal worker justifiably wondered whether she could deliver all of the mail by the end of the day.

Question: Was the postal worker worried about delivering all of the mail?

Expected answer: Yes

Filler (grammatical)

(689) Someone from the east coast falsely claimed that the journalist undermined the government, but Luke couldn't remember who.

Target (short × non-island)

(690) Someone from Los Angeles inaccurately asserted that the episode with the famous actor was widely despised, and Lacey was trying to verify who.

Target (short × island)

(691) * Barbara correctly predicted that the company would go out of business even though they had a new product to sell at customers.

Question: Did the company stay in business?

Expected answer: No

Filler (ungrammatical)

(692) Someone from San Francisco falsely alleged that the post from the social media influencer was deceitful, and Curtis wanted to find out who.

Target (short × island)

(693) Jane falsely stated that some representative with lots of social media followers scared the citizens, and Vanessa asked who.

Target (long × non-island)

(694) * Every designer desperately wanted the chance to showcase their work, but any designer could has.

Filler (ungrammatical)

(695) * Alex timidly asked what the person who already bought was still doing in the store.

Filler (ungrammatical)

(696) Nina falsely alleged that the business fired some employee from the village, and Betty will want to find out who.

Target (long × non-island)

(697) Steve wrongly declared that some judge from Harvard caused civil unrest, and Carter was trying to discover who.

Question: Did Steve declare that the judge caused civil unrest?

Expected answer: Yes

Target (long × non-island)

(698) * The thing about the candidate's campaign is that it was doomed to be failure because everyone hated the candidate.

Filler (ungrammatical)

(699) Someone from New Jersey inaccurately replied that Diane married the famous actor, and Emma will try to guess who.

Target (short × non-island)

(700) Someone from Yale falsely proclaimed that the scientist cured cancer, but Annie forgot who.

Question: Did the scientist cure cancer?

Expected answer: No

Target (short × non-island)

(701) The construction worker hopelessly tried to convince the manager that his way of installing the window would work better, but the manager adamantly disagreed.

Filler (grammatical)

(702) Juliette falsely reported that Rose bribed some official in the government, and Ivy will want to find out who.

Question: Did Juliette report that Rose bribed an official?

Expected answer: Yes

Target (long × non-island)

(703) The assistant placed the mail in the correct mailbox, but the director complained that the assistant got it wrong anyway.

Filler (grammatical)

(704) ? Katie gave the false testimony that the defendant stole from some doctor in the town, and Lauren will try to remember who.

Target (long × island)

(705) Someone with lots of connections mistakenly thought that the lawyer threatened a lawsuit against the company, and Joanna was trying to discover who.

Target (short × non-island)

(706) Morgan inaccurately stated that some famous chef from Florida caused the customer to throw up, but Kristin doesn't know who.

Target (long × non-island)

(707) * Even though only one of them will win, it seems abundantly clear to the men that each other will win the race.

Filler (ungrammatical)

(708) ? Rebecca made the incorrect allegation that the financial advisor took advantage of some old man from the city, and Melissa will want to confirm who.

Question: Did the financial advisor take advantage of an old man?

Expected answer: No

Target (long × island)

(709) * The vacation destination that nobody wanted to go to has any chance of becoming famous.

Filler (ungrammatical)

(710) * The basketball coach accurately evaluated the strategy of the other team, but the players wasn't able to take advantage in this knowledge.

Filler (ungrammatical)

(711) ? Heidi regurgitated the false assertion that the dentist overcharged some patient from the suburbs, and Clarissa will try to remember who.

Target (long × island)

(712) Someone from out of town repeated the untrue announcement that the store owner swindled the customer, and Daisy will try to verify who.

Target (short × island)

(713) ? Brie falsely believed that the meeting with some senator from rural America destroyed the political union, but Amy cannot recall who.

Target (long × island)

(714) * The chef ate the leftover food, and the waitress has too even though the manager said they couldn't do so.

Question: Did the chef eat the food?

Expected answer: Yes

Filler (ungrammatical)

(715) James truthfully told his parents that he had not eaten any of the cookies, but he did lie when he said that he hadn't eaten any of the candy.

Filler (grammatical)

(716) * The parents of each child seemed to think that every child except for their own child would have any chance of winning the school contest.

Filler (ungrammatical)

(717) ? Diane incorrectly announced that the book by some author from Wisconsin sold millions of copies, and Cynthia wants to find out who.

Question: Did Diane say the book sold millions of copies?

Expected answer: Yes

Target (long × island)

(718) * Helen desperately wanted to be astronaut when she grew up, but her parents hasn't liked the idea because they wanted her to be doctor.

Question: Did Helen's parents want her to be an astronaut?

Expected answer: Yes

Filler (ungrammatical)

(719) Paula incorrectly declared that some famous astronaut from NASA was boring, and Jessie asked who.

Target (long × non-island)

(720) Someone from her town dishonestly said that the high school quarterback lied to the teacher, and Nikki will want to determine who.

Target (short × non-island)

(721) * William was a hard worker, and he tried to complete that homework on time each time it was due.

Question: Was William a hard worker?

Expected answer: Yes

Filler (ungrammatical)

(722) Someone from California wrongly asserted that the actor despised the director, and Lyla will attempt to determine who.

Target (short × non-island)

(723) * The customers were quite upset because they could have had been eating dessert by now, but service was really slow.

Filler (ungrammatical)

(724) ? Maddie wrongly thinks that the dress by some designer from Sweden is worth a lot of money, but Lisa isn't sure who.

Target (long × island)

(725) * Alyssa and her friend doesn't often go out to eat together, but when she does, they get happy.

Filler (ungrammatical)

(726) Someone with lots of Twitter followers wrongly declared that the announcement from the CEO caused all stock prices to plummet, and Macie was trying to guess who.

Question: Did the announcement cause stock prices to plummet?

Expected answer: No

Target (short × island)

(727) * Anybody didn't repeat the false claim that the judge didn't convict the suspected criminal.

Filler (ungrammatical)

(728) ? Casey falsely said that the note from some teacher from Spain expressed doubts about the student, and Jordan wanted to determine who.

Target (long × island)

(729) Someone from her city propagated the untrue belief that the prime minister despised the member of parliament, and Norah will try to discover who.

Target (short × island)

(730) Elizabeth mistakenly claimed that Carly met some celebrity from Hawaii, and Deb will want to ask who.

Target (long × non-island)

(731) * The engineer correctly designed the bridge right materials, but the construction crew much wrong materials used.

Filler (ungrammatical)

(732) Someone from New York repeated the false accusation that the museum curator hated the wealthy patron, and Angie will try to discover who.

Question: Did someone falsely accuse the museum curator of hating the wealthy patron?

Expected answer: Yes

Target (short × island)

(733) * Even though everyone complains about dealing with the leaves in the fall, the tree in the edge of the neighbor's yard provides lots of shade of the house.

Filler (ungrammatical)

B.2.2.3 List 3

(734) James truthfully told his parents that he had not eaten any of the cookies, but he did lie when he said that he hadn't eaten any of the candy.

Filler (grammatical)

(735) * The parents of each child seemed to think that every child except for their own child would have any chance of winning the school contest.

Filler (ungrammatical)

(736) * All of the animals in the forest were right to be terrified from the logging company, even the ones that live underground.

Filler (ungrammatical)

(737) Casey falsely said that some teacher from Spain expressed doubts about the student, and Jordan wanted to determine who.

Target (long × non-island)

(738) Someone with lots of Twitter followers wrongly declared that the CEO caused all stock prices to plummet, and Macie was trying to guess who.

Target (short × non-island)

(739) * The basketball coach accurately evaluated the strategy of the other team, but the players wasn't able to take advantage in this knowledge.

Filler (ungrammatical)

(740) * The chef ate the leftover food, and the waitress has too even though the manager said they couldn't do so.

Question: Did the chef eat the food?

Expected answer: Yes

Filler (ungrammatical)

(741) * The vacation destination that nobody wanted to go to has any chance of becoming famous.

Filler (ungrammatical)

(742) Katie falsely testified that the defendant stole from some doctor in the town, and Lauren will try to remember who.

Target (long × non-island)

(743) * The bill that no senator justifiably voted for has ever become law.

Filler (ungrammatical)

(744) Someone with lots of social media followers falsely stated that the announcement from the representative scared the citizens, and Vanessa asked who.

Target (short × island)

(745) Someone from Los Angeles inaccurately asserted that the famous actor was widely despised, and Lacey was trying to verify who.

Question: Is the famous actor widely despised?

Expected answer: No

Target (short × non-island)

(746) Someone from her high school incorrectly reported that the inventor changed society for the better, and Blair wanted to determine who.

Target (short × non-island)

(747) * The electrician incorrectly installed a new light fixture, and the carpenter has did so the black cabinet as well.

Filler (ungrammatical)

(748) The plumber correctly determined that the leak was caused by the loose pipe fitting, but the home owner didn't want to pay to have it fixed.

Filler (grammatical)

(749) Brie falsely believed that some senator from rural America destroyed the political union, but Amy cannot recall who.

Question: Did the senator destroy the political union?

Expected answer: No

Target (long × non-island)

(750) * The game show host said that all of the contestants had a chance to win as long as they follow the rules by the game.

Filler (ungrammatical)

(751) Jeremy rightly thinks that the CEO was committing fraud, and Angela is investigating what kind of fraud it was.

Filler (grammatical)

(752) ? Francesca gave the inaccurate reply that Diane married some famous actor from New Jersey, and Emma will try to guess who.

Question: Did Diane marry a famous actor?

Expected answer: No

Target (long × island)

(753) * Anybody didn't repeat the false claim that the judge didn't convict the suspected criminal.

Filler (ungrammatical)

(754) Someone from her village parroted the false allegation that the business fired the employee, and Betty will want to find out who.

Target (short × island)

(755) Someone from Italy untruthfully reported that Amanda paid off the mob boss, and Bethany will try to verify who.

Target (short × non-island)

(756) ? Mike mistakenly thought that the notice from some lawyer with lots of connections threatened a lawsuit against the company, and Joanna was trying to discover who.

Target (long × island)

(757) * Even though everyone complains about dealing with the leaves in the fall, the tree in the edge of the neighbor's yard provides lots of shade of the house.

Filler (ungrammatical)

(758) * The store clerk sneakily charged the customer many extra money the warranty the computer.

Question: Did the store clerk charge charge the customer the fair amount?

Expected answer: No

Filler (ungrammatical)

(759) ? Wendy restated the wrongful accusation that Brian swindled some millionaire from Canada, and Jen will try to guess who.

Target (long × island)

(760) Rebecca wrongly alleged that the financial advisor took advantage of some old man from the city, and Melissa will want to confirm who.

Target (long × non-island)

(761) Someone from Harvard wrongly declared that the proclamation from the judge caused civil unrest, and Carter was trying to discover who.

Target (short × island)

(762) * Naomi was very worried that the acrobat would fall from the trapeze, but the acrobat didn't seem to be.

Filler (ungrammatical)

(763) Maddie wrongly thinks that some designer from Sweden is worth a lot of money, but Lisa isn't sure who.

Target (long × non-island)

(764) * Barbara correctly predicted that the company would go out of business even though they had a new product to sell at customers.

Question: Did the company stay in business?

Expected answer: No

Filler (ungrammatical)

(765) Diane incorrectly announced that some author from Wisconsin sold millions of copies, and Cynthia wants to find out who.

Target (long × non-island)

(766) Someone from New York wrongly alleged that the museum curator hates the wealthy patron, and Angie will try to discover who.

Target (short × non-island)

(767) Victor sincerely believed that the team would win the championship, but what he didn't know was that they planned to lose the game on purpose.

Question: Did Victor think the team would lose the championship?

Expected answer: No

Filler (grammatical)

(768) ? Elaine reiterated the false assertion that the actor despised some director from California, and Lyla will attempt to determine who.

Target (long × island)

(769) Someone from out of town incorrectly announced that the store owner swindled the customer, and Daisy will try to verify who.

Target (short × non-island)

(770) The assistant placed the mail in the correct mailbox, but the director complained that the assistant got it wrong anyway.

Filler (grammatical)

(771) * Only the residents of the county can voted on the ballot proposition the county.

Filler (ungrammatical)

(772) Someone from NASA incorrectly declared that the interview with the famous astronaut was boring, and Jessie asked who.

Question: Did someone declare that the interview was boring?

Expected answer: Yes

Target (short × island)

(773) The postal worker justifiably wondered whether she could deliver all of the mail by the end of the day.

Question: Was the postal worker worried about delivering all of the mail?

Expected answer: Yes

Filler (grammatical)

(774) * Even though only one of them will win, it seems abundantly clear to the men that each other will win the race.

Filler (ungrammatical)

(775) * The customers were quite upset because they could have had been eating dessert by now, but service was really slow.

Filler (ungrammatical)

(776) Someone in the government restated the falsehood that Rose bribed the official, and Ivy will want to find out who.

Target (short × island)

(777) Heidi wrongly asserted that the dentist overcharged some patient from the suburbs, and Clarissa will try to remember who.

Target (long × non-island)

(778) * Clarissa urgently tried to call dentist because tooth had been chipped when she fell and tripped.

Question: Did Clarissa call a nurse?

Expected answer: No

Filler (ungrammatical)

(779) * Alyssa and her friend doesn't often go out to eat together, but when she does, they get happy.

Filler (ungrammatical)

(780) Olivia wrongly reported that Amy discovered some famous model from Germany, and Nancy will want to confirm who.

Question: Did Amy discover a famous model?

Expected answer: No

Target (long × non-island)

(781) * The thing about the candidate's campaign is that it was doomed to be failure because everyone hated the candidate.

Filler (ungrammatical)

(782) ? Mary falsely claimed that the news report by some journalist from the east coast undermined the government, but Luke couldn't remember who.

Question: Did Mary claim the news report undermined the government?

Expected answer: Yes

Target (long × island)

(783) ? Olga spread the false rumor that the high school quarterback lied to some teacher from the town, and Nikki will want to determine who.

Target (long × island)

(784) * William was a hard worker, and he tried to complete that homework on time each time it was due.

Question: Was William a hard worker?

Expected answer: Yes

Filler (ungrammatical)

(785) Someone from Florida inaccurately stated that the dish by the famous chef caused the customer to throw up, but Kristin doesn't know who.

Target (short × island)

(786) * The engineer correctly designed the bridge right materials, but the construction crew much wrong materials used.

Filler (ungrammatical)

(787) * Every designer desperately wanted the chance to showcase their work, but any designer could has.

Filler (ungrammatical)

(788) * Alex timidly asked what the person who already bought was still doing in the store.

Filler (ungrammatical)

(789) Someone from Hawaii reported the false claim that Carly met Oprah, and Deb will want to ask who.

Question: Did Carly meet Oprah?

Expected answer: No

Target (short × island)

(790) Someone from her town accepted the false proclamation that the general attacked the civilian, and Becca will try to ask who.

Target (short × island)

(791) The construction worker hopelessly tried to convince the manager that his way of installing the window would work better, but the manager adamantly disagreed.

Filler (grammatical)

(792) Someone from San Francisco falsely alleged that the social media influencer was deceitful, and Curtis wanted to find out who.

Target (short × non-island)

(793) Someone from her city inaccurately believed that the prime minister despised the member of parliament, and Norah will try to discover who.

Question: Does someone believe that the prime minister despises the member of parliament? Expected answer: Yes

Target (short × non-island)

(794) ? Phoebe untruthfully said that the building by some architect from France won an award, and Brynn is trying to confirm who.

Target (long × island)

(795) * Helen desperately wanted to be astronaut when she grew up, but her parents hasn't liked the idea because they wanted her to be doctor.

Question: Did Helen's parents want her to be an astronaut? Expected answer: Yes

Filler (ungrammatical)

(796) The hair stylist truly believed that the customer would look better with brunette hair, but she decided to die her hair blonde despite what her hair stylist thought.

Filler (grammatical)

(797) ? Julie falsely proclaimed that the discovery by some scientist from Yale cured cancer, but Annie forgot who.

Target (long × island)

B.2.2.4 List 4

(798) * The engineer correctly designed the bridge right materials, but the construction crew much wrong materials used.

Filler (ungrammatical)

(799) Someone from Wisconsin incorrectly announced that the book by the author sold millions of copies, and Cynthia wants to find out who.

Target (short × island)

(800) Someone from Harvard wrongly declared that the judge caused civil unrest, and Carter was trying to discover who.

Target (short × non-island)

(801) Jeremy rightly thinks that the CEO was committing fraud, and Angela is investigating what kind of fraud it was.

Filler (grammatical)

(802) * William was a hard worker, and he tried to complete that homework on time each time it was due.

Question: Was William a hard worker?

Expected answer: Yes

Filler (ungrammatical)

(803) * Only the residents of the county can voted on the ballot proposition the county.

Filler (ungrammatical)

(804) Someone from Sweden wrongly thinks that the dress by the designer is worth a lot of money, but Lisa isn't sure who.

Target (short × island)

(805) The construction worker hopelessly tried to convince the manager that his way of installing the window would work better, but the manager adamantly disagreed.

Filler (grammatical)

(806) Someone in the government falsely reported that Rose bribed the official, and Ivy will want to find out who.

Target (short × non-island)

(807) Elaine wrongly asserted that the actor despised some director from California, and Lyla will attempt to determine who.

Target (long × non-island)

(808) Olga dishonestly said that the high school quarterback lied to some teacher from the town, and Nikki will want to determine who.

Question: Did the quarterback lie to the teacher?

Expected answer: No

Target (long × non-island)

(809) * Alyssa and her friend doesn't often go out to eat together, but when she does, they get happy.

Filler (ungrammatical)

(810) Victor sincerely believed that the team would win the championship, but what he didn't know was that they planned to lose the game on purpose.

Question: Did Victor think the team would lose the championship?

Expected answer: No

Filler (grammatical)

(811) Phoebe untruthfully said that some architect from France won an award, and Brynn is trying to confirm who.

Target (long × non-island)

(812) The assistant placed the mail in the correct mailbox, but the director complained that the assistant got it wrong anyway.

Filler (grammatical)

(813) ? Hillary spread the falsehood that Amanda paid off some mob boss from Italy, and Bethany will try to verify who.

Target (long × island)

(814) ? Shelby incorrectly reported that the patent of some inventor from her high school changed society for the better, and Blair wanted to determine who.

Target (long × island)

(815) * The chef ate the leftover food, and the waitress has too even though the manager said they couldn't do so.

Question: Did the chef eat the food?

Expected answer: Yes

Filler (ungrammatical)

(816) Mary falsely claimed that some journalist from the east coast undermined the government, but Luke couldn't remember who.

Target (long × non-island)

(817) The hair stylist truly believed that the customer would look better with brunette hair, but she decided to die her hair blonde despite what her hair stylist thought.

Filler (grammatical)

(818) ? Cassandra repeated the untrue announcement that the store owner swindled some customer from out of town, and Daisy will try to verify who.

Question: Did Cassandra say that the store owner swindled a customer?

Expected answer: Yes

Target (long × island)

(819) ? Karla propagated the untrue belief that the prime minister despised some member of parliament from the city, and Norah will try to discover who.

Target (long × island)

(820) * All of the animals in the forest were right to be terrified from the logging company, even the ones that live underground.

Filler (ungrammatical)

(821) * Anybody didn't repeat the false claim that the judge didn't convict the suspected criminal.

Filler (ungrammatical)

(822) * Naomi was very worried that the acrobat would fall from the trapeze, but the acrobat didn't seem to be.

Filler (ungrammatical)

(823) * The basketball coach accurately evaluated the strategy of the other team, but the players wasn't able to take advantage in this knowledge.

Filler (ungrammatical)

(824) * Barbara correctly predicted that the company would go out of business even though they had a new product to sell at customers.

Question: Did the company stay in business?

Expected answer: No

Filler (ungrammatical)

(825) Someone in the town gave the false testimony that the defendant stole from the doctor, and Lauren will try to remember who.

Question: Did someone falsely testify that the defendant stole from the doctor?

Expected answer: Yes

Target (short × island)

(826) * The parents of each child seemed to think that every child except for their own child would have any chance of winning the school contest.

Filler (ungrammatical)

(827) Francesca inaccurately replied that Diane married some famous actor from New Jersey, and Emma will try to guess who.

Target (long × non-island)

(828) Someone from Hawaii mistakenly claimed that Carly met Oprah, and Deb will want to ask who.

Target (short × non-island)

(829) Someone from NASA incorrectly declared that the famous astronaut was boring, and Jessie asked who.

Target (short × non-island)

(830) The postal worker justifiably wondered whether she could deliver all of the mail by the end of the day.

Question: Was the postal worker worried about delivering all of the mail?

Expected answer: Yes

Filler (grammatical)

(831) Someone from her city made the incorrect allegation that the financial advisor took advantage of the old man, and Melissa will want to confirm who.

Target (short × island)

(832) * The vacation destination that nobody wanted to go to has any chance of becoming famous.

Filler (ungrammatical)

(833) Wendy wrongfully alleged that Brian swindled some millionaire from Canada, and Jen will try to guess who.

Target (long × non-island)

(834) * Helen desperately wanted to be astronaut when she grew up, but her parents hasn't liked the idea because they wanted her to be doctor.

Question: Did Helen's parents want her to be an astronaut?

Expected answer: Yes

Filler (ungrammatical)

(835) Someone from Germany agreed with the false report that Amy discovered the famous model, and Nancy will want to confirm who.

Target (short × island)

(836) * The customers were quite upset because they could have had been eating dessert by now, but service was really slow.

Filler (ungrammatical)

(837) Someone from rural America falsely believed that the meeting with the senator destroyed the political union, but Amy cannot recall who.

Target (short × island)

(838) James truthfully told his parents that he had not eaten any of the cookies, but he did lie when he said that he hadn't eaten any of the candy.

Filler (grammatical)

(839) * Even though everyone complains about dealing with the leaves in the fall, the tree in the edge of the neighbor's yard provides lots of shade of the house.

Filler (ungrammatical)

(840) Someone from Spain falsely said that the note from the teacher expressed doubts about the student, and Jordan wanted to determine who.

Question: Did the note express doubts about the student?

Expected answer: No

Target (short × island)

(841) * The store clerk sneakily charged the customer many extra money the warranty the computer.

Question: Did the store clerk charge charge the customer the fair amount?

Expected answer: No

Filler (ungrammatical)

(842) * Even though only one of them will win, it seems abundantly clear to the men that each other will win the race.

Filler (ungrammatical)

(843) ? Kari inaccurately asserted that the episode with some famous actor from Los Angeles was widely despised, and Lacey was trying to verify who.

Target (long × island)

(844) Someone from the suburbs regurgitated the false assertion that the dentist overcharged the patient, and Clarissa will try to remember who.

Target (short × island)

(845) * The thing about the candidate's campaign is that it was doomed to be failure because everyone hated the candidate.

Filler (ungrammatical)

(846) * The bill that no senator justifiably voted for has ever become law.

Filler (ungrammatical)

(847) Julie falsely proclaimed that some scientist from Yale cured cancer, but Annie forgot who.

Target (long × non-island)

(848) Mike mistakenly thought that some lawyer with lots of connections threatened a lawsuit against the company, and Joanna was trying to discover who.

Question: Did Mike think the lawyer threatened a lawsuit?

Expected answer: Yes

Target (long × non-island)

(849) * The electrician incorrectly installed a new light fixture, and the carpenter has did so the black cabinet as well.

Filler (ungrammatical)

(850) ? Albert falsely alleged that the post from some social media influencer from San Francisco was deceitful, and Curtis wanted to find out who.

Question: Was the post from the social media influencer deceitful?

Expected answer: No

Target (long × island)

(851) * Clarissa urgently tried to call dentist because tooth had been chipped when she fell and tripped.

Question: Did Clarissa call a nurse?

Expected answer: No

Filler (ungrammatical)

(852) Someone from her town incorrectly stated that the general attacked the civilian, and Becca will try to ask who.

Target (short × non-island)

(853) ? Ashley wrongly declared that the announcement from some CEO with lots of Twitter followers caused all stock prices to plummet, and Macie was trying to guess who.

Target (long × island)

(854) * Alex timidly asked what the person who already bought was still doing in the store.

Filler (ungrammatical)

(855) Someone with lots of social media followers falsely stated that the representative scared the citizens, and Vanessa asked who.

Target (short × non-island)

(856) Someone from her village falsely alleged that the business fired the employee, and Betty will want to find out who.

Question: Did the business fire the employee?

Expected answer: No

Target (short × non-island)

(857) ? Marlene repeated the false accusation that the museum curator hated some wealthy patron from New York, and Angie will try to discover who.

Target (long × island)

(858) * The game show host said that all of the contestants had a chance to win as long as they follow the rules by the game.

Filler (ungrammatical)

(859) Someone from Florida inaccurately stated that the famous chef caused the customer to throw up, but Kristin doesn't know who.

Question: Did someone say that the chef caused the customer to throw up?

Expected answer: Yes

Target (short × non-island)

(860) * Every designer desperately wanted the chance to showcase their work, but any designer could has.

Filler (ungrammatical)

(861) The plumber correctly determined that the leak was caused by the loose pipe fitting, but the home owner didn't want to pay to have it fixed.

Filler (grammatical)

B.3 Materials for Experiments 3a and 3b

B.3.1 Experiment 3a: All target items

(862) Subject island, Quartet 1

- a. A certain person with lots of social media followers falsely stated that the representative scared the citizens, but nobody would confirm who.
- b. Jane falsely stated that a certain representative with lots of social media followers scared the citizens, but nobody would confirm who.
- c. A certain person with lots of social media followers falsely stated that the announcement from the representative scared the citizens, but nobody would confirm who.
- d. ? Jane falsely stated that the announcement from a certain representative with lots of social media followers scared the citizens, but nobody would confirm who.

(863) Subject island, Quartet 2

- a. A certain person from Sweden wrongly thinks that the designer is worth a lot of money, but nobody could determine who.
- b. Miles wrongly thinks that a certain designer from Sweden is worth a lot of money, but nobody could determine who.
- c. A certain person from Sweden wrongly thinks that the dress by the designer is worth a lot of money, but nobody could determine who.
- d. ? Miles wrongly thinks that the dress by a certain designer from Sweden is worth a lot of money, but nobody could determine who.

(864) Subject island, Quartet 3

- a. A certain person from France untruthfully said that the architect won an award, but nobody could discover who.
- b. Phoebe untruthfully said that a certain architect from France won an award, but nobody could discover who.

- c. A certain person from France untruthfully said that the building by the architect won an award, but nobody could discover who.
- d. ? Phoebe untruthfully said that the building by a certain architect from France won an award, but nobody could discover who.

(865) Subject island, Quartet 4

- a. A certain person from Germany incorrectly reported that the inventor changed society for the better, but nobody wanted to find out who.
- b. Steve incorrectly reported that a certain inventor from Germany changed society for the better, but nobody wanted to find out who.
- c. A certain person from Germany incorrectly reported that the new gadget from the inventor changed society for the better, but nobody wanted to find out who.
- d. ? Steve incorrectly reported that the new gadget from a certain inventor from Germany changed society for the better, but nobody wanted to find out who.

(866) Subject island, Quartet 5

- a. A certain person from Harvard wrongly declared that the judge caused civil unrest, but nobody could guess who.
- b. Shelby wrongly declared that a certain judge from Harvard caused civil unrest, but nobody could guess who.
- c. A certain person from Harvard wrongly declared that the proclamation from the judge caused civil unrest, but nobody could guess who.
- d. ? Shelby wrongly declared that the proclamation from a certain judge from Harvard caused civil unrest, but nobody could guess who.

(867) Subject island, Quartet 6

- a. A certain person from Wisconsin incorrectly announced that the author sold millions of copies, but nobody wanted to know who.

- b. Diane incorrectly announced that a certain author from Wisconsin sold millions of copies, but nobody wanted to know who.
- c. A certain person from Wisconsin incorrectly announced that the book by the author sold millions of copies, but nobody wanted to know who.
- d. ? Diane incorrectly announced that the book by a certain author from Wisconsin sold millions of copies, but nobody wanted to know who.

(868) Subject island, Quartet 7

- a. A certain person from Yale falsely proclaimed that the scientist cured cancer, but nobody could recall who.
- b. Julie falsely proclaimed that a certain scientist from Yale cured cancer, but nobody could recall who.
- c. A certain person from Yale falsely proclaimed that the discovery by the scientist cured cancer, but nobody could recall who.
- d. ? Julie falsely proclaimed that the discovery by a certain scientist from Yale cured cancer, but nobody could recall who.

(869) Subject island, Quartet 8

- a. A certain person with lots of Twitter followers wrongly declared that the CEO caused all stock prices to plummet, but nobody could remember who.
- b. Ashley wrongly declared that a certain CEO with lots of Twitter followers caused all stock prices to plummet, but nobody could remember who.
- c. A certain person with lots of Twitter followers wrongly declared that the announcement from the CEO caused all stock prices to plummet, but nobody could remember who.
- d. ? Ashley wrongly declared that the announcement from a certain CEO with lots of Twitter followers caused all stock prices to plummet, but nobody could remember who.

(870) Subject island, Quartet 9

- a. A certain person from Florida inaccurately stated that the famous chef caused Sarah to throw up, but nobody could confirm who.
- b. Morgan inaccurately stated that a certain chef from Florida caused Sarah to throw up, but nobody could confirm who.
- c. A certain person from Florida inaccurately stated that the dish by the famous chef caused Sarah to throw up, but nobody could confirm who.
- d. ? Morgan inaccurately stated that the dish by a certain chef from Florida caused Sarah to throw up, but nobody could confirm who.

(871) Subject island, Quartet 10

- a. A certain person from rural America falsely believed that the senator destroyed the political union, but nobody wanted to determine who.
- b. Brie falsely believed that a certain senator from rural America destroyed the political union, but nobody wanted to determine who.
- c. A certain person from rural America falsely believed that the meeting with the senator destroyed the political union, but nobody wanted to determine who.
- d. ? Brie falsely believed that the meeting with a certain senator from rural America destroyed the political union, but nobody wanted to determine who.

(872) Subject island, Quartet 11

- a. A certain person from the east coast falsely claimed that the journalist undermined the government, but nobody could discover who.
- b. Mark falsely claimed that a certain journalist from the east coast undermined the government, but nobody could discover who.
- c. A certain person from the east coast falsely claimed that the news report by the journalist undermined the government, but nobody could discover who.

- d. ? Mark falsely claimed that the news report by a certain journalist from the east coast undermined the government, but nobody could discover who.

(873) Subject island, Quartet 12

- a. A certain person from Los Angeles inaccurately asserted that the famous actor was widely despised, but nobody wanted to find out who.
- b. Kari inaccurately asserted that a certain actor from Los Angeles was widely despised, but nobody wanted to find out who.
- c. A certain person from Los Angeles inaccurately asserted that the episode with the famous actor was widely despised, but nobody wanted to find out who.
- d. ? Kari inaccurately asserted that the episode with a certain actor from Los Angeles was widely despised, but nobody wanted to find out who.

(874) Subject island, Quartet 13

- a. A certain person from NASA incorrectly declared that the famous astronaut was boring, but nobody could guess who.
- b. Paula incorrectly declared that a certain astronaut from NASA was boring, but nobody could guess who.
- c. A certain person from NASA incorrectly declared that the interview with the famous astronaut was boring, but nobody could guess who.
- d. ? Paula incorrectly declared that the interview with a certain astronaut from NASA was boring, but nobody could guess who.

(875) Subject island, Quartet 14

- a. A certain person from Spain falsely said that the teacher expressed doubts about James, but nobody wanted to know who.
- b. Adam falsely said that a certain teacher from Spain expressed doubts about James, but nobody wanted to know who.

- c. A certain person from Spain falsely said that the note from the teacher expressed doubts about James, but nobody wanted to know who.
- d. ? Adam falsely said that the note from a certain teacher from Spain expressed doubts about James, but nobody wanted to know who.

(876) Subject island, Quartet 15

- a. A certain person with lots of connections mistakenly thought that the lawyer threatened a lawsuit against the company, but nobody could recall who.
- b. Mary mistakenly thought that a certain lawyer with lots of connections threatened a lawsuit against the company, but nobody could recall who.
- c. A certain person with lots of connections mistakenly thought that the notice from the lawyer threatened a lawsuit against the company, but nobody could recall who.
- d. ? Mary mistakenly thought that the notice from a certain lawyer with lots of connections threatened a lawsuit against the company, but nobody could recall who.

(877) Subject island, Quartet 16

- a. A certain person from San Francisco falsely alleged that the social media influencer was deceitful, but nobody could remember who.
- b. Albert falsely alleged that a certain social media influencer from San Francisco was deceitful, but nobody could remember who.
- c. A certain person from San Francisco falsely alleged that the post from the social media influencer was deceitful, but nobody could remember who.
- d. ? Albert falsely alleged that the post from a certain social media influencer from San Francisco was deceitful, but nobody could remember who.

B.3.2 Experiment 3a: Lists with fillers in pseudorandomized order

B.3.2.1 List 1

(878) * The bill that no senator justifiably voted for has ever become law.

Filler (ungrammatical)

(879) * The engineer correctly designed the bridge right materials, but the construction crew much wrong materials used.

Filler (ungrammatical)

(880) Albert falsely alleged that a certain social media influencer from San Francisco was deceitful, but nobody could remember who.

Target (long × non-island)

(881) * Helen desperately wanted to be astronaut when she grew up, but her parents hasn't liked the idea because they wanted her to be doctor.

Question: Did Helen's parents want her to be an astronaut?

Expected answer: Yes

Filler (ungrammatical)

(882) * The thing about the candidate's campaign is that it was doomed to be failure because everyone hated the candidate.

Filler (ungrammatical)

(883) * William was a hard worker, and he tried to complete that homework on time each time it was due.

Question: Was William a hard worker?

Expected answer: Yes

Filler (ungrammatical)

(884) * The vacation destination that nobody wanted to go to has any chance of becoming famous.

Filler (ungrammatical)

(885) A certain person from Yale falsely proclaimed that the discovery by the scientist cured cancer, but nobody could recall who.

Target (short × island)

- (886) * Naomi was very worried that the acrobat would fall from the trapeze, but the acrobat didn't seem to be.

Filler (ungrammatical)

- (887) A certain person from France untruthfully said that the building by the architect won an award, but nobody could discover who.

Question: Did someone say that the building won an award?

Expected answer: Yes

Target (short × island)

- (888) James truthfully told his parents that he had not eaten any of the cookies, but he did lie when he said that he hadn't eaten any of the candy.

Filler (grammatical)

- (889) * The electrician incorrectly installed a new light fixture, and the carpenter has did so the black cabinet as well.

Filler (ungrammatical)

- (890) * Even though only one of them will win, it seems abundantly clear to the men that each other will win the race.

Filler (ungrammatical)

- (891) ? Jane falsely stated that the announcement from a certain representative with lots of social media followers scared the citizens, but nobody would confirm who.

Question: Did the announcement scare the citizens?

Expected answer: No

Target (long × island)

- (892) * All of the animals in the forest were right to be terrified from the logging company, even the ones that live underground.

Filler (ungrammatical)

- (893) ? Paula incorrectly declared that the interview with a certain astronaut from NASA was boring, but nobody could guess who.

Target (long × island)

(894) * Only the residents of the county can voted on the ballot proposition the county.

Filler (ungrammatical)

(895) A certain person with lots of connections mistakenly thought that the notice from the lawyer threatened a lawsuit against the company, but nobody could recall who.

Target (short × island)

(896) * The parents of each child seemed to think that every child except for their own child would have any chance of winning the school contest.

Filler (ungrammatical)

(897) * Barbara correctly predicted that the company would go out of business even though they had a new product to sell at customers.

Question: Did the company stay in business?

Expected answer: No

Filler (ungrammatical)

(898) * The store clerk sneakily charged the customer many extra money the warranty the computer.

Question: Did the store clerk charge charge the customer the fair amount?

Expected answer: No

Filler (ungrammatical)

(899) * The customers were quite upset because they could have had been eating dessert by now, but service was really slow.

Filler (ungrammatical)

(900) * Even though everyone complains about dealing with the leaves in the fall, the tree in the edge of the neighbor's yard provides lots of shade of the house.

Filler (ungrammatical)

(901) A certain person from the east coast falsely claimed that the news report by the journalist undermined the government, but nobody could discover who.

Target (short × island)

(902) Steve incorrectly reported that a certain inventor from Germany changed society for the better, but nobody wanted to find out who.

Question: Did the inventor change society for the better?

Expected answer: No

Target (long × non-island)

(903) * Clarissa urgently tried to call dentist because tooth had been chipped when she fell and tripped.

Question: Did Clarissa call a nurse?

Expected answer: No

Filler (ungrammatical)

(904) A certain person from Sweden wrongly thinks that the designer is worth a lot of money, but nobody could determine who.

Question: Does someone think the designer is worth a lot of money?

Expected answer: Yes

Target (short × non-island)

(905) * Anybody didn't repeat the false claim that the judge didn't convict the suspected criminal.

Filler (ungrammatical)

(906) * Every designer desperately wanted the chance to showcase their work, but any designer could has.

Filler (ungrammatical)

(907) * The basketball coach accurately evaluated the strategy of the other team, but the players wasn't able to take advantage in this knowledge.

Filler (ungrammatical)

(908) ? Shelby wrongly declared that the proclamation from a certain judge from Harvard caused civil unrest, but nobody could guess who.

Target (long × island)

(909) Ashley wrongly declared that a certain CEO with lots of Twitter followers caused all stock prices to plummet, but nobody could remember who.

Target (long × non-island)

(910) * Alex timidly asked what the person who already bought was still doing in the store.

Filler (ungrammatical)

(911) Victor sincerely believed that the team would win the championship, but what he didn't know was that they planned to lose the game on purpose.

Question: Did Victor think the team would lose the championship?

Expected answer: No

Filler (grammatical)

(912) Jeremy rightly thinks that the CEO was committing fraud, and Angela is investigating what kind of fraud it was.

Filler (grammatical)

(913) A certain person from rural America falsely believed that the senator destroyed the political union, but nobody wanted to determine who.

Target (short × non-island)

(914) * Alyssa and her friend doesn't often go out to eat together, but when she does, they get happy.

Filler (ungrammatical)

(915) The plumber correctly determined that the leak was caused by the loose pipe fitting, but the home owner didn't want to pay to have it fixed.

Filler (grammatical)

(916) The postal worker justifiably wondered whether she could deliver all of the mail by the end of the day.

Question: Was the postal worker worried about delivering all of the mail?

Expected answer: Yes

Filler (grammatical)

(917) The assistant placed the mail in the correct mailbox, but the director complained that the assistant got it wrong anyway.

Filler (grammatical)

(918) Kari inaccurately asserted that a certain actor from Los Angeles was widely despised, but nobody wanted to find out who.

Target (long × non-island)

- (919) * The chef ate the leftover food, and the waitress has too even though the manager said they couldn't do so.

Question: Did the chef eat the food?

Expected answer: Yes

Filler (ungrammatical)

- (920) The construction worker hopelessly tried to convince the manager that his way of installing the window would work better, but the manager adamantly disagreed.

Filler (grammatical)

- (921) ? Morgan inaccurately stated that the dish by a certain chef from Florida caused Sarah to throw up, but nobody could confirm who.

Target (long × island)

- (922) A certain person from Wisconsin incorrectly announced that the author sold millions of copies, but nobody wanted to know who.

Target (short × non-island)

- (923) The hair stylist truly believed that the customer would look better with brunette hair, but she decided to dye her hair blonde despite what her hair stylist thought.

Filler (grammatical)

- (924) * The game show host said that all of the contestants had a chance to win as long as they follow the rules by the game.

Filler (ungrammatical)

- (925) A certain person from Spain falsely said that the teacher expressed doubts about James, but nobody wanted to know who.

Target (short × non-island)

B.3.2.2 List 2

(926) Shelby wrongly declared that a certain judge from Harvard caused civil unrest, but nobody could guess who.

Question: Did Shelby declare that the judge caused civil unrest?

Expected answer: Yes

Target (long × non-island)

(927) * The chef ate the leftover food, and the waitress has too even though the manager said they couldn't do so.

Question: Did the chef eat the food?

Expected answer: Yes

Filler (ungrammatical)

(928) A certain person from the east coast falsely claimed that the journalist undermined the government, but nobody could discover who.

Target (short × non-island)

(929) The assistant placed the mail in the correct mailbox, but the director complained that the assistant got it wrong anyway.

Filler (grammatical)

(930) * The customers were quite upset because they could have had been eating dessert by now, but service was really slow.

Filler (ungrammatical)

(931) Paula incorrectly declared that a certain astronaut from NASA was boring, but nobody could guess who.

Target (long × non-island)

(932) Jeremy rightly thinks that the CEO was committing fraud, and Angela is investigating what kind of fraud it was.

Filler (grammatical)

(933) * Anybody didn't repeat the false claim that the judge didn't convict the suspected criminal.

Filler (ungrammatical)

(934) * Clarissa urgently tried to call dentist because tooth had been chipped when she fell and tripped.

Question: Did Clarissa call a nurse?

Expected answer: No

Filler (ungrammatical)

(935) * All of the animals in the forest were right to be terrified from the logging company, even the ones that live underground.

Filler (ungrammatical)

(936) * Alyssa and her friend doesn't often go out to eat together, but when she does, they get happy.

Filler (ungrammatical)

(937) * Naomi was very worried that the acrobat would fall from the trapeze, but the acrobat didn't seem to been.

Filler (ungrammatical)

(938) * The electrician incorrectly installed a new light fixture, and the carpenter has did so the black cabinet as well.

Filler (ungrammatical)

(939) * The thing about the candidate's campaign is that it was doomed to be failure because everyone hated the candidate.

Filler (ungrammatical)

(940) James truthfully told his parents that he had not eaten any of the cookies, but he did lie when he said that he hadn't eaten any of the candy.

Filler (grammatical)

(941) A certain person with lots of Twitter followers wrongly declared that the announcement from the CEO caused all stock prices to plummet, but nobody could remember who.

Question: Did the announcement cause stock prices to plummet?

Expected answer: No

Target (short × island)

(942) * Even though only one of them will win, it seems abundantly clear to the men that each other will win the race.

Filler (ungrammatical)

(943) * Only the residents of the county can voted on the ballot proposition the county.

Filler (ungrammatical)

(944) A certain person from Yale falsely proclaimed that the scientist cured cancer, but nobody could recall who.

Question: Did the scientist cure cancer?

Expected answer: No

Target (short × non-island)

(945) ? Miles wrongly thinks that the dress by a certain designer from Sweden is worth a lot of money, but nobody could determine who.

Target (long × island)

(946) A certain person from San Francisco falsely alleged that the post from the social media influencer was deceitful, but nobody could remember who.

Target (short × island)

(947) * Helen desperately wanted to be astronaut when she grew up, but her parents hasn't liked the idea because they wanted her to be doctor.

Question: Did Helen's parents want her to be an astronaut?

Expected answer: Yes

Filler (ungrammatical)

(948) * Even though everyone complains about dealing with the leaves in the fall, the tree in the edge of the neighbor's yard provides lots of shade of the house.

Filler (ungrammatical)

(949) ? Brie falsely believed that the meeting with a certain senator from rural America destroyed the political union, but nobody wanted to determine who.

Target (long × island)

- (950) * Every designer desperately wanted the chance to showcase their work, but any designer could has.
- Filler (ungrammatical)
- (951) * Barbara correctly predicted that the company would go out of business even though they had a new product to sell at customers.
- Question: Did the company stay in business? Expected answer: No
- Filler (ungrammatical)
- (952) * The store clerk sneakily charged the customer many extra money the warranty the computer.
- Question: Did the store clerk charge charge the customer the fair amount? Expected answer: No
- Filler (ungrammatical)
- (953) * The vacation destination that nobody wanted to go to has any chance of becoming famous.
- Filler (ungrammatical)
- (954) * The parents of each child seemed to think that every child except for their own child would have any chance of winning the school contest.
- Filler (ungrammatical)
- (955) * The engineer correctly designed the bridge right materials, but the construction crew much wrong materials used.
- Filler (ungrammatical)
- (956) The hair stylist truly believed that the customer would look better with brunette hair, but she decided to die her hair blonde despite what her hair stylist thought.
- Filler (grammatical)
- (957) Morgan inaccurately stated that a certain chef from Florida caused Sarah to throw up, but nobody could confirm who.
- Target (long × non-island)
- (958) * The basketball coach accurately evaluated the strategy of the other team, but the players wasn't able to take advantage in this knowledge.

Filler (ungrammatical)

(959) The postal worker justifiably wondered whether she could deliver all of the mail by the end of the day.

Question: Was the postal worker worried about delivering all of the mail?

Expected answer: Yes

Filler (grammatical)

(960) * Alex timidly asked what the person who already bought was still doing in the store.

Filler (ungrammatical)

(961) A certain person from Germany incorrectly reported that the new gadget from the inventor changed society for the better, but nobody wanted to find out who.

Target (short × island)

(962) * The game show host said that all of the contestants had a chance to win as long as they follow the rules by the game.

Filler (ungrammatical)

(963) Jane falsely stated that a certain representative with lots of social media followers scared the citizens, but nobody would confirm who.

Target (long × non-island)

(964) The construction worker hopelessly tried to convince the manager that his way of installing the window would work better, but the manager adamantly disagreed.

Filler (grammatical)

(965) * William was a hard worker, and he tried to complete that homework on time each time it was due.

Question: Was William a hard worker?

Expected answer: Yes

Filler (ungrammatical)

(966) A certain person with lots of connections mistakenly thought that the lawyer threatened a lawsuit against the company, but nobody could recall who.

Target (short × non-island)

(967) A certain person from Los Angeles inaccurately asserted that the episode with the famous actor was widely despised, but nobody wanted to find out who.

Target (short × island)

(968) A certain person from France untruthfully said that the architect won an award, but nobody could discover who.

Target (short × non-island)

(969) The plumber correctly determined that the leak was caused by the loose pipe fitting, but the home owner didn't want to pay to have it fixed.

Filler (grammatical)

(970) Victor sincerely believed that the team would win the championship, but what he didn't know was that they planned to lose the game on purpose.

Question: Did Victor think the team would lose the championship?

Expected answer: No

Filler (grammatical)

(971) ? Diane incorrectly announced that the book by a certain author from Wisconsin sold millions of copies, but nobody wanted to know who.

Question: Did Diane say the book sold millions of copies?

Expected answer: Yes

Target (long × island)

(972) ? Adam falsely said that the note from a certain teacher from Spain expressed doubts about James, but nobody wanted to know who.

Target (long × island)

(973) * The bill that no senator justifiably voted for has ever become law.

Filler (ungrammatical)

B.3.2.3 List 3

(974) * William was a hard worker, and he tried to complete that homework on time each time it was due.

- Question: Was William a hard worker? Expected answer: Yes
Filler (ungrammatical)
- (975) * The basketball coach accurately evaluated the strategy of the other team, but the players wasn't able to take advantage in this knowledge.
Filler (ungrammatical)
- (976) * Alyssa and her friend doesn't often go out to eat together, but when she does, they get happy.
Filler (ungrammatical)
- (977) A certain person from NASA incorrectly declared that the interview with the famous astronaut was boring, but nobody could guess who.
Question: Did someone declare that the interview was boring? Expected answer: Yes
Target (short × island)
- (978) * The electrician incorrectly installed a new light fixture, and the carpenter has did so the black cabinet as well.
Filler (ungrammatical)
- (979) A certain person from Harvard wrongly declared that the proclamation from the judge caused civil unrest, but nobody could guess who.
Target (short × island)
- (980) A certain person with lots of social media followers falsely stated that the announcement from the representative scared the citizens, but nobody would confirm who.
Target (short × island)
- (981) * Only the residents of the county can voted on the ballot proposition the county.
Filler (ungrammatical)
- (982) * The customers were quite upset because they could have had been eating dessert by now, but service was really slow.
Filler (ungrammatical)

(983) ? Mary mistakenly thought that the notice from a certain lawyer with lots of connections threatened a lawsuit against the company, but nobody could recall who.

Target (long × island)

(984) ? Mark falsely claimed that the news report by a certain journalist from the east coast undermined the government, but nobody could discover who.

Question: Did Mark claim the news report undermined the government?

Expected answer: Yes

Target (long × island)

(985) * Naomi was very worried that the acrobat would fall from the trapeze, but the acrobat didn't seem to be.

Filler (ungrammatical)

(986) A certain person from Germany incorrectly reported that the inventor changed society for the better, but nobody wanted to find out who.

Target (short × non-island)

(987) * Helen desperately wanted to be astronaut when she grew up, but her parents hasn't liked the idea because they wanted her to be doctor.

Question: Did Helen's parents want her to be an astronaut?

Expected answer: Yes

Filler (ungrammatical)

(988) Diane incorrectly announced that a certain author from Wisconsin sold millions of copies, but nobody wanted to know who.

Target (long × non-island)

(989) * The chef ate the leftover food, and the waitress has too even though the manager said they couldn't do so.

Question: Did the chef eat the food?

Expected answer: Yes

Filler (ungrammatical)

(990) The plumber correctly determined that the leak was caused by the loose pipe fitting, but the home owner didn't want to pay to have it fixed.

Filler (grammatical)

(991) ? Phoebe untruthfully said that the building by a certain architect from France won an award, but nobody could discover who.

Target (long × island)

(992) The hair stylist truly believed that the customer would look better with brunette hair, but she decided to dye her hair blonde despite what her hair stylist thought.

Filler (grammatical)

(993) * Anybody didn't repeat the false claim that the judge didn't convict the suspected criminal.

Filler (ungrammatical)

(994) * The engineer correctly designed the bridge with the right materials, but the construction crew used much wrong materials.

Filler (ungrammatical)

(995) Victor sincerely believed that the team would win the championship, but what he didn't know was that they planned to lose the game on purpose.

Question: Did Victor think the team would lose the championship?

Expected answer: No

Filler (grammatical)

(996) A certain person from San Francisco falsely alleged that the social media influencer was deceitful, but nobody could remember who.

Target (short × non-island)

(997) * Barbara correctly predicted that the company would go out of business even though they had a new product to sell to customers.

Question: Did the company stay in business?

Expected answer: No

Filler (ungrammatical)

(998) * The parents of each child seemed to think that every child except for their own child would have any chance of winning the school contest.

Filler (ungrammatical)

- (999) James truthfully told his parents that he had not eaten any of the cookies, but he did lie when he said that he hadn't eaten any of the candy.
 Filler (grammatical)
- (1000) * All of the animals in the forest were right to be terrified from the logging company, even the ones that live underground.
 Filler (ungrammatical)
- (1001) ? Julie falsely proclaimed that the discovery by a certain scientist from Yale cured cancer, but nobody could recall who.
 Target (long × island)
- (1002) * The vacation destination that nobody wanted to go to has any chance of becoming famous.
 Filler (ungrammatical)
- (1003) * The store clerk sneakily charged the customer many extra money the warranty the computer.
 Question: Did the store clerk charge charge the customer the fair amount? Expected answer: No
 Filler (ungrammatical)
- (1004) A certain person from Los Angeles inaccurately asserted that the famous actor was widely despised, but nobody wanted to find out who.
 Question: Is the famous actor widely despised? Expected answer: No
 Target (short × non-island)
- (1005) The assistant placed the mail in the correct mailbox, but the director complained that the assistant got it wrong anyway.
 Filler (grammatical)
- (1006) A certain person from Florida inaccurately stated that the dish by the famous chef caused Sarah to throw up, but nobody could confirm who.
 Target (short × island)
- (1007) * Even though only one of them will win, it seems abundantly clear to the men that each other will win the race.

Filler (ungrammatical)

(1008) A certain person with lots of Twitter followers wrongly declared that the CEO caused all stock prices to plummet, but nobody could remember who.

Target (short × non-island)

(1009) Adam falsely said that a certain teacher from Spain expressed doubts about James, but nobody wanted to know who.

Target (long × non-island)

(1010) Brie falsely believed that a certain senator from rural America destroyed the political union, but nobody wanted to determine who.

Question: Did the senator destroy the political union?

Expected answer: No

Target (long × non-island)

(1011) * Even though everyone complains about dealing with the leaves in the fall, the tree in the edge of the neighbor's yard provides lots of shade of the house.

Filler (ungrammatical)

(1012) Miles wrongly thinks that a certain designer from Sweden is worth a lot of money, but nobody could determine who.

Target (long × non-island)

(1013) Jeremy rightly thinks that the CEO was committing fraud, and Angela is investigating what kind of fraud it was.

Filler (grammatical)

(1014) * Clarissa urgently tried to call dentist because tooth had been chipped when she fell and tripped.

Question: Did Clarissa call a nurse?

Expected answer: No

Filler (ungrammatical)

(1015) The postal worker justifiably wondered whether she could deliver all of the mail by the end of the day.

- Question: Was the postal worker worried about delivering all of the mail? Expected answer: Yes
Filler (grammatical)
- (1016) * Alex timidly asked what the person who already bought was still doing in the store.
Filler (ungrammatical)
- (1017) The construction worker hopelessly tried to convince the manager that his way of installing the window would work better, but the manager adamantly disagreed.
Filler (grammatical)
- (1018) * Every designer desperately wanted the chance to showcase their work, but any designer could has.
Filler (ungrammatical)
- (1019) * The thing about the candidate's campaign is that it was doomed to be failure because everyone hated the candidate.
Filler (ungrammatical)
- (1020) * The bill that no senator justifiably voted for has ever become law.
Filler (ungrammatical)
- (1021) * The game show host said that all of the contestants had a chance to win as long as they follow the rules by the game.
Filler (ungrammatical)

B.3.2.4 List 4

- (1022) Mark falsely claimed that a certain journalist from the east coast undermined the government, but nobody could discover who.
Target (long × non-island)
- (1023) * Alex timidly asked what the person who already bought was still doing in the store.
Filler (ungrammatical)

(1024) A certain person from Spain falsely said that the note from the teacher expressed doubts about James, but nobody wanted to know who.

Question: Did the note express doubts about the student?

Expected answer: No

Target (short × island)

(1025) * The parents of each child seemed to think that every child except for their own child would have any chance of winning the school contest.

Filler (ungrammatical)

(1026) * The chef ate the leftover food, and the waitress has too even though the manager said they couldn't do so.

Question: Did the chef eat the food?

Expected answer: Yes

Filler (ungrammatical)

(1027) * Anybody didn't repeat the false claim that the judge didn't convict the suspected criminal.

Filler (ungrammatical)

(1028) A certain person from NASA incorrectly declared that the famous astronaut was boring, but nobody could guess who.

Target (short × non-island)

(1029) * The electrician incorrectly installed a new light fixture, and the carpenter has did so the black cabinet as well.

Filler (ungrammatical)

(1030) * The engineer correctly designed the bridge right materials, but the construction crew much wrong materials used.

Filler (ungrammatical)

(1031) Jeremy rightly thinks that the CEO was committing fraud, and Angela is investigating what kind of fraud it was.

Filler (grammatical)

(1032) * The game show host said that all of the contestants had a chance to win as long as they follow the rules by the game.

Filler (ungrammatical)

(1033) Victor sincerely believed that the team would win the championship, but what he didn't know was that they planned to lose the game on purpose.

Question: Did Victor think the team would lose the championship?

Expected answer: No

Filler (grammatical)

(1034) A certain person from Wisconsin incorrectly announced that the book by the author sold millions of copies, but nobody wanted to know who.

Target (short × island)

(1035) James truthfully told his parents that he had not eaten any of the cookies, but he did lie when he said that he hadn't eaten any of the candy.

Filler (grammatical)

(1036) * The thing about the candidate's campaign is that it was doomed to be failure because everyone hated the candidate.

Filler (ungrammatical)

(1037) The assistant placed the mail in the correct mailbox, but the director complained that the assistant got it wrong anyway.

Filler (grammatical)

(1038) * William was a hard worker, and he tried to complete that homework on time each time it was due.

Question: Was William a hard worker?

Expected answer: Yes

Filler (ungrammatical)

(1039) * Only the residents of the county can voted on the ballot proposition the county.

Filler (ungrammatical)

- (1040) ? Albert falsely alleged that the post from a certain social media influencer from San Francisco was deceitful, but nobody could remember who.
 Question: Was the post from the social media influencer deceitful? Expected answer: No
 Target (long × island)
- (1041) * The customers were quite upset because they could have had been eating dessert by now, but service was really slow.
 Filler (ungrammatical)
- (1042) Julie falsely proclaimed that a certain scientist from Yale cured cancer, but nobody could recall who.
 Target (long × non-island)
- (1043) * The vacation destination that nobody wanted to go to has any chance of becoming famous.
 Filler (ungrammatical)
- (1044) ? Steve incorrectly reported that the new gadget from a certain inventor from Germany changed society for the better, but nobody wanted to find out who.
 Target (long × island)
- (1045) * Clarissa urgently tried to call dentist because tooth had been chipped when she fell and tripped.
 Question: Did Clarissa call a nurse? Expected answer: No
 Filler (ungrammatical)
- (1046) A certain person from Sweden wrongly thinks that the dress by the designer is worth a lot of money, but nobody could determine who.
 Target (short × island)
- (1047) A certain person from Harvard wrongly declared that the judge caused civil unrest, but nobody could guess who.
 Target (short × non-island)

(1048) ? Kari inaccurately asserted that the episode with a certain actor from Los Angeles was widely despised, but nobody wanted to find out who.

Target (long × island)

(1049) * Barbara correctly predicted that the company would go out of business even though they had a new product to sell at customers.

Question: Did the company stay in business?

Expected answer: No

Filler (ungrammatical)

(1050) * All of the animals in the forest were right to be terrified from the logging company, even the ones that live underground.

Filler (ungrammatical)

(1051) A certain person from rural America falsely believed that the meeting with the senator destroyed the political union, but nobody wanted to determine who.

Target (short × island)

(1052) * The basketball coach accurately evaluated the strategy of the other team, but the players wasn't able to take advantage in this knowledge.

Filler (ungrammatical)

(1053) * Every designer desperately wanted the chance to showcase their work, but any designer could has.

Filler (ungrammatical)

(1054) * Helen desperately wanted to be astronaut when she grew up, but her parents hasn't liked the idea because they wanted her to be doctor.

Question: Did Helen's parents want her to be an astronaut?

Expected answer: Yes

Filler (ungrammatical)

(1055) ? Ashley wrongly declared that the announcement from a certain CEO with lots of Twitter followers caused all stock prices to plummet, but nobody could remember who.

Target (long × island)

(1056) The construction worker hopelessly tried to convince the manager that his way of installing the window would work better, but the manager adamantly disagreed.

Filler (grammatical)

(1057) * Naomi was very worried that the acrobat would fall from the trapeze, but the acrobat didn't seem to be.

Filler (ungrammatical)

(1058) * Alyssa and her friend doesn't often go out to eat together, but when she does, they get happy.

Filler (ungrammatical)

(1059) Mary mistakenly thought that a certain lawyer with lots of connections threatened a lawsuit against the company, but nobody could recall who.

Question: Did Mary think the lawyer threatened a lawsuit?

Expected answer: Yes

Target (long × non-island)

(1060) The postal worker justifiably wondered whether she could deliver all of the mail by the end of the day.

Question: Was the postal worker worried about delivering all of the mail?

Expected answer: Yes

Filler (grammatical)

(1061) * The store clerk sneakily charged the customer many extra money the warranty the computer.

Question: Did the store clerk charge charge the customer the fair amount?

Expected answer: No

Filler (ungrammatical)

(1062) A certain person with lots of social media followers falsely stated that the representative scared the citizens, but nobody would confirm who.

Target (short × non-island)

(1063) The hair stylist truly believed that the customer would look better with brunette hair, but she decided to die her hair blonde despite what her hair stylist thought.

Filler (grammatical)

(1064) A certain person from Florida inaccurately stated that the famous chef caused Sarah to throw up, but nobody could confirm who.

Question: Did someone say that the chef caused Sarah to throw up?

Expected answer: Yes

Target (short × non-island)

(1065) * Even though only one of them will win, it seems abundantly clear to the men that each other will win the race.

Filler (ungrammatical)

(1066) * The bill that no senator justifiably voted for has ever become law.

Filler (ungrammatical)

(1067) Phoebe untruthfully said that a certain architect from France won an award, but nobody could discover who.

Target (long × non-island)

(1068) * Even though everyone complains about dealing with the leaves in the fall, the tree in the edge of the neighbor's yard provides lots of shade of the house.

Filler (ungrammatical)

(1069) The plumber correctly determined that the leak was caused by the loose pipe fitting, but the home owner didn't want to pay to have it fixed.

Filler (grammatical)

B.3.3 Experiment 3b: All target items

(1070) Subject island, Quartet 1

- a. Jane falsely stated that a certain representative with lots of social media followers scared the citizens, but nobody would confirm his name.
- b. Jane falsely stated that a certain representative with lots of social media followers scared the citizens, but nobody would confirm who.

- c. Jane falsely stated that the announcement from a certain representative with lots of social media followers scared the citizens, but nobody would confirm his name.
- d. ? Jane falsely stated that the announcement from a certain representative with lots of social media followers scared the citizens, but nobody would confirm who.

(1071) Subject island, Quartet 2

- a. Miles wrongly thinks that a certain designer from Sweden is worth a lot of money, but nobody could determine her name.
- b. Miles wrongly thinks that a certain designer from Sweden is worth a lot of money, but nobody could determine who.
- c. Miles wrongly thinks that the dress by a certain designer from Sweden is worth a lot of money, but nobody could determine her name.
- d. ? Miles wrongly thinks that the dress by a certain designer from Sweden is worth a lot of money, but nobody could determine who.

(1072) Subject island, Quartet 3

- a. Phoebe untruthfully said that a certain architect from France won an award, but nobody could discover his name.
- b. Phoebe untruthfully said that a certain architect from France won an award, but nobody could discover who.
- c. Phoebe untruthfully said that the building by a certain architect from France won an award, but nobody could discover his name.
- d. ? Phoebe untruthfully said that the building by a certain architect from France won an award, but nobody could discover who.

(1073) Subject island, Quartet 4

- a. Steve incorrectly reported that a certain inventor from Germany changed society for the better, but nobody wanted to find out her name.

- b. Steve incorrectly reported that a certain inventor from Germany changed society for the better, but nobody wanted to find out who.
- c. Steve incorrectly reported that the new gadget from a certain inventor from Germany changed society for the better, but nobody wanted to find out her name.
- d. ? Steve incorrectly reported that the new gadget from a certain inventor from Germany changed society for the better, but nobody wanted to find out who.

(1074) Subject island, Quartet 5

- a. Shelby wrongly declared that a certain judge from Harvard caused civil unrest, but nobody could guess his name.
- b. Shelby wrongly declared that a certain judge from Harvard caused civil unrest, but nobody could guess who.
- c. Shelby wrongly declared that the proclamation from a certain judge from Harvard caused civil unrest, but nobody could guess his name.
- d. ? Shelby wrongly declared that the proclamation from a certain judge from Harvard caused civil unrest, but nobody could guess who.

(1075) Subject island, Quartet 6

- a. Diane incorrectly announced that a certain author from Wisconsin sold millions of copies, but nobody wanted to know his name.
- b. Diane incorrectly announced that a certain author from Wisconsin sold millions of copies, but nobody wanted to know who.
- c. Diane incorrectly announced that the book by a certain author from Wisconsin sold millions of copies, but nobody wanted to know his name.
- d. ? Diane incorrectly announced that the book by a certain author from Wisconsin sold millions of copies, but nobody wanted to know who.

(1076) Subject island, Quartet 7

- a. Julie falsely proclaimed that a certain scientist from Yale cured cancer, but nobody could recall his name.
- b. Julie falsely proclaimed that a certain scientist from Yale cured cancer, but nobody could recall who.
- c. Julie falsely proclaimed that the discovery by a certain scientist from Yale cured cancer, but nobody could recall his name.
- d. ? Julie falsely proclaimed that the discovery by a certain scientist from Yale cured cancer, but nobody could recall who.

(1077) Subject island, Quartet 8

- a. Ashley wrongly declared that a certain CEO with lots of Twitter followers caused all stock prices to plummet, but nobody could remember his name.
- b. Ashley wrongly declared that a certain CEO with lots of Twitter followers caused all stock prices to plummet, but nobody could remember who.
- c. Ashley wrongly declared that the announcement from a certain CEO with lots of Twitter followers caused all stock prices to plummet, but nobody could remember his name.
- d. ? Ashley wrongly declared that the announcement from a certain CEO with lots of Twitter followers caused all stock prices to plummet, but nobody could remember who.

(1078) Subject island, Quartet 9

- a. Morgan inaccurately stated that a certain chef from Florida caused Sarah to throw up, but nobody could confirm his name.
- b. Morgan inaccurately stated that a certain chef from Florida caused Sarah to throw up, but nobody could confirm who.
- c. Morgan inaccurately stated that the dish by a certain chef from Florida caused Sarah to throw up, but nobody could confirm his name.
- d. ? Morgan inaccurately stated that the dish by a certain chef from Florida caused Sarah to throw up, but nobody could confirm who.

(1079) Subject island, Quartet 10

- a. Brie falsely believed that a certain senator from rural America destroyed the political union, but nobody wanted to determine his name.
- b. Brie falsely believed that a certain senator from rural America destroyed the political union, but nobody wanted to determine who.
- c. Brie falsely believed that the meeting with a certain senator from rural America destroyed the political union, but nobody wanted to determine his name.
- d. ? Brie falsely believed that the meeting with a certain senator from rural America destroyed the political union, but nobody wanted to determine who.

(1080) Subject island, Quartet 11

- a. Mark falsely claimed that a certain journalist from the east coast undermined the government, but nobody could discover her name.
- b. Mark falsely claimed that a certain journalist from the east coast undermined the government, but nobody could discover who.
- c. Mark falsely claimed that the news report by a certain journalist from the east coast undermined the government, but nobody could discover her name.
- d. ? Mark falsely claimed that the news report by a certain journalist from the east coast undermined the government, but nobody could discover who.

(1081) Subject island, Quartet 12

- a. Kari inaccurately asserted that a certain actor from Los Angeles was widely despised, but nobody wanted to find out his name.
- b. Kari inaccurately asserted that a certain actor from Los Angeles was widely despised, but nobody wanted to find out who.
- c. Kari inaccurately asserted that the episode with a certain actor from Los Angeles was widely despised, but nobody wanted to find out his name.

- d. ? Kari inaccurately asserted that the episode with a certain actor from Los Angeles was widely despised, but nobody wanted to find out who.

(1082) Subject island, Quartet 13

- a. Paula incorrectly declared that a certain astronaut from NASA was boring, but nobody could guess his name.
- b. Paula incorrectly declared that a certain astronaut from NASA was boring, but nobody could guess who.
- c. Paula incorrectly declared that the interview with a certain astronaut from NASA was boring, but nobody could guess his name.
- d. ? Paula incorrectly declared that the interview with a certain astronaut from NASA was boring, but nobody could guess who.

(1083) Subject island, Quartet 14

- a. Adam falsely said that a certain teacher from Spain expressed doubts about James, but nobody wanted to know her name.
- b. Adam falsely said that a certain teacher from Spain expressed doubts about James, but nobody wanted to know who.
- c. Adam falsely said that the note from a certain teacher from Spain expressed doubts about James, but nobody wanted to know her name.
- d. ? Adam falsely said that the note from a certain teacher from Spain expressed doubts about James, but nobody wanted to know who.

(1084) Subject island, Quartet 15

- a. Mary mistakenly thought that a certain lawyer with lots of connections threatened a lawsuit against the company, but nobody could recall his name.
- b. Mary mistakenly thought that a certain lawyer with lots of connections threatened a lawsuit against the company, but nobody could recall who.

- c. Mary mistakenly thought that the notice from a certain lawyer with lots of connections threatened a lawsuit against the company, but nobody could recall his name.
- d. ? Mary mistakenly thought that the notice from a certain lawyer with lots of connections threatened a lawsuit against the company, but nobody could recall who.

(1085) Subject island, Quartet 16

- a. Albert falsely alleged that a certain social media influencer from San Francisco was deceitful, but nobody could remember her name.
- b. Albert falsely alleged that a certain social media influencer from San Francisco was deceitful, but nobody could remember who.
- c. Albert falsely alleged that the post from a certain social media influencer from San Francisco was deceitful, but nobody could remember her name.
- d. ? Albert falsely alleged that the post from a certain social media influencer from San Francisco was deceitful, but nobody could remember who.

B.3.4 Experiment 3b: Lists with fillers in pseudorandomized order

B.3.4.1 List 1

(1086) * The customers were quite upset because they could have had been eating dessert by now, but service was really slow.

Filler (ungrammatical)

(1087) * Alyssa and her friend doesn't often go out to eat together, but when she does, they get happy.

Filler (ungrammatical)

(1088) * All of the animals in the forest were right to be terrified from the logging company, even the ones that live underground.

Filler (ungrammatical)

(1089) * Naomi was very worried that the acrobat would fall from the trapeze, but the acrobat didn't seem to be.

Filler (ungrammatical)

(1090) Jane falsely stated that the announcement from a certain representative with lots of social media followers scared the citizens, but nobody would confirm his name.

Target (pronoun × island)

(1091) * The vacation destination that nobody wanted to go to has any chance of becoming famous.

Filler (ungrammatical)

(1092) Paula incorrectly declared that the interview with a certain astronaut from NASA was boring, but nobody could guess his name.

Question: Did someone declare that the interview was boring?

Expected answer: Yes

Target (pronoun × island)

(1093) * Every designer desperately wanted the chance to showcase their work, but any designer could have.

Filler (ungrammatical)

(1094) Albert falsely alleged that a certain social media influencer from San Francisco was deceitful, but nobody could remember her name.

Target (pronoun × non-island)

(1095) * The electrician incorrectly installed a new light fixture, and the carpenter has done so the black cabinet as well.

Filler (ungrammatical)

(1096) * Anybody didn't repeat the false claim that the judge didn't convict the suspected criminal.

Filler (ungrammatical)

(1097) * William was a hard worker, and he tried to complete that homework on time each time it was due.

Question: Was William a hard worker?

Expected answer: Yes

Filler (ungrammatical)

(1098) Steve incorrectly reported that a certain inventor from Germany changed society for the better, but nobody wanted to find out her name.

Target (pronoun × non-island)

(1099) * Barbara correctly predicted that the company would go out of business even though they had a new product to sell at customers.

Question: Did the company stay in business?

Expected answer: No

Filler (ungrammatical)

(1100) Victor sincerely believed that the team would win the championship, but what he didn't know was that they planned to lose the game on purpose.

Question: Did Victor think the team would lose the championship?

Expected answer: No

Filler (grammatical)

(1101) * The parents of each child seemed to think that every child except for their own child would have any chance of winning the school contest.

Filler (ungrammatical)

(1102) ? Mark falsely claimed that the news report by a certain journalist from the east coast undermined the government, but nobody could discover who.

Question: Did Mark claim the news report undermined the government?

Expected answer: Yes

Target (wh × island)

(1103) * The store clerk sneakily charged the customer many extra money the warranty the computer.

Question: Did the store clerk charge charge the customer the fair amount?

Expected answer: No

Filler (ungrammatical)

(1104) The construction worker hopelessly tried to convince the manager that his way of installing the window would work better, but the manager adamantly disagreed.

Filler (grammatical)

- (1105) The plumber correctly determined that the leak was caused by the loose pipe fitting, but the home owner didn't want to pay to have it fixed.
 Filler (grammatical)
- (1106) * The engineer correctly designed the bridge right materials, but the construction crew much wrong materials used.
 Filler (ungrammatical)
- (1107) Miles wrongly thinks that a certain designer from Sweden is worth a lot of money, but nobody could determine who.
 Target (wh × non-island)
- (1108) James truthfully told his parents that he had not eaten any of the cookies, but he did lie when he said that he hadn't eaten any of the candy.
 Filler (grammatical)
- (1109) * Helen desperately wanted to be astronaut when she grew up, but her parents hasn't liked the idea because they wanted her to be doctor.
 Question: Did Helen's parents want her to be an astronaut? Expected answer: Yes
 Filler (ungrammatical)
- (1110) * Only the residents of the county can voted on the ballot proposition the county.
 Filler (ungrammatical)
- (1111) * Clarissa urgently tried to call dentist because tooth had been chipped when she fell and tripped.
 Question: Did Clarissa call a nurse? Expected answer: No
 Filler (ungrammatical)
- (1112) * The game show host said that all of the contestants had a chance to win as long as they follow the rules by the game.
 Filler (ungrammatical)

(1113) * The basketball coach accurately evaluated the strategy of the other team, but the players wasn't able to take advantage in this knowledge.

Filler (ungrammatical)

(1114) * Alex timidly asked what the person who already bought was still doing in the store.

Filler (ungrammatical)

(1115) * The chef ate the leftover food, and the waitress has too even though the manager said they couldn't do so.

Question: Did the chef eat the food?

Expected answer: Yes

Filler (ungrammatical)

(1116) ? Phoebe untruthfully said that the building by a certain architect from France won an award, but nobody could discover who.

Target (wh × island)

(1117) Diane incorrectly announced that a certain author from Wisconsin sold millions of copies, but nobody wanted to know who.

Target (wh × non-island)

(1118) Jeremy rightly thinks that the CEO was committing fraud, and Angela is investigating what kind of fraud it was.

Filler (grammatical)

(1119) ? Julie falsely proclaimed that the discovery by a certain scientist from Yale cured cancer, but nobody could recall who.

Target (wh × island)

(1120) The postal worker justifiably wondered whether she could deliver all of the mail by the end of the day.

Question: Was the postal worker worried about delivering all of the mail?

Expected answer: Yes

Filler (grammatical)

- (1121) Ashley wrongly declared that a certain CEO with lots of Twitter followers caused all stock prices to plummet, but nobody could remember his name.
Target (pronoun × non-island)
- (1122) * The bill that no senator justifiably voted for has ever become law.
Filler (ungrammatical)
- (1123) Kari inaccurately asserted that a certain actor from Los Angeles was widely despised, but nobody wanted to find out his name.
Question: Is the famous actor widely despised? Expected answer: No
Target (pronoun × non-island)
- (1124) Morgan inaccurately stated that the dish by a certain chef from Florida caused Sarah to throw up, but nobody could confirm his name.
Target (pronoun × island)
- (1125) * The thing about the candidate's campaign is that it was doomed to be failure because everyone hated the candidate.
Filler (ungrammatical)
- (1126) Adam falsely said that a certain teacher from Spain expressed doubts about James, but nobody wanted to know who.
Target (wh × non-island)
- (1127) The hair stylist truly believed that the customer would look better with brunette hair, but she decided to die her hair blonde despite what her hair stylist thought.
Filler (grammatical)
- (1128) The assistant placed the mail in the correct mailbox, but the director complained that the assistant got it wrong anyway.
Filler (grammatical)
- (1129) * Even though everyone complains about dealing with the leaves in the fall, the tree in the edge of the neighbor's yard provides lots of shade of the house.

Filler (ungrammatical)

- (1130) Brie falsely believed that a certain senator from rural America destroyed the political union, but nobody wanted to determine who.

Question: Did the senator destroy the political union?

Expected answer: No

Target (wh × non-island)

- (1131) * Even though only one of them will win, it seems abundantly clear to the men that each other will win the race.

Filler (ungrammatical)

- (1132) ? Mary mistakenly thought that the notice from a certain lawyer with lots of connections threatened a lawsuit against the company, but nobody could recall who.

Target (wh × island)

- (1133) Shelby wrongly declared that the proclamation from a certain judge from Harvard caused civil unrest, but nobody could guess his name.

Target (pronoun × island)

B.3.4.2 List 2

- (1134) The plumber correctly determined that the leak was caused by the loose pipe fitting, but the home owner didn't want to pay to have it fixed.

Filler (grammatical)

- (1135) * Every designer desperately wanted the chance to showcase their work, but any designer could has.

Filler (ungrammatical)

- (1136) Paula incorrectly declared that a certain astronaut from NASA was boring, but nobody could guess his name.

Target (pronoun × non-island)

(1137) * The game show host said that all of the contestants had a chance to win as long as they follow the rules by the game.

Filler (ungrammatical)

(1138) * The chef ate the leftover food, and the waitress has too even though the manager said they couldn't do so.

Question: Did the chef eat the food?

Expected answer: Yes

Filler (ungrammatical)

(1139) The construction worker hopelessly tried to convince the manager that his way of installing the window would work better, but the manager adamantly disagreed.

Filler (grammatical)

(1140) Mark falsely claimed that a certain journalist from the east coast undermined the government, but nobody could discover who.

Target (wh × non-island)

(1141) * Even though only one of them will win, it seems abundantly clear to the men that each other will win the race.

Filler (ungrammatical)

(1142) * Helen desperately wanted to be astronaut when she grew up, but her parents hasn't liked the idea because they wanted her to be doctor.

Question: Did Helen's parents want her to be an astronaut?

Expected answer: Yes

Filler (ungrammatical)

(1143) ? Ashley wrongly declared that the announcement from a certain CEO with lots of Twitter followers caused all stock prices to plummet, but nobody could remember who.

Target (wh × island)

(1144) * Even though everyone complains about dealing with the leaves in the fall, the tree in the edge of the neighbor's yard provides lots of shade of the house.

Filler (ungrammatical)

- (1145) Diane incorrectly announced that the book by a certain author from Wisconsin sold millions of copies, but nobody wanted to know his name.
Target (pronoun × island)
- (1146) Shelby wrongly declared that a certain judge from Harvard caused civil unrest, but nobody could guess his name.
Target (pronoun × non-island)
- (1147) The hair stylist truly believed that the customer would look better with brunette hair, but she decided to dye her hair blonde despite what her hair stylist thought.
Filler (grammatical)
- (1148) * The basketball coach accurately evaluated the strategy of the other team, but the players wasn't able to take advantage in this knowledge.
Filler (ungrammatical)
- (1149) Mary mistakenly thought that a certain lawyer with lots of connections threatened a lawsuit against the company, but nobody could recall who.
Question: Did Mary think the lawyer threatened a lawsuit? Expected answer: Yes
Target (wh × non-island)
- (1150) * Anybody didn't repeat the false claim that the judge didn't convict the suspected criminal.
Filler (ungrammatical)
- (1151) Phoebe untruthfully said that a certain architect from France won an award, but nobody could discover who.
Target (wh × non-island)
- (1152) * The parents of each child seemed to think that every child except for their own child would have any chance of winning the school contest.
Filler (ungrammatical)
- (1153) * The thing about the candidate's campaign is that it was doomed to be failure because everyone hated the candidate.

Filler (ungrammatical)

(1154) Brie falsely believed that the meeting with a certain senator from rural America destroyed the political union, but nobody wanted to determine his name.

Target (pronoun × island)

(1155) Adam falsely said that the note from a certain teacher from Spain expressed doubts about James, but nobody wanted to know her name.

Question: Did the note express doubts about the student?

Expected answer: No

Target (pronoun × island)

(1156) * All of the animals in the forest were right to be terrified from the logging company, even the ones that live underground.

Filler (ungrammatical)

(1157) * The bill that no senator justifiably voted for has ever become law.

Filler (ungrammatical)

(1158) ? Albert falsely alleged that the post from a certain social media influencer from San Francisco was deceitful, but nobody could remember who.

Question: Was the post from the social media influencer deceitful?

Expected answer: No

Target (wh × island)

(1159) Julie falsely proclaimed that a certain scientist from Yale cured cancer, but nobody could recall who.

Target (wh × non-island)

(1160) * The vacation destination that nobody wanted to go to has any chance of becoming famous.

Filler (ungrammatical)

(1161) * Alex timidly asked what the person who already bought was still doing in the store.

Filler (ungrammatical)

- (1162) * Barbara correctly predicted that the company would go out of business even though they had a new product to sell at customers.
 Question: Did the company stay in business? Expected answer: No
 Filler (ungrammatical)
- (1163) * The store clerk sneakily charged the customer many extra money the warranty the computer.
 Question: Did the store clerk charge charge the customer the fair amount? Expected answer: No
 Filler (ungrammatical)
- (1164) * Alyssa and her friend doesn't often go out to eat together, but when she does, they get happy.
 Filler (ungrammatical)
- (1165) The postal worker justifiably wondered whether she could deliver all of the mail by the end of the day.
 Question: Was the postal worker worried about delivering all of the mail? Expected answer: Yes
 Filler (grammatical)
- (1166) * Naomi was very worried that the acrobat would fall from the trapeze, but the acrobat didn't seem to been.
 Filler (ungrammatical)
- (1167) The assistant placed the mail in the correct mailbox, but the director complained that the assistant got it wrong anyway.
 Filler (grammatical)
- (1168) Morgan inaccurately stated that a certain chef from Florida caused Sarah to throw up, but nobody could confirm his name.
 Question: Did someone say that the chef caused Sarah to throw up? Expected answer: Yes
 Target (pronoun × non-island)
- (1169) * Clarissa urgently tried to call dentist because tooth had been chipped when she fell and tripped.
 Question: Did Clarissa call a nurse? Expected answer: No

Filler (ungrammatical)

(1170) * Only the residents of the county can voted on the ballot proposition the county.

Filler (ungrammatical)

(1171) Jeremy rightly thinks that the CEO was committing fraud, and Angela is investigating what kind of fraud it was.

Filler (grammatical)

(1172) * The engineer correctly designed the bridge right materials, but the construction crew much wrong materials used.

Filler (ungrammatical)

(1173) Victor sincerely believed that the team would win the championship, but what he didn't know was that they planned to lose the game on purpose.

Question: Did Victor think the team would lose the championship?

Expected answer: No

Filler (grammatical)

(1174) ? Steve incorrectly reported that the new gadget from a certain inventor from Germany changed society for the better, but nobody wanted to find out who.

Target (wh × island)

(1175) ? Kari inaccurately asserted that the episode with a certain actor from Los Angeles was widely despised, but nobody wanted to find out who.

Target (wh × island)

(1176) Miles wrongly thinks that the dress by a certain designer from Sweden is worth a lot of money, but nobody could determine her name.

Target (pronoun × island)

(1177) * The electrician incorrectly installed a new light fixture, and the carpenter has did so the black cabinet as well.

Filler (ungrammatical)

(1178) * William was a hard worker, and he tried to complete that homework on time each time it was due.

Question: Was William a hard worker?

Expected answer: Yes

Filler (ungrammatical)

(1179) * The customers were quite upset because they could have had been eating dessert by now, but service was really slow.

Filler (ungrammatical)

(1180) James truthfully told his parents that he had not eaten any of the cookies, but he did lie when he said that he hadn't eaten any of the candy.

Filler (grammatical)

(1181) Jane falsely stated that a certain representative with lots of social media followers scared the citizens, but nobody would confirm his name.

Target (pronoun × non-island)

B.3.4.3 List 3

(1182) * The parents of each child seemed to think that every child except for their own child would have any chance of winning the school contest.

Filler (ungrammatical)

(1183) The hair stylist truly believed that the customer would look better with brunette hair, but she decided to die her hair blonde despite what her hair stylist thought.

Filler (grammatical)

(1184) * Every designer desperately wanted the chance to showcase their work, but any designer could has.

Filler (ungrammatical)

(1185) * The bill that no senator justifiably voted for has ever become law.

Filler (ungrammatical)

(1186) The postal worker justifiably wondered whether she could deliver all of the mail by the end of the day.

Question: Was the postal worker worried about delivering all of the mail?

Expected answer: Yes

Filler (grammatical)

(1187) * All of the animals in the forest were right to be terrified from the logging company, even the ones that live underground.

Filler (ungrammatical)

(1188) * The thing about the candidate's campaign is that it was doomed to be failure because everyone hated the candidate.

Filler (ungrammatical)

(1189) * The engineer correctly designed the bridge right materials, but the construction crew much wrong materials used.

Filler (ungrammatical)

(1190) * Barbara correctly predicted that the company would go out of business even though they had a new product to sell at customers.

Question: Did the company stay in business?

Expected answer: No

Filler (ungrammatical)

(1191) Julie falsely proclaimed that the discovery by a certain scientist from Yale cured cancer, but nobody could recall his name.

Target (pronoun × island)

(1192) * The game show host said that all of the contestants had a chance to win as long as they follow the rules by the game.

Filler (ungrammatical)

(1193) * Alex timidly asked what the person who already bought was still doing in the store.

Filler (ungrammatical)

(1194) * Anybody didn't repeat the false claim that the judge didn't convict the suspected criminal.

Filler (ungrammatical)

- (1195) * Clarissa urgently tried to call dentist because tooth had been chipped when she fell and tripped.

Question: Did Clarissa call a nurse?

Expected answer: No

Filler (ungrammatical)

- (1196) Mark falsely claimed that the news report by a certain journalist from the east coast undermined the government, but nobody could discover her name.

Target (pronoun × island)

- (1197) * The electrician incorrectly installed a new light fixture, and the carpenter has did so the black cabinet as well.

Filler (ungrammatical)

- (1198) James truthfully told his parents that he had not eaten any of the cookies, but he did lie when he said that he hadn't eaten any of the candy.

Filler (grammatical)

- (1199) The construction worker hopelessly tried to convince the manager that his way of installing the window would work better, but the manager adamantly disagreed.

Filler (grammatical)

- (1200) Victor sincerely believed that the team would win the championship, but what he didn't know was that they planned to lose the game on purpose.

Question: Did Victor think the team would lose the championship?

Expected answer: No

Filler (grammatical)

- (1201) Ashley wrongly declared that a certain CEO with lots of Twitter followers caused all stock prices to plummet, but nobody could remember who.

Target (wh × non-island)

- (1202) * William was a hard worker, and he tried to complete that homework on time each time it was due.

- Question: Was William a hard worker? Expected answer: Yes
 Filler (ungrammatical)
- (1203) ? Shelby wrongly declared that the proclamation from a certain judge from Harvard caused civil unrest, but nobody could guess who.
 Target (wh × island)
- (1204) ? Jane falsely stated that the announcement from a certain representative with lots of social media followers scared the citizens, but nobody would confirm who.
 Question: Did the announcement scare the citizens? Expected answer: No
 Target (wh × island)
- (1205) * The vacation destination that nobody wanted to go to has any chance of becoming famous.
 Filler (ungrammatical)
- (1206) * The basketball coach accurately evaluated the strategy of the other team, but the players wasn't able to take advantage in this knowledge.
 Filler (ungrammatical)
- (1207) Diane incorrectly announced that a certain author from Wisconsin sold millions of copies, but nobody wanted to know his name.
 Target (pronoun × non-island)
- (1208) The plumber correctly determined that the leak was caused by the loose pipe fitting, but the home owner didn't want to pay to have it fixed.
 Filler (grammatical)
- (1209) ? Morgan inaccurately stated that the dish by a certain chef from Florida caused Sarah to throw up, but nobody could confirm who.
 Target (wh × island)
- (1210) * Even though only one of them will win, it seems abundantly clear to the men that each other will win the race.
 Filler (ungrammatical)

(1211) Phoebe untruthfully said that the building by a certain architect from France won an award, but nobody could discover his name.

Question: Did someone say that the building won an award?

Expected answer: Yes

Target (pronoun × island)

(1212) * The chef ate the leftover food, and the waitress has too even though the manager said they couldn't do so.

Question: Did the chef eat the food?

Expected answer: Yes

Filler (ungrammatical)

(1213) Mary mistakenly thought that the notice from a certain lawyer with lots of connections threatened a lawsuit against the company, but nobody could recall his name.

Target (pronoun × island)

(1214) * Only the residents of the county can voted on the ballot proposition the county.

Filler (ungrammatical)

(1215) Jeremy rightly thinks that the CEO was committing fraud, and Angela is investigating what kind of fraud it was.

Filler (grammatical)

(1216) * Helen desperately wanted to be astronaut when she grew up, but her parents hasn't liked the idea because they wanted her to be doctor.

Question: Did Helen's parents want her to be an astronaut?

Expected answer: Yes

Filler (ungrammatical)

(1217) Brie falsely believed that a certain senator from rural America destroyed the political union, but nobody wanted to determine his name.

Target (pronoun × non-island)

(1218) The assistant placed the mail in the correct mailbox, but the director complained that the assistant got it wrong anyway.

Filler (grammatical)

(1219) Adam falsely said that a certain teacher from Spain expressed doubts about James, but nobody wanted to know her name.

Target (pronoun × non-island)

(1220) Kari inaccurately asserted that a certain actor from Los Angeles was widely despised, but nobody wanted to find out who.

Target (wh × non-island)

(1221) * The customers were quite upset because they could have had been eating dessert by now, but service was really slow.

Filler (ungrammatical)

(1222) Albert falsely alleged that a certain social media influencer from San Francisco was deceitful, but nobody could remember who.

Target (wh × non-island)

(1223) Steve incorrectly reported that a certain inventor from Germany changed society for the better, but nobody wanted to find out who.

Question: Did the inventor change society for the better?

Expected answer: No

Target (wh × non-island)

(1224) Miles wrongly thinks that a certain designer from Sweden is worth a lot of money, but nobody could determine her name.

Question: Does someone think the designer is worth a lot of money?

Expected answer: Yes

Target (pronoun × non-island)

(1225) * The store clerk sneakily charged the customer many extra money the warranty the computer.

Question: Did the store clerk charge charge the customer the fair amount?

Expected answer: No

Filler (ungrammatical)

(1226) * Naomi was very worried that the acrobat would fall from the trapeze, but the acrobat didn't seem to been.

Filler (ungrammatical)

(1227) * Alyssa and her friend doesn't often go out to eat together, but when she does, they get happy.

Filler (ungrammatical)

(1228) ? Paula incorrectly declared that the interview with a certain astronaut from NASA was boring, but nobody could guess who.

Target (wh × island)

(1229) * Even though everyone complains about dealing with the leaves in the fall, the tree in the edge of the neighbor's yard provides lots of shade of the house.

Filler (ungrammatical)

B.3.4.4 List 4

(1230) * The customers were quite upset because they could have had been eating dessert by now, but service was really slow.

Filler (ungrammatical)

(1231) * The game show host said that all of the contestants had a chance to win as long as they follow the rules by the game.

Filler (ungrammatical)

(1232) Mark falsely claimed that a certain journalist from the east coast undermined the government, but nobody could discover her name.

Target (pronoun × non-island)

(1233) * The store clerk sneakily charged the customer many extra money the warranty the computer.

Question: Did the store clerk charge charge the customer the fair amount?

Expected answer: No

Filler (ungrammatical)

(1234) Morgan inaccurately stated that a certain chef from Florida caused Sarah to throw up, but nobody could confirm who.

Target (wh × non-island)

(1235) * The thing about the candidate's campaign is that it was doomed to be failure because everyone hated the candidate.

Filler (ungrammatical)

(1236) * Only the residents of the county can voted on the ballot proposition the county.

Filler (ungrammatical)

(1237) ? Miles wrongly thinks that the dress by a certain designer from Sweden is worth a lot of money, but nobody could determine who.

Target (wh × island)

(1238) * All of the animals in the forest were right to be terrified from the logging company, even the ones that live underground.

Filler (ungrammatical)

(1239) ? Diane incorrectly announced that the book by a certain author from Wisconsin sold millions of copies, but nobody wanted to know who.

Question: Did Diane say the book sold millions of copies?

Expected answer: Yes

Target (wh × island)

(1240) * The basketball coach accurately evaluated the strategy of the other team, but the players wasn't able to take advantage in this knowledge.

Filler (ungrammatical)

(1241) Paula incorrectly declared that a certain astronaut from NASA was boring, but nobody could guess who.

Target (wh × non-island)

(1242) * William was a hard worker, and he tried to complete that homework on time each time it was due.

Question: Was William a hard worker?

Expected answer: Yes

Filler (ungrammatical)

(1243) The hair stylist truly believed that the customer would look better with brunette hair, but she decided to die her hair blonde despite what her hair stylist thought.

Filler (grammatical)

(1244) * Alyssa and her friend doesn't often go out to eat together, but when she does, they get happy.

Filler (ungrammatical)

(1245) ? Adam falsely said that the note from a certain teacher from Spain expressed doubts about James, but nobody wanted to know who.

Target (wh × island)

(1246) Jane falsely stated that a certain representative with lots of social media followers scared the citizens, but nobody would confirm who.

Target (wh × non-island)

(1247) * Even though everyone complains about dealing with the leaves in the fall, the tree in the edge of the neighbor's yard provides lots of shade of the house.

Filler (ungrammatical)

(1248) * Helen desperately wanted to be astronaut when she grew up, but her parents hasn't liked the idea because they wanted her to be doctor.

Question: Did Helen's parents want her to be an astronaut?

Expected answer: Yes

Filler (ungrammatical)

(1249) Kari inaccurately asserted that the episode with a certain actor from Los Angeles was widely despised, but nobody wanted to find out his name.

Target (pronoun × island)

(1250) Mary mistakenly thought that a certain lawyer with lots of connections threatened a lawsuit against the company, but nobody could recall his name.

Target (pronoun × non-island)

(1251) * Naomi was very worried that the acrobat would fall from the trapeze, but the acrobat didn't seem to been.

Filler (ungrammatical)

(1252) Steve incorrectly reported that the new gadget from a certain inventor from Germany changed society for the better, but nobody wanted to find out her name.

Target (pronoun × island)

(1253) The assistant placed the mail in the correct mailbox, but the director complained that the assistant got it wrong anyway.

Filler (grammatical)

(1254) Victor sincerely believed that the team would win the championship, but what he didn't know was that they planned to lose the game on purpose.

Question: Did Victor think the team would lose the championship?

Expected answer: No

Filler (grammatical)

(1255) * Anybody didn't repeat the false claim that the judge didn't convict the suspected criminal.

Filler (ungrammatical)

(1256) Julie falsely proclaimed that a certain scientist from Yale cured cancer, but nobody could recall his name.

Question: Did the scientist cure cancer?

Expected answer: No

Target (pronoun × non-island)

(1257) Albert falsely alleged that the post from a certain social media influencer from San Francisco was deceitful, but nobody could remember her name.

Target (pronoun × island)

(1258) * The parents of each child seemed to think that every child except for their own child would have any chance of winning the school contest.

Filler (ungrammatical)

(1259) Shelby wrongly declared that a certain judge from Harvard caused civil unrest, but nobody could guess who.

Question: Did Shelby declare that the judge caused civil unrest?

Expected answer: Yes

Target (wh × non-island)

(1260) Jeremy rightly thinks that the CEO was committing fraud, and Angela is investigating what kind of fraud it was.

Filler (grammatical)

(1261) * The electrician incorrectly installed a new light fixture, and the carpenter has did so the black cabinet as well.

Filler (ungrammatical)

(1262) ? Brie falsely believed that the meeting with a certain senator from rural America destroyed the political union, but nobody wanted to determine who.

Target (wh × island)

(1263) * Alex timidly asked what the person who already bought was still doing in the store.

Filler (ungrammatical)

(1264) The postal worker justifiably wondered whether she could deliver all of the mail by the end of the day.

Question: Was the postal worker worried about delivering all of the mail?

Expected answer: Yes

Filler (grammatical)

(1265) * Every designer desperately wanted the chance to showcase their work, but any designer could has.

Filler (ungrammatical)

(1266) * The bill that no senator justifiably voted for has ever become law.

Filler (ungrammatical)

(1267) * The vacation destination that nobody wanted to go to has any chance of becoming famous.

Filler (ungrammatical)

(1268) * Barbara correctly predicted that the company would go out of business even though they had a new product to sell at customers.

Question: Did the company stay in business?

Expected answer: No

Filler (ungrammatical)

(1269) * Clarissa urgently tried to call dentist because tooth had been chipped when she fell and tripped.

Question: Did Clarissa call a nurse?

Expected answer: No

Filler (ungrammatical)

(1270) * Even though only one of them will win, it seems abundantly clear to the men that each other will win the race.

Filler (ungrammatical)

(1271) James truthfully told his parents that he had not eaten any of the cookies, but he did lie when he said that he hadn't eaten any of the candy.

Filler (grammatical)

(1272) * The chef ate the leftover food, and the waitress has too even though the manager said they couldn't do so.

Question: Did the chef eat the food?

Expected answer: Yes

Filler (ungrammatical)

(1273) The construction worker hopelessly tried to convince the manager that his way of installing the window would work better, but the manager adamantly disagreed.

Filler (grammatical)

(1274) * The engineer correctly designed the bridge right materials, but the construction crew much wrong materials used.

Filler (ungrammatical)

(1275) Ashley wrongly declared that the announcement from a certain CEO with lots of Twitter followers caused all stock prices to plummet, but nobody could remember his name.

Question: Did the announcement cause stock prices to plummet?

Expected answer: No

Target (pronoun × island)

(1276) Phoebe untruthfully said that a certain architect from France won an award, but nobody could discover his name.

Target (pronoun × non-island)

(1277) The plumber correctly determined that the leak was caused by the loose pipe fitting, but the home owner didn't want to pay to have it fixed.

Filler (grammatical)

B.4 Materials for Experiments 4a and 4b

B.4.1 Experiment 4a: All target items

(1278) Subject island, Quartet 1

- a. A certain mediator stated that the representative scared Sally, but Maya couldn't confirm who.
- b. Jane stated that a certain representative scared Sally, but Maya couldn't confirm who.
- c. A certain mediator stated that the announcement from the representative scared Sally, but Maya couldn't confirm who.
- d. ? Jane stated that the announcement from a certain representative scared Sally, but Maya couldn't confirm who.

(1279) Subject island, Quartet 2

- a. A certain reporter thinks that the designer is worth a lot of money, but Mark couldn't determine who.
- b. Miles thinks that a certain designer is worth a lot of money, but Mark couldn't determine who.
- c. A certain reporter thinks that the dress by the designer is worth a lot of money, but Mark couldn't determine who.

- d. ? Miles thinks that the dress by a certain designer is worth a lot of money, but Mark couldn't determine who.

(1280) Subject island, Quartet 3

- a. A certain celebrity said that the architect won an award, but Charlie couldn't discover who.
- b. Phoebe said that a certain architect won an award, but Charlie couldn't discover who.
- c. A certain celebrity said that the building by the architect won an award, but Charlie couldn't discover who.
- d. ? Phoebe said that the building by a certain architect won an award, but Charlie couldn't discover who.

(1281) Subject island, Quartet 4

- a. A certain individual reported that the inventor changed society for the better, but Brett couldn't find out who.
- b. Steve reported that a certain inventor changed society for the better, but Brett couldn't find out who.
- c. A certain individual reported that the new gadget from the inventor changed society for the better, but Brett couldn't find out who.
- d. ? Steve reported that the new gadget from a certain inventor changed society for the better, but Brett couldn't find out who.

(1282) Subject island, Quartet 5

- a. A certain TV host declared that the judge caused civil unrest, but Zoe couldn't guess who.
- b. Shelby declared that a certain judge caused civil unrest, but Zoe couldn't guess who.
- c. A certain TV host declared that the proclamation from the judge caused civil unrest, but Zoe couldn't guess who.

- d. ? Shelby declared that the proclamation from a certain judge caused civil unrest, but Zoe couldn't guess who.

(1283) Subject island, Quartet 6

- a. A certain columnist announced that the author sold millions of copies, but Jim didn't know who.
- b. Diane announced that a certain author sold millions of copies, but Jim didn't know who.
- c. A certain columnist announced that the book by the author sold millions of copies, but Jim didn't know who.
- d. ? Diane announced that the book by a certain author sold millions of copies, but Jim didn't know who.

(1284) Subject island, Quartet 7

- a. A certain public official proclaimed that the scientist cured cancer, but Shannon couldn't recall who.
- b. Julie proclaimed that a certain scientist cured cancer, but Shannon couldn't recall who.
- c. A certain public official proclaimed that the discovery by the scientist cured cancer, but Shannon couldn't recall who.
- d. ? Julie proclaimed that the discovery by a certain scientist cured cancer, but Shannon couldn't recall who.

(1285) Subject island, Quartet 8

- a. A certain investor declared that the CEO caused all stock prices to plummet, but Tim couldn't remember who.
- b. Ashley declared that a certain CEO caused all stock prices to plummet, but Tim couldn't remember who.

- c. A certain investor declared that the announcement from the CEO caused all stock prices to plummet, but Tim couldn't remember who.
- d. ? Ashley declared that the announcement from a certain CEO caused all stock prices to plummet, but Tim couldn't remember who.

(1286) Subject island, Quartet 9

- a. A certain health expert stated that the famous chef made Sarah sick, but Audrey couldn't confirm who.
- b. Morgan stated that a certain chef made Sarah sick, but Audrey couldn't confirm who.
- c. A certain health expert stated that the dish by the famous chef made Sarah sick, but Audrey couldn't confirm who.
- d. ? Morgan stated that the dish by a certain chef made Sarah sick, but Audrey couldn't confirm who.

(1287) Subject island, Quartet 10

- a. A certain activist believed that the senator destroyed the political union, but Jess couldn't determine who.
- b. Brie believed that a certain senator destroyed the political union, but Jess couldn't determine who.
- c. A certain activist believed that the meeting with the senator destroyed the political union, but Jess couldn't determine who.
- d. ? Brie believed that the meeting with a certain senator destroyed the political union, but Jess couldn't determine who.

(1288) Subject island, Quartet 11

- a. A certain diplomat claimed that the journalist undermined the government, but Nina couldn't discover who.

- b. Mark claimed that a certain journalist undermined the government, but Nina couldn't discover who.
- c. A certain diplomat claimed that the news report by the journalist undermined the government, but Nina couldn't discover who.
- d. ? Mark claimed that the news report by a certain journalist undermined the government, but Nina couldn't discover who.

(1289) Subject island, Quartet 12

- a. A certain critic asserted that the famous actor was widely despised, but Jane couldn't find out who.
- b. Kari asserted that a certain actor was widely despised, but Jane couldn't find out who.
- c. A certain critic asserted that the episode with the famous actor was widely despised, but Jane couldn't find out who.
- d. ? Kari asserted that the episode with a certain actor was widely despised, but Jane couldn't find out who.

(1290) Subject island, Quartet 13

- a. A certain pundit declared that the famous astronaut was boring, but Katie couldn't guess who.
- b. Paula declared that a certain astronaut was boring, but Katie couldn't guess who.
- c. A certain pundit declared that the interview with the famous astronaut was boring, but Katie couldn't guess who.
- d. ? Paula declared that the interview with a certain astronaut was boring, but Katie couldn't guess who.

(1291) Subject island, Quartet 14

- a. A certain parent said that the teacher expressed doubts about James, but Laurie didn't know who.

- b. Adam said that a certain teacher expressed doubts about James, but Laurie didn't know who.
- c. A certain parent said that the note from the teacher expressed doubts about James, but Laurie didn't know who.
- d. ? Adam said that the note from a certain teacher expressed doubts about James, but Laurie didn't know who.

(1292) Subject island, Quartet 15

- a. A certain investigator thought that the lawyer threatened to sue the company, but Brian couldn't recall who.
- b. Mary thought that a certain lawyer threatened to sue the company, but Brian couldn't recall who.
- c. A certain investigator thought that the notice from the lawyer threatened to sue the company, but Brian couldn't recall who.
- d. ? Mary thought that the notice from a certain lawyer threatened to sue the company, but Brian couldn't recall who.

(1293) Subject island, Quartet 16

- a. A certain journalist alleged that the social media influencer was deceitful, but Ryan couldn't remember who.
- b. Albert alleged that a certain social media influencer was deceitful, but Ryan couldn't remember who.
- c. A certain journalist alleged that the post from the social media influencer was deceitful, but Ryan couldn't remember who.
- d. ? Albert alleged that the post from a certain social media influencer was deceitful, but Ryan couldn't remember who.

B.4.2 Experiment 4a: Lists with fillers in pseudorandomized order

B.4.2.1 List 1

(1294) * All of the animals in the forest were right to be terrified from the logging company, even the ones that live underground.

Filler (ungrammatical)

(1295) A certain diplomat claimed that the news report by the journalist undermined the government, but Nina couldn't discover who.

Target (short × island)

(1296) * The engineer correctly designed the bridge right materials, but the construction crew much wrong materials used.

Filler (ungrammatical)

(1297) A certain activist believed that the senator destroyed the political union, but Jess couldn't determine who.

Target (short × non-island)

(1298) Kari asserted that a certain actor was widely despised, but Jane couldn't find out who.

Target (long × non-island)

(1299) A certain investigator thought that the notice from the lawyer threatened to sue the company, but Brian couldn't recall who.

Target (short × island)

(1300) The postal worker justifiably wondered whether she could deliver all of the mail by the end of the day.

Question: Was the postal worker worried about delivering all of the mail?

Expected answer: Yes

Filler (grammatical)

(1301) * Alyssa and her friend doesn't often go out to eat together, but when she does, they get happy.

Filler (ungrammatical)

- (1302) * Only the residents of the county can voted on the ballot proposition the county.
 Filler (ungrammatical)
- (1303) * William was a hard worker, and he tried to complete that homework on time each time it was due.
 Question: Was William a hard worker? Expected answer: Yes
 Filler (ungrammatical)
- (1304) Ashley declared that a certain CEO caused all stock prices to plummet, but Tim couldn't remember who.
 Target (long × non-island)
- (1305) A certain columnist announced that the author sold millions of copies, but Jim didn't know who.
 Target (short × non-island)
- (1306) A certain reporter thinks that the designer is worth a lot of money, but Mark couldn't determine who.
 Question: Does someone think the designer is worth a lot of money? Expected answer: Yes
 Target (short × non-island)
- (1307) The plumber correctly determined that the leak was caused by the loose pipe fitting, but the home owner didn't want to pay to have it fixed.
 Filler (grammatical)
- (1308) Jeremy rightly thinks that the CEO was committing fraud, and Angela is investigating what kind of fraud it was.
 Filler (grammatical)
- (1309) ? Jane stated that the announcement from a certain representative scared Sally, but Maya couldn't confirm who.
 Question: Did Maya state the announcement from a certain representative scared Sally? Expected answer: No
 Target (long × island)

(1310) ? Paula declared that the interview with a certain astronaut was boring, but Katie couldn't guess who.

Target (long × island)

(1311) Steve reported that a certain inventor changed society for the better, but Brett couldn't find out who.

Question: Did Brett report that a certain inventor changed society for the better?

Expected answer: No

Target (long × non-island)

(1312) * The electrician incorrectly installed a new light fixture, and the carpenter has did so the black cabinet as well.

Filler (ungrammatical)

(1313) The assistant placed the mail in the correct mailbox, but the director complained that the assistant got it wrong anyway.

Filler (grammatical)

(1314) * Barbara correctly predicted that the company would go out of business even though they had a new product to sell at customers.

Question: Did the company stay in business?

Expected answer: No

Filler (ungrammatical)

(1315) ? Morgan stated that the dish by a certain chef made Sarah sick, but Audrey couldn't confirm who.

Target (long × island)

(1316) * The thing about the candidate's campaign is that it was doomed to be failure because everyone hated the candidate.

Filler (ungrammatical)

(1317) * The parents of each child seemed to think that every child except for their own child would have any chance of winning the school contest.

Filler (ungrammatical)

(1318) Albert alleged that a certain social media influencer was deceitful, but Ryan couldn't remember who.

Target (long × non-island)

(1319) * Every designer desperately wanted the chance to showcase their work, but any designer could have.

Filler (ungrammatical)

(1320) A certain public official proclaimed that the discovery by the scientist cured cancer, but Shannon couldn't recall who.

Target (short × island)

(1321) * The store clerk sneakily charged the customer many extra money the warranty the computer.

Question: Did the store clerk charge charge the customer the fair amount?

Expected answer: No

Filler (ungrammatical)

(1322) A certain parent said that the teacher expressed doubts about James, but Laurie didn't know who.

Target (short × non-island)

(1323) ? Shelby declared that the proclamation from a certain judge caused civil unrest, but Zoe couldn't guess who.

Target (long × island)

(1324) * The customers were quite upset because they could have had been eating dessert by now, but service was really slow.

Filler (ungrammatical)

(1325) A certain celebrity said that the building by the architect won an award, but Charlie couldn't discover who.

Question: Did someone say that the building won an award?

Expected answer: Yes

Target (short × island)

B.4.2.2 List 2

- (1326) A certain celebrity said that the architect won an award, but Charlie couldn't discover who.
Target (short × non-island)
- (1327) * The engineer correctly designed the bridge right materials, but the construction crew much wrong materials used.
Filler (ungrammatical)
- (1328) A certain diplomat claimed that the journalist undermined the government, but Nina couldn't discover who.
Target (short × non-island)
- (1329) A certain investor declared that the announcement from the CEO caused all stock prices to plummet, but Tim couldn't remember who.
Question: Did Tim declare that the announcement from the CEO caused stock prices to plummet? Expected answer: No
Target (short × island)
- (1330) Shelby declared that a certain judge caused civil unrest, but Zoe couldn't guess who.
Question: Did Shelby declare that a certain judge caused civil unrest? Expected answer: Yes
Target (long × non-island)
- (1331) * The parents of each child seemed to think that every child except for their own child would have any chance of winning the school contest.
Filler (ungrammatical)
- (1332) * The customers were quite upset because they could have had been eating dessert by now, but service was really slow.
Filler (ungrammatical)
- (1333) * Only the residents of the county can voted on the ballot proposition the county.
Filler (ungrammatical)
- (1334) Morgan stated that a certain chef made Sarah sick, but Audrey couldn't confirm who.

Target (long × non-island)

(1335) * Alyssa and her friend doesn't often go out to eat together, but when she does, they get happy.

Filler (ungrammatical)

(1336) The plumber correctly determined that the leak was caused by the loose pipe fitting, but the home owner didn't want to pay to have it fixed.

Filler (grammatical)

(1337) * The store clerk sneakily charged the customer many extra money the warranty the computer.

Question: Did the store clerk charge charge the customer the fair amount?

Expected answer: No

Filler (ungrammatical)

(1338) * Barbara correctly predicted that the company would go out of business even though they had a new product to sell at customers.

Question: Did the company stay in business?

Expected answer: No

Filler (ungrammatical)

(1339) A certain critic asserted that the episode with the famous actor was widely despised, but Jane couldn't find out who.

Target (short × island)

(1340) A certain investigator thought that the lawyer threatened to sue the company, but Brian couldn't recall who.

Target (short × non-island)

(1341) * The thing about the candidate's campaign is that it was doomed to be failure because everyone hated the candidate.

Filler (ungrammatical)

(1342) * William was a hard worker, and he tried to complete that homework on time each time it was due.

Question: Was William a hard worker?

Expected answer: Yes

Filler (ungrammatical)

(1343) A certain public official proclaimed that the scientist cured cancer, but Shannon couldn't recall who.

Question: Did Shannon proclaim that the scientist cured cancer?

Expected answer: No

Target (short × non-island)

(1344) * All of the animals in the forest were right to be terrified from the logging company, even the ones that live underground.

Filler (ungrammatical)

(1345) ? Adam said that the note from a certain teacher expressed doubts about James, but Laurie didn't know who.

Target (long × island)

(1346) ? Diane announced that the book by a certain author sold millions of copies, but Jim didn't know who.

Question: Did Diane announce that the book by a certain author sold millions of copies?

Expected answer: Yes

Target (long × island)

(1347) Paula declared that a certain astronaut was boring, but Katie couldn't guess who.

Target (long × non-island)

(1348) The assistant placed the mail in the correct mailbox, but the director complained that the assistant got it wrong anyway.

Filler (grammatical)

(1349) A certain journalist alleged that the post from the social media influencer was deceitful, but Ryan couldn't remember who.

Target (short × island)

(1350) A certain individual reported that the new gadget from the inventor changed society for the better, but Brett couldn't find out who.

Target (short × island)

(1351) ? Brie believed that the meeting with a certain senator destroyed the political union, but Jess couldn't determine who.

Target (long × island)

(1352) The postal worker justifiably wondered whether she could deliver all of the mail by the end of the day.

Question: Was the postal worker worried about delivering all of the mail?

Expected answer: Yes

Filler (grammatical)

(1353) * Every designer desperately wanted the chance to showcase their work, but any designer could has.

Filler (ungrammatical)

(1354) Jane stated that a certain representative scared Sally, but Maya couldn't confirm who.

Target (long × non-island)

(1355) * The electrician incorrectly installed a new light fixture, and the carpenter has did so the black cabinet as well.

Filler (ungrammatical)

(1356) ? Miles thinks that the dress by a certain designer is worth a lot of money, but Mark couldn't determine who.

Target (long × island)

(1357) Jeremy rightly thinks that the CEO was committing fraud, and Angela is investigating what kind of fraud it was.

Filler (grammatical)

B.4.2.3 List 3

(1358) The assistant placed the mail in the correct mailbox, but the director complained that the assistant got it wrong anyway.

Filler (grammatical)

(1359) * Every designer desperately wanted the chance to showcase their work, but any designer could has.

Filler (ungrammatical)

(1360) A certain health expert stated that the dish by the famous chef made Sarah sick, but Audrey couldn't confirm who.

Target (short × island)

(1361) The postal worker justifiably wondered whether she could deliver all of the mail by the end of the day.

Question: Was the postal worker worried about delivering all of the mail?

Expected answer: Yes

Filler (grammatical)

(1362) A certain individual reported that the inventor changed society for the better, but Brett couldn't find out who.

Target (short × non-island)

(1363) * The thing about the candidate's campaign is that it was doomed to be failure because everyone hated the candidate.

Filler (ungrammatical)

(1364) A certain investor declared that the CEO caused all stock prices to plummet, but Tim couldn't remember who.

Target (short × non-island)

(1365) * The customers were quite upset because they could have had been eating dessert by now, but service was really slow.

Filler (ungrammatical)

(1366) Diane announced that a certain author sold millions of copies, but Jim didn't know who.

Target (long × non-island)

(1367) Brie believed that a certain senator destroyed the political union, but Jess couldn't determine who.

- Question: Did Jess believe that a certain senator destroyed the political union? Expected answer: No
Target (long × non-island)
- (1368) * Alyssa and her friend doesn't often go out to eat together, but when she does, they get happy.
Filler (ungrammatical)
- (1369) * Only the residents of the county can voted on the ballot proposition the county.
Filler (ungrammatical)
- (1370) Adam said that a certain teacher expressed doubts about James, but Laurie didn't know who.
Target (long × non-island)
- (1371) * The parents of each child seemed to think that every child except for their own child would have any chance of winning the school contest.
Filler (ungrammatical)
- (1372) ? Julie proclaimed that the discovery by a certain scientist cured cancer, but Shannon couldn't recall who.
Target (long × island)
- (1373) A certain critic asserted that the famous actor was widely despised, but Jane couldn't find out who.
Question: Did Jane assert that the famous actor is widely despised? Expected answer: No
Target (short × non-island)
- (1374) * Barbara correctly predicted that the company would go out of business even though they had a new product to sell at customers.
Question: Did the company stay in business? Expected answer: No
Filler (ungrammatical)
- (1375) The plumber correctly determined that the leak was caused by the loose pipe fitting, but the home owner didn't want to pay to have it fixed.
Filler (grammatical)

(1376) ? Mary thought that the notice from a certain lawyer threatened to sue the company, but Brian couldn't recall who.

Target (long × island)

(1377) * The electrician incorrectly installed a new light fixture, and the carpenter has did so the black cabinet as well.

Filler (ungrammatical)

(1378) A certain TV host declared that the proclamation from the judge caused civil unrest, but Zoe couldn't guess who.

Target (short × island)

(1379) * William was a hard worker, and he tried to complete that homework on time each time it was due.

Question: Was William a hard worker?

Expected answer: Yes

Filler (ungrammatical)

(1380) A certain pundit declared that the interview with the famous astronaut was boring, but Katie couldn't guess who.

Question: Did someone declare that the interview with the famous astronaut was boring?

Expected answer: Yes

Target (short × island)

(1381) Jeremy rightly thinks that the CEO was committing fraud, and Angela is investigating what kind of fraud it was.

Filler (grammatical)

(1382) A certain journalist alleged that the social media influencer was deceitful, but Ryan couldn't remember who.

Target (short × non-island)

(1383) ? Phoebe said that the building by a certain architect won an award, but Charlie couldn't discover who.

Target (long × island)

(1384) * The engineer correctly designed the bridge right materials, but the construction crew much wrong materials used.

Filler (ungrammatical)

(1385) * All of the animals in the forest were right to be terrified from the logging company, even the ones that live underground.

Filler (ungrammatical)

(1386) ? Mark claimed that the news report by a certain journalist undermined the government, but Nina couldn't discover who.

Question: Did Mark claim the news report by a certain journalist undermined the government? Expected answer: Yes

Target (long × island)

(1387) Miles thinks that a certain designer is worth a lot of money, but Mark couldn't determine who.

Target (long × non-island)

(1388) * The store clerk sneakily charged the customer many extra money the warranty the computer.

Question: Did the store clerk charge charge the customer the fair amount? Expected answer: No

Filler (ungrammatical)

(1389) A certain mediator stated that the announcement from the representative scared Sally, but Maya couldn't confirm who.

Target (short × island)

B.4.2.4 List 4

(1390) A certain columnist announced that the book by the author sold millions of copies, but Jim didn't know who.

Target (short × island)

(1391) * Only the residents of the county can voted on the ballot proposition the county.

Filler (ungrammatical)

(1392) * The electrician incorrectly installed a new light fixture, and the carpenter has did so the black cabinet as well.

Filler (ungrammatical)

(1393) A certain parent said that the note from the teacher expressed doubts about James, but Laurie didn't know who.

Question: Did Laurie say that the note from the teacher expressed doubts about the student? Expected answer: No

Target (short × island)

(1394) The plumber correctly determined that the leak was caused by the loose pipe fitting, but the home owner didn't want to pay to have it fixed.

Filler (grammatical)

(1395) ? Ashley declared that the announcement from a certain CEO caused all stock prices to plummet, but Tim couldn't remember who.

Target (long × island)

(1396) A certain mediator stated that the representative scared Sally, but Maya couldn't confirm who.

Target (short × non-island)

(1397) The assistant placed the mail in the correct mailbox, but the director complained that the assistant got it wrong anyway.

Filler (grammatical)

(1398) ? Kari asserted that the episode with a certain actor was widely despised, but Jane couldn't find out who.

Target (long × island)

(1399) * The store clerk sneakily charged the customer many extra money the warranty the computer.

Question: Did the store clerk charge charge the customer the fair amount? Expected answer: No

Filler (ungrammatical)

(1400) Mark claimed that a certain journalist undermined the government, but Nina couldn't discover who.

Target (long × non-island)

(1401) * The customers were quite upset because they could have had been eating dessert by now, but service was really slow.

Filler (ungrammatical)

(1402) Phoebe said that a certain architect won an award, but Charlie couldn't discover who.

Target (long × non-island)

(1403) ? Albert alleged that the post from a certain social media influencer was deceitful, but Ryan couldn't remember who.

Question: Did Ryan allege that the post from a certain social media influencer was deceitful?

Expected answer: No

Target (long × island)

(1404) * All of the animals in the forest were right to be terrified from the logging company, even the ones that live underground.

Filler (ungrammatical)

(1405) Mary thought that a certain lawyer threatened to sue the company, but Brian couldn't recall who.

Question: Did Mary think a certain lawyer threatened to sue the company?

Expected answer: Yes

Target (long × non-island)

(1406) Jeremy rightly thinks that the CEO was committing fraud, and Angela is investigating what kind of fraud it was.

Filler (grammatical)

(1407) A certain reporter thinks that the dress by the designer is worth a lot of money, but Mark couldn't determine who.

Target (short × island)

(1408) A certain activist believed that the meeting with the senator destroyed the political union, but Jess couldn't determine who.

Target (short × island)

(1409) A certain TV host declared that the judge caused civil unrest, but Zoe couldn't guess who.

Target (short × non-island)

(1410) * Barbara correctly predicted that the company would go out of business even though they had a new product to sell at customers.

Question: Did the company stay in business?

Expected answer: No

Filler (ungrammatical)

(1411) * The parents of each child seemed to think that every child except for their own child would have any chance of winning the school contest.

Filler (ungrammatical)

(1412) * William was a hard worker, and he tried to complete that homework on time each time it was due.

Question: Was William a hard worker?

Expected answer: Yes

Filler (ungrammatical)

(1413) The postal worker justifiably wondered whether she could deliver all of the mail by the end of the day.

Question: Was the postal worker worried about delivering all of the mail?

Expected answer: Yes

Filler (grammatical)

(1414) * The engineer correctly designed the bridge right materials, but the construction crew much wrong materials used.

Filler (ungrammatical)

(1415) ? Steve reported that the new gadget from a certain inventor changed society for the better, but Brett couldn't find out who.

Target (long × island)

(1416) * Alyssa and her friend doesn't often go out to eat together, but when she does, they get happy.

Filler (ungrammatical)

(1417) A certain pundit declared that the famous astronaut was boring, but Katie couldn't guess who.

Target (short × non-island)

(1418) * Every designer desperately wanted the chance to showcase their work, but any designer could has.

Filler (ungrammatical)

(1419) A certain health expert stated that the famous chef made Sarah sick, but Audrey couldn't confirm who.

Question: Did someone say that the chef made Sarah sick?

Expected answer: Yes

Target (short × non-island)

(1420) Julie proclaimed that a certain scientist cured cancer, but Shannon couldn't recall who.

Target (long × non-island)

(1421) * The thing about the candidate's campaign is that it was doomed to be failure because everyone hated the candidate.

Filler (ungrammatical)

B.4.3 Experiment 4b: All target items

(1422) Subject island, Quartet 1

- a. Jane stated that a certain representative scared Sally, but Maya couldn't confirm his name.
- b. Jane stated that a certain representative scared Sally, but Maya couldn't confirm who.
- c. Jane stated that the announcement from a certain representative scared Sally, but Maya couldn't confirm his name.

- d. ? Jane stated that the announcement from a certain representative scared Sally, but Maya couldn't confirm who.

(1423) Subject island, Quartet 2

- a. Miles thinks that a certain designer is worth a lot of money, but Mark couldn't determine her name.
- b. Miles thinks that a certain designer is worth a lot of money, but Mark couldn't determine who.
- c. Miles thinks that the dress by a certain designer is worth a lot of money, but Mark couldn't determine her name.
- d. ? Miles thinks that the dress by a certain designer is worth a lot of money, but Mark couldn't determine who.

(1424) Subject island, Quartet 3

- a. Phoebe said that a certain architect won an award, but Charlie couldn't discover his name.
- b. Phoebe said that a certain architect won an award, but Charlie couldn't discover who.
- c. Phoebe said that the building by a certain architect won an award, but Charlie couldn't discover his name.
- d. ? Phoebe said that the building by a certain architect won an award, but Charlie couldn't discover who.

(1425) Subject island, Quartet 4

- a. Steve reported that a certain inventor changed society for the better, but Brett couldn't find out her name.
- b. Steve reported that a certain inventor changed society for the better, but Brett couldn't find out who.

- c. Steve reported that the new gadget from a certain inventor changed society for the better, but Brett couldn't find out her name.
- d. ? Steve reported that the new gadget from a certain inventor changed society for the better, but Brett couldn't find out who.

(1426) Subject island, Quartet 5

- a. Shelby declared that a certain judge caused civil unrest, but Zoe couldn't guess his name.
- b. Shelby declared that a certain judge caused civil unrest, but Zoe couldn't guess who.
- c. Shelby declared that the proclamation from a certain judge caused civil unrest, but Zoe couldn't guess his name.
- d. ? Shelby declared that the proclamation from a certain judge caused civil unrest, but Zoe couldn't guess who.

(1427) Subject island, Quartet 6

- a. Diane announced that a certain author sold millions of copies, but Jim didn't know his name.
- b. Diane announced that a certain author sold millions of copies, but Jim didn't know who.
- c. Diane announced that the book by a certain author sold millions of copies, but Jim didn't know his name.
- d. ? Diane announced that the book by a certain author sold millions of copies, but Jim didn't know who.

(1428) Subject island, Quartet 7

- a. Julie proclaimed that a certain scientist cured cancer, but Shannon couldn't recall his name.
- b. Julie proclaimed that a certain scientist cured cancer, but Shannon couldn't recall who.

- c. Julie proclaimed that the discovery by a certain scientist cured cancer, but Shannon couldn't recall his name.
- d. ? Julie proclaimed that the discovery by a certain scientist cured cancer, but Shannon couldn't recall who.

(1429) Subject island, Quartet 8

- a. Ashley declared that a certain CEO caused all stock prices to plummet, but Tim couldn't remember his name.
- b. Ashley declared that a certain CEO caused all stock prices to plummet, but Tim couldn't remember who.
- c. Ashley declared that the announcement from a certain CEO caused all stock prices to plummet, but Tim couldn't remember his name.
- d. ? Ashley declared that the announcement from a certain CEO caused all stock prices to plummet, but Tim couldn't remember who.

(1430) Subject island, Quartet 9

- a. Morgan stated that a certain chef made Sarah sick, but Audrey couldn't confirm his name.
- b. Morgan stated that a certain chef made Sarah sick, but Audrey couldn't confirm who.
- c. Morgan stated that the dish by a certain chef made Sarah sick, but Audrey couldn't confirm his name.
- d. ? Morgan stated that the dish by a certain chef made Sarah sick, but Audrey couldn't confirm who.

(1431) Subject island, Quartet 10

- a. Brie believed that a certain senator destroyed the political union, but Jess couldn't determine his name.

- b. Brie believed that a certain senator destroyed the political union, but Jess couldn't determine who.
- c. Brie believed that the meeting with a certain senator destroyed the political union, but Jess couldn't determine his name.
- d. ? Brie believed that the meeting with a certain senator destroyed the political union, but Jess couldn't determine who.

(1432) Subject island, Quartet 11

- a. Mark claimed that a certain journalist undermined the government, but Nina couldn't discover her name.
- b. Mark claimed that a certain journalist undermined the government, but Nina couldn't discover who.
- c. Mark claimed that the news report by a certain journalist undermined the government, but Nina couldn't discover her name.
- d. ? Mark claimed that the news report by a certain journalist undermined the government, but Nina couldn't discover who.

(1433) Subject island, Quartet 12

- a. Kari asserted that a certain actor was widely despised, but Jane couldn't find out his name.
- b. Kari asserted that a certain actor was widely despised, but Jane couldn't find out who.
- c. Kari asserted that the episode with a certain actor was widely despised, but Jane couldn't find out his name.
- d. ? Kari asserted that the episode with a certain actor was widely despised, but Jane couldn't find out who.

(1434) Subject island, Quartet 13

- a. Paula declared that a certain astronaut was boring, but Katie couldn't guess his name.

- b. Paula declared that a certain astronaut was boring, but Katie couldn't guess who.
- c. Paula declared that the interview with a certain astronaut was boring, but Katie couldn't guess his name.
- d. ? Paula declared that the interview with a certain astronaut was boring, but Katie couldn't guess who.

(1435) Subject island, Quartet 14

- a. Adam said that a certain teacher expressed doubts about James, but Laurie didn't know her name.
- b. Adam said that a certain teacher expressed doubts about James, but Laurie didn't know who.
- c. Adam said that the note from a certain teacher expressed doubts about James, but Laurie didn't know her name.
- d. ? Adam said that the note from a certain teacher expressed doubts about James, but Laurie didn't know who.

(1436) Subject island, Quartet 15

- a. Mary thought that a certain lawyer threatened to sue the company, but Brian couldn't recall his name.
- b. Mary thought that a certain lawyer threatened to sue the company, but Brian couldn't recall who.
- c. Mary thought that the notice from a certain lawyer threatened to sue the company, but Brian couldn't recall his name.
- d. ? Mary thought that the notice from a certain lawyer threatened to sue the company, but Brian couldn't recall who.

(1437) Subject island, Quartet 16

- a. Albert alleged that a certain social media influencer was deceitful, but Ryan couldn't remember her name.
- b. Albert alleged that a certain social media influencer was deceitful, but Ryan couldn't remember who.
- c. Albert alleged that the post from a certain social media influencer was deceitful, but Ryan couldn't remember her name.
- d. ? Albert alleged that the post from a certain social media influencer was deceitful, but Ryan couldn't remember who.

B.4.4 Experiment 4b: Lists with fillers in pseudorandomized order

B.4.4.1 List 1

(1438) Albert alleged that a certain social media influencer was deceitful, but Ryan couldn't remember her name.

Target (pronoun × non-island)

(1439) * Barbara correctly predicted that the company would go out of business even though they had a new product to sell at customers.

Question: Did the company stay in business?

Expected answer: No

Filler (ungrammatical)

(1440) * The customers were quite upset because they could have had been eating dessert by now, but service was really slow.

Filler (ungrammatical)

(1441) Adam said that a certain teacher expressed doubts about James, but Laurie didn't know who.

Target (wh × non-island)

(1442) * Alyssa and her friend doesn't often go out to eat together, but when she does, they get happy.

Filler (ungrammatical)

- (1443) * The store clerk sneakily charged the customer many extra money the warranty the computer.
 Question: Did the store clerk charge charge the customer the fair amount? Expected answer: No
 Filler (ungrammatical)
- (1444) ? Mark claimed that the news report by a certain journalist undermined the government, but Nina couldn't discover who.
 Question: Did Mark claim the news report by a certain journalist undermined the government? Expected answer: Yes
 Target (wh × island)
- (1445) Jane stated that the announcement from a certain representative scared Sally, but Maya couldn't confirm his name.
 Target (pronoun × island)
- (1446) The plumber correctly determined that the leak was caused by the loose pipe fitting, but the home owner didn't want to pay to have it fixed.
 Filler (grammatical)
- (1447) Kari asserted that a certain actor was widely despised, but Jane couldn't find out his name.
 Question: Did Jane assert that the famous actor is widely despised? Expected answer: No
 Target (pronoun × non-island)
- (1448) ? Mary thought that the notice from a certain lawyer threatened to sue the company, but Brian couldn't recall who.
 Target (wh × island)
- (1449) * Only the residents of the county can voted on the ballot proposition the county.
 Filler (ungrammatical)
- (1450) * The parents of each child seemed to think that every child except for their own child would have any chance of winning the school contest.
 Filler (ungrammatical)
- (1451) Diane announced that a certain author sold millions of copies, but Jim didn't know who.
 Target (wh × non-island)

(1452) * The engineer correctly designed the bridge right materials, but the construction crew much wrong materials used.

Filler (ungrammatical)

(1453) Ashley declared that a certain CEO caused all stock prices to plummet, but Tim couldn't remember his name.

Target (pronoun × non-island)

(1454) Brie believed that a certain senator destroyed the political union, but Jess couldn't determine who.

Question: Did Jess believe that a certain senator destroyed the political union?

Expected answer: No

Target (wh × non-island)

(1455) ? Phoebe said that the building by a certain architect won an award, but Charlie couldn't discover who.

Target (wh × island)

(1456) Jeremy rightly thinks that the CEO was committing fraud, and Angela is investigating what kind of fraud it was.

Filler (grammatical)

(1457) ? Julie proclaimed that the discovery by a certain scientist cured cancer, but Shannon couldn't recall who.

Target (wh × island)

(1458) Paula declared that the interview with a certain astronaut was boring, but Katie couldn't guess his name.

Question: Did someone declare that the interview with the famous astronaut was boring?

Expected answer: Yes

Target (pronoun × island)

(1459) * The thing about the candidate's campaign is that it was doomed to be failure because everyone hated the candidate.

Filler (ungrammatical)

(1460) Miles thinks that a certain designer is worth a lot of money, but Mark couldn't determine who.

Target (wh × non-island)

(1461) * All of the animals in the forest were right to be terrified from the logging company, even the ones that live underground.

Filler (ungrammatical)

(1462) The assistant placed the mail in the correct mailbox, but the director complained that the assistant got it wrong anyway.

Filler (grammatical)

(1463) * The electrician incorrectly installed a new light fixture, and the carpenter has did so the black cabinet as well.

Filler (ungrammatical)

(1464) The postal worker justifiably wondered whether she could deliver all of the mail by the end of the day.

Question: Was the postal worker worried about delivering all of the mail?

Expected answer: Yes

Filler (grammatical)

(1465) Shelby declared that the proclamation from a certain judge caused civil unrest, but Zoe couldn't guess his name.

Target (pronoun × island)

(1466) Morgan stated that the dish by a certain chef made Sarah sick, but Audrey couldn't confirm his name.

Target (pronoun × island)

(1467) * William was a hard worker, and he tried to complete that homework on time each time it was due.

Question: Was William a hard worker?

Expected answer: Yes

Filler (ungrammatical)

(1468) * Every designer desperately wanted the chance to showcase their work, but any designer could has.

Filler (ungrammatical)

(1469) Steve reported that a certain inventor changed society for the better, but Brett couldn't find out her name.

Target (pronoun × non-island)

B.4.4.2 List 2

(1470) Jane stated that a certain representative scared Sally, but Maya couldn't confirm his name.

Target (pronoun × non-island)

(1471) Paula declared that a certain astronaut was boring, but Katie couldn't guess his name.

Target (pronoun × non-island)

(1472) * The parents of each child seemed to think that every child except for their own child would have any chance of winning the school contest.

Filler (ungrammatical)

(1473) Julie proclaimed that a certain scientist cured cancer, but Shannon couldn't recall who.

Target (wh × non-island)

(1474) Diane announced that the book by a certain author sold millions of copies, but Jim didn't know his name.

Target (pronoun × island)

(1475) Adam said that the note from a certain teacher expressed doubts about James, but Laurie didn't know her name.

Question: Did Laurie say that the note from the teacher expressed doubts about the student? Expected answer: No

Target (pronoun × island)

(1476) * The engineer correctly designed the bridge right materials, but the construction crew much wrong materials used.

Filler (ungrammatical)

(1477) * The store clerk sneakily charged the customer many extra money the warranty the computer.

Question: Did the store clerk charge charge the customer the fair amount?

Expected answer: No

Filler (ungrammatical)

(1478) ? Steve reported that the new gadget from a certain inventor changed society for the better, but Brett couldn't find out who.

Target (wh × island)

(1479) The assistant placed the mail in the correct mailbox, but the director complained that the assistant got it wrong anyway.

Filler (grammatical)

(1480) Shelby declared that a certain judge caused civil unrest, but Zoe couldn't guess his name.

Target (pronoun × non-island)

(1481) Jeremy rightly thinks that the CEO was committing fraud, and Angela is investigating what kind of fraud it was.

Filler (grammatical)

(1482) The plumber correctly determined that the leak was caused by the loose pipe fitting, but the home owner didn't want to pay to have it fixed.

Filler (grammatical)

(1483) * Only the residents of the county can voted on the ballot proposition the county.

Filler (ungrammatical)

(1484) * Barbara correctly predicted that the company would go out of business even though they had a new product to sell at customers.

Question: Did the company stay in business?

Expected answer: No

Filler (ungrammatical)

(1485) ? Ashley declared that the announcement from a certain CEO caused all stock prices to plummet, but Tim couldn't remember who.

Target (wh × island)

(1486) * Every designer desperately wanted the chance to showcase their work, but any designer could has.

Filler (ungrammatical)

(1487) Mary thought that a certain lawyer threatened to sue the company, but Brian couldn't recall who.

Question: Did Mary think a certain lawyer threatened to sue the company?

Expected answer: Yes

Target (wh × non-island)

(1488) ? Kari asserted that the episode with a certain actor was widely despised, but Jane couldn't find out who.

Target (wh × island)

(1489) * The electrician incorrectly installed a new light fixture, and the carpenter has did so the black cabinet as well.

Filler (ungrammatical)

(1490) * Alyssa and her friend doesn't often go out to eat together, but when she does, they get happy.

Filler (ungrammatical)

(1491) Morgan stated that a certain chef made Sarah sick, but Audrey couldn't confirm his name.

Question: Did someone say that the chef made Sarah sick?

Expected answer: Yes

Target (pronoun × non-island)

(1492) The postal worker justifiably wondered whether she could deliver all of the mail by the end of the day.

Question: Was the postal worker worried about delivering all of the mail?

Expected answer: Yes

Filler (grammatical)

(1493) * The thing about the candidate's campaign is that it was doomed to be failure because everyone hated the candidate.

Filler (ungrammatical)

(1494) * The customers were quite upset because they could have had been eating dessert by now, but service was really slow.

Filler (ungrammatical)

(1495) ? Albert alleged that the post from a certain social media influencer was deceitful, but Ryan couldn't remember who.

Question: Did Ryan allege that the post from a certain social media influencer was deceitful?

Expected answer: No

Target (wh × island)

(1496) Brie believed that the meeting with a certain senator destroyed the political union, but Jess couldn't determine his name.

Target (pronoun × island)

(1497) * All of the animals in the forest were right to be terrified from the logging company, even the ones that live underground.

Filler (ungrammatical)

(1498) Miles thinks that the dress by a certain designer is worth a lot of money, but Mark couldn't determine her name.

Target (pronoun × island)

(1499) * William was a hard worker, and he tried to complete that homework on time each time it was due.

Question: Was William a hard worker?

Expected answer: Yes

Filler (ungrammatical)

(1500) Mark claimed that a certain journalist undermined the government, but Nina couldn't discover who.

Target (wh × non-island)

(1501) Phoebe said that a certain architect won an award, but Charlie couldn't discover who.

Target (wh × non-island)

B.4.4.3 List 3

(1502) Adam said that a certain teacher expressed doubts about James, but Laurie didn't know her name.

Target (pronoun × non-island)

(1503) * The engineer correctly designed the bridge right materials, but the construction crew much wrong materials used.

Filler (ungrammatical)

(1504) * The store clerk sneakily charged the customer many extra money the warranty the computer.

Question: Did the store clerk charge charge the customer the fair amount?

Expected answer: No

Filler (ungrammatical)

(1505) Mary thought that the notice from a certain lawyer threatened to sue the company, but Brian couldn't recall his name.

Target (pronoun × island)

(1506) * The customers were quite upset because they could have had been eating dessert by now, but service was really slow.

Filler (ungrammatical)

(1507) Mark claimed that the news report by a certain journalist undermined the government, but Nina couldn't discover her name.

Target (pronoun × island)

(1508) The postal worker justifiably wondered whether she could deliver all of the mail by the end of the day.

Question: Was the postal worker worried about delivering all of the mail?

Expected answer: Yes

Filler (grammatical)

(1509) The plumber correctly determined that the leak was caused by the loose pipe fitting, but the home owner didn't want to pay to have it fixed.

Filler (grammatical)

(1510) ? Shelby declared that the proclamation from a certain judge caused civil unrest, but Zoe couldn't guess who.

Target (wh × island)

(1511) Albert alleged that a certain social media influencer was deceitful, but Ryan couldn't remember who.

Target (wh × non-island)

(1512) * Barbara correctly predicted that the company would go out of business even though they had a new product to sell at customers.

Question: Did the company stay in business?

Expected answer: No

Filler (ungrammatical)

(1513) Ashley declared that a certain CEO caused all stock prices to plummet, but Tim couldn't remember who.

Target (wh × non-island)

(1514) Kari asserted that a certain actor was widely despised, but Jane couldn't find out who.

Target (wh × non-island)

(1515) * The parents of each child seemed to think that every child except for their own child would have any chance of winning the school contest.

Filler (ungrammatical)

(1516) Steve reported that a certain inventor changed society for the better, but Brett couldn't find out who.

Question: Did Brett report that a certain inventor changed society for the better?

Expected answer: No

Target (wh × non-island)

(1517) Julie proclaimed that the discovery by a certain scientist cured cancer, but Shannon couldn't recall his name.

Target (pronoun × island)

(1518) * All of the animals in the forest were right to be terrified from the logging company, even the ones that live underground.

Filler (ungrammatical)

(1519) Diane announced that a certain author sold millions of copies, but Jim didn't know his name.

Target (pronoun × non-island)

(1520) The assistant placed the mail in the correct mailbox, but the director complained that the assistant got it wrong anyway.

Filler (grammatical)

(1521) Brie believed that a certain senator destroyed the political union, but Jess couldn't determine his name.

Target (pronoun × non-island)

(1522) * Every designer desperately wanted the chance to showcase their work, but any designer could has.

Filler (ungrammatical)

(1523) ? Jane stated that the announcement from a certain representative scared Sally, but Maya couldn't confirm who.

Question: Did Maya state the announcement from a certain representative scared Sally?

Expected answer: No

Target (wh × island)

(1524) * Alyssa and her friend doesn't often go out to eat together, but when she does, they get happy.

Filler (ungrammatical)

(1525) * Only the residents of the county can voted on the ballot proposition the county.

Filler (ungrammatical)

(1526) Phoebe said that the building by a certain architect won an award, but Charlie couldn't discover his name.

Question: Did someone say that the building won an award?

Expected answer: Yes

Target (pronoun × island)

(1527) ? Morgan stated that the dish by a certain chef made Sarah sick, but Audrey couldn't confirm who.

Target (wh × island)

(1528) * The electrician incorrectly installed a new light fixture, and the carpenter has did so the black cabinet as well.

Filler (ungrammatical)

(1529) * The thing about the candidate's campaign is that it was doomed to be failure because everyone hated the candidate.

Filler (ungrammatical)

(1530) Miles thinks that a certain designer is worth a lot of money, but Mark couldn't determine her name.

Question: Does someone think the designer is worth a lot of money?

Expected answer: Yes

Target (pronoun × non-island)

(1531) ? Paula declared that the interview with a certain astronaut was boring, but Katie couldn't guess who.

Target (wh × island)

(1532) * William was a hard worker, and he tried to complete that homework on time each time it was due.

Question: Was William a hard worker?

Expected answer: Yes

Filler (ungrammatical)

(1533) Jeremy rightly thinks that the CEO was committing fraud, and Angela is investigating what kind of fraud it was.

Filler (grammatical)

B.4.4.4 List 4

(1534) Albert alleged that the post from a certain social media influencer was deceitful, but Ryan couldn't remember her name.

Target (pronoun × island)

(1535) Steve reported that the new gadget from a certain inventor changed society for the better, but Brett couldn't find out her name.

Target (pronoun × island)

(1536) * Alyssa and her friend doesn't often go out to eat together, but when she does, they get happy.

Filler (ungrammatical)

(1537) * The thing about the candidate's campaign is that it was doomed to be failure because everyone hated the candidate.

Filler (ungrammatical)

(1538) Jane stated that a certain representative scared Sally, but Maya couldn't confirm who.

Target (wh × non-island)

(1539) * The electrician incorrectly installed a new light fixture, and the carpenter has did so the black cabinet as well.

Filler (ungrammatical)

(1540) * The store clerk sneakily charged the customer many extra money the warranty the computer.

Question: Did the store clerk charge charge the customer the fair amount?

Expected answer: No

Filler (ungrammatical)

(1541) * The customers were quite upset because they could have had been eating dessert by now, but service was really slow.

Filler (ungrammatical)

(1542) Ashley declared that the announcement from a certain CEO caused all stock prices to plummet, but Tim couldn't remember his name.

- Question: Did Tim declare that the announcement from the CEO caused stock prices to plummet? Expected answer: No
Target (pronoun × island)
- (1543) ? Miles thinks that the dress by a certain designer is worth a lot of money, but Mark couldn't determine who.
Target (wh × island)
- (1544) Kari asserted that the episode with a certain actor was widely despised, but Jane couldn't find out his name.
Target (pronoun × island)
- (1545) The assistant placed the mail in the correct mailbox, but the director complained that the assistant got it wrong anyway.
Filler (grammatical)
- (1546) The postal worker justifiably wondered whether she could deliver all of the mail by the end of the day.
Question: Was the postal worker worried about delivering all of the mail? Expected answer: Yes
Filler (grammatical)
- (1547) * The engineer correctly designed the bridge right materials, but the construction crew much wrong materials used.
Filler (ungrammatical)
- (1548) ? Diane announced that the book by a certain author sold millions of copies, but Jim didn't know who.
Question: Did Diane announce that the book by a certain author sold millions of copies? Expected answer: Yes
Target (wh × island)
- (1549) ? Brie believed that the meeting with a certain senator destroyed the political union, but Jess couldn't determine who.
Target (wh × island)
- (1550) * Only the residents of the county can voted on the ballot proposition the county.

Filler (ungrammatical)

(1551) ? Adam said that the note from a certain teacher expressed doubts about James, but Laurie didn't know who.

Target (wh × island)

(1552) The plumber correctly determined that the leak was caused by the loose pipe fitting, but the home owner didn't want to pay to have it fixed.

Filler (grammatical)

(1553) Shelby declared that a certain judge caused civil unrest, but Zoe couldn't guess who.

Question: Did Shelby declare that a certain judge caused civil unrest?

Expected answer: Yes

Target (wh × non-island)

(1554) * Every designer desperately wanted the chance to showcase their work, but any designer could has.

Filler (ungrammatical)

(1555) * The parents of each child seemed to think that every child except for their own child would have any chance of winning the school contest.

Filler (ungrammatical)

(1556) Mary thought that a certain lawyer threatened to sue the company, but Brian couldn't recall his name.

Target (pronoun × non-island)

(1557) Julie proclaimed that a certain scientist cured cancer, but Shannon couldn't recall his name.

Question: Did Shannon proclaim that the scientist cured cancer?

Expected answer: No

Target (pronoun × non-island)

(1558) * Barbara correctly predicted that the company would go out of business even though they had a new product to sell at customers.

Question: Did the company stay in business?

Expected answer: No

Filler (ungrammatical)

(1559) Mark claimed that a certain journalist undermined the government, but Nina couldn't discover her name.

Target (pronoun × non-island)

(1560) Jeremy rightly thinks that the CEO was committing fraud, and Angela is investigating what kind of fraud it was.

Filler (grammatical)

(1561) Paula declared that a certain astronaut was boring, but Katie couldn't guess who.

Target (wh × non-island)

(1562) Phoebe said that a certain architect won an award, but Charlie couldn't discover his name.

Target (pronoun × non-island)

(1563) Morgan stated that a certain chef made Sarah sick, but Audrey couldn't confirm who.

Target (wh × non-island)

(1564) * All of the animals in the forest were right to be terrified from the logging company, even the ones that live underground.

Filler (ungrammatical)

(1565) * William was a hard worker, and he tried to complete that homework on time each time it was due.

Question: Was William a hard worker?

Expected answer: Yes

Filler (ungrammatical)

B.5 Materials for Experiments 5a and 5b

B.5.1 Experiment 5a: All target items

(1566) Subject island, Quartet 1

- a. Some mediator stated that the representative scared Sally, but Maya couldn't confirm who.

- b. Jane stated that some representative scared Sally, but Maya couldn't confirm who.
- c. Some mediator stated that the announcement from the representative scared Sally, but Maya couldn't confirm who.
- d. ? Jane stated that the announcement from some representative scared Sally, but Maya couldn't confirm who.

(1567) Subject island, Quartet 2

- a. Some reporter thinks that the designer is worth a lot of money, but Mark couldn't determine who.
- b. Miles thinks that some designer is worth a lot of money, but Mark couldn't determine who.
- c. Some reporter thinks that the dress by the designer is worth a lot of money, but Mark couldn't determine who.
- d. ? Miles thinks that the dress by some designer is worth a lot of money, but Mark couldn't determine who.

(1568) Subject island, Quartet 3

- a. Some celebrity said that the architect won an award, but Charlie couldn't discover who.
- b. Phoebe said that some architect won an award, but Charlie couldn't discover who.
- c. Some celebrity said that the building by the architect won an award, but Charlie couldn't discover who.
- d. ? Phoebe said that the building by some architect won an award, but Charlie couldn't discover who.

(1569) Subject island, Quartet 4

- a. Some individual reported that the inventor changed society for the better, but Brett couldn't find out who.

- b. Steve reported that some inventor changed society for the better, but Brett couldn't find out who.
- c. Some individual reported that the new gadget from the inventor changed society for the better, but Brett couldn't find out who.
- d. ? Steve reported that the new gadget from some inventor changed society for the better, but Brett couldn't find out who.

(1570) Subject island, Quartet 5

- a. Some TV host declared that the judge caused civil unrest, but Zoe couldn't guess who.
- b. Shelby declared that some judge caused civil unrest, but Zoe couldn't guess who.
- c. Some TV host declared that the proclamation from the judge caused civil unrest, but Zoe couldn't guess who.
- d. ? Shelby declared that the proclamation from some judge caused civil unrest, but Zoe couldn't guess who.

(1571) Subject island, Quartet 6

- a. Some columnist announced that the author sold millions of copies, but Jim didn't know who.
- b. Diane announced that some author sold millions of copies, but Jim didn't know who.
- c. Some columnist announced that the book by the author sold millions of copies, but Jim didn't know who.
- d. ? Diane announced that the book by some author sold millions of copies, but Jim didn't know who.

(1572) Subject island, Quartet 7

- a. Some public official proclaimed that the scientist cured cancer, but Shannon couldn't recall who.
- b. Julie proclaimed that some scientist cured cancer, but Shannon couldn't recall who.

- c. Some public official proclaimed that the discovery by the scientist cured cancer, but Shannon couldn't recall who.
- d. ? Julie proclaimed that the discovery by some scientist cured cancer, but Shannon couldn't recall who.

(1573) Subject island, Quartet 8

- a. Some investor declared that the CEO caused all stock prices to plummet, but Tim couldn't remember who.
- b. Ashley declared that some CEO caused all stock prices to plummet, but Tim couldn't remember who.
- c. Some investor declared that the announcement from the CEO caused all stock prices to plummet, but Tim couldn't remember who.
- d. ? Ashley declared that the announcement from some CEO caused all stock prices to plummet, but Tim couldn't remember who.

(1574) Subject island, Quartet 9

- a. Some health expert stated that the famous chef made Sarah sick, but Audrey couldn't confirm who.
- b. Morgan stated that some chef made Sarah sick, but Audrey couldn't confirm who.
- c. Some health expert stated that the dish by the famous chef made Sarah sick, but Audrey couldn't confirm who.
- d. ? Morgan stated that the dish by some chef made Sarah sick, but Audrey couldn't confirm who.

(1575) Subject island, Quartet 10

- a. Some activist believed that the senator destroyed the political union, but Jess couldn't determine who.

- b. Brie believed that some senator destroyed the political union, but Jess couldn't determine who.
- c. Some activist believed that the meeting with the senator destroyed the political union, but Jess couldn't determine who.
- d. ? Brie believed that the meeting with some senator destroyed the political union, but Jess couldn't determine who.

(1576) Subject island, Quartet 11

- a. Some diplomat claimed that the journalist undermined the government, but Nina couldn't discover who.
- b. Mark claimed that some journalist undermined the government, but Nina couldn't discover who.
- c. Some diplomat claimed that the news report by the journalist undermined the government, but Nina couldn't discover who.
- d. ? Mark claimed that the news report by some journalist undermined the government, but Nina couldn't discover who.

(1577) Subject island, Quartet 12

- a. Some critic asserted that the famous actor was widely despised, but Jane couldn't find out who.
- b. Kari asserted that some actor was widely despised, but Jane couldn't find out who.
- c. Some critic asserted that the episode with the famous actor was widely despised, but Jane couldn't find out who.
- d. ? Kari asserted that the episode with some actor was widely despised, but Jane couldn't find out who.

(1578) Subject island, Quartet 13

- a. Some pundit declared that the famous astronaut was boring, but Katie couldn't guess who.
- b. Paula declared that some astronaut was boring, but Katie couldn't guess who.
- c. Some pundit declared that the interview with the famous astronaut was boring, but Katie couldn't guess who.
- d. ? Paula declared that the interview with some astronaut was boring, but Katie couldn't guess who.

(1579) Subject island, Quartet 14

- a. Some parent said that the teacher expressed doubts about James, but Laurie didn't know who.
- b. Adam said that some teacher expressed doubts about James, but Laurie didn't know who.
- c. Some parent said that the note from the teacher expressed doubts about James, but Laurie didn't know who.
- d. ? Adam said that the note from some teacher expressed doubts about James, but Laurie didn't know who.

(1580) Subject island, Quartet 15

- a. Some investigator thought that the lawyer threatened to sue the company, but Brian couldn't recall who.
- b. Mary thought that some lawyer threatened to sue the company, but Brian couldn't recall who.
- c. Some investigator thought that the notice from the lawyer threatened to sue the company, but Brian couldn't recall who.
- d. ? Mary thought that the notice from some lawyer threatened to sue the company, but Brian couldn't recall who.

- (1581) Subject island, Quartet 16
- a. Some journalist alleged that the social media influencer was deceitful, but Ryan couldn't remember who.
 - b. Albert alleged that some social media influencer was deceitful, but Ryan couldn't remember who.
 - c. Some journalist alleged that the post from the social media influencer was deceitful, but Ryan couldn't remember who.
 - d. ? Albert alleged that the post from some social media influencer was deceitful, but Ryan couldn't remember who.

B.5.2 Experiment 5a: Lists with fillers in pseudorandomized order

B.5.2.1 List 1

(1582) The plumber correctly determined that the leak was caused by the loose pipe fitting, but the home owner didn't want to pay to have it fixed.

Filler (grammatical)

(1583) Some public official proclaimed that the discovery by the scientist cured cancer, but Shannon couldn't recall who.

Target (short × island)

(1584) *The engineer correctly designed the bridge right materials, but the construction crew much wrong materials used.

Filler (ungrammatical)

(1585) The postal worker justifiably wondered whether she could deliver all of the mail by the end of the day.

Question: Was the postal worker worried about delivering all of the mail?

Expected answer: Yes

Filler (grammatical)

(1586) Some diplomat claimed that the news report by the journalist undermined the government, but Nina couldn't discover who.

Target (short × island)

(1587) Ashley declared that some CEO caused all stock prices to plummet, but Tim couldn't remember who.

Target (long × non-island)

(1588) Steve reported that some inventor changed society for the better, but Brett couldn't find out who.

Question: Did Brett report that some inventor changed society for the better?

Expected answer: No

Target (long × non-island)

(1589) * The thing about the candidate's campaign is that it was doomed to be failure because everyone hated the candidate.

Filler (ungrammatical)

(1590) Some investigator thought that the notice from the lawyer threatened to sue the company, but Brian couldn't recall who.

Target (short × island)

(1591) * All of the animals in the forest were right to be terrified from the logging company, even the ones that live underground.

Filler (ungrammatical)

(1592) Kari asserted that some actor was widely despised, but Jane couldn't find out who.

Target (long × non-island)

(1593) Some celebrity said that the building by the architect won an award, but Charlie couldn't discover who.

Question: Did someone say that the building won an award?

Expected answer: Yes

Target (short × island)

(1594) * Only the residents of the county can voted on the ballot proposition the county.

Filler (ungrammatical)

(1595) Jeremy rightly thinks that the CEO was committing fraud, and Angela is investigating what kind of fraud it was.

Filler (grammatical)

(1596) ? Jane stated that the announcement from some representative scared Sally, but Maya couldn't confirm who.

Question: Did Maya state the announcement from some representative scared Sally?

Expected answer: No

Target (long × island)

(1597) * Every designer desperately wanted the chance to showcase their work, but any designer could has.

Filler (ungrammatical)

(1598) Some activist believed that the senator destroyed the political union, but Jess couldn't determine who.

Target (short × non-island)

(1599) ? Paula declared that the interview with some astronaut was boring, but Katie couldn't guess who.

Target (long × island)

(1600) * The customers were quite upset because they could have had been eating dessert by now, but service was really slow.

Filler (ungrammatical)

(1601) * Barbara correctly predicted that the company would go out of business even though they had a new product to sell at customers.

Question: Did the company stay in business?

Expected answer: No

Filler (ungrammatical)

(1602) * William was a hard worker, and he tried to complete that homework on time each time it was due.

- Question: Was William a hard worker? Expected answer: Yes
 Filler (ungrammatical)
- (1603) Some parent said that the teacher expressed doubts about James, but Laurie didn't know who.
 Target (short × non-island)
- (1604) ? Morgan stated that the dish by some chef made Sarah sick, but Audrey couldn't confirm who.
 Target (long × island)
- (1605) Some columnist announced that the author sold millions of copies, but Jim didn't know who.
 Target (short × non-island)
- (1606) * The parents of each child seemed to think that every child except for their own child would have any chance of winning the school contest.
 Filler (ungrammatical)
- (1607) * The electrician incorrectly installed a new light fixture, and the carpenter has did so the black cabinet as well.
 Filler (ungrammatical)
- (1608) The assistant placed the mail in the correct mailbox, but the director complained that the assistant got it wrong anyway.
 Filler (grammatical)
- (1609) Some reporter thinks that the designer is worth a lot of money, but Mark couldn't determine who.
 Question: Does someone think the designer is worth a lot of money? Expected answer: Yes
 Target (short × non-island)
- (1610) Albert alleged that some social media influencer was deceitful, but Ryan couldn't remember who.
 Target (long × non-island)

(1611) * The store clerk sneakily charged the customer many extra money the warranty the computer.

Question: Did the store clerk charge charge the customer the fair amount?

Expected answer: No

Filler (ungrammatical)

(1612) ? Shelby declared that the proclamation from some judge caused civil unrest, but Zoe couldn't guess who.

Target (long × island)

(1613) * Alyssa and her friend doesn't often go out to eat together, but when she does, they get happy.

Filler (ungrammatical)

B.5.2.2 List 2

(1614) Morgan stated that some chef made Sarah sick, but Audrey couldn't confirm who.

Target (long × non-island)

(1615) * Every designer desperately wanted the chance to showcase their work, but any designer could has.

Filler (ungrammatical)

(1616) Some public official proclaimed that the scientist cured cancer, but Shannon couldn't recall who.

Question: Did Shannon proclaim that the scientist cured cancer?

Expected answer: No

Target (short × non-island)

(1617) * Alyssa and her friend doesn't often go out to eat together, but when she does, they get happy.

Filler (ungrammatical)

(1618) Jane stated that some representative scared Sally, but Maya couldn't confirm who.

Target (long × non-island)

(1619) Some investor declared that the announcement from the CEO caused all stock prices to plummet, but Tim couldn't remember who.

Question: Did Tim declare that the announcement from the CEO caused stock prices to plummet? Expected answer: No

Target (short × island)

(1620) ? Brie believed that the meeting with some senator destroyed the political union, but Jess couldn't determine who.

Target (long × island)

(1621) * Only the residents of the county can voted on the ballot proposition the county.

Filler (ungrammatical)

(1622) * The thing about the candidate's campaign is that it was doomed to be failure because everyone hated the candidate.

Filler (ungrammatical)

(1623) ? Diane announced that the book by some author sold millions of copies, but Jim didn't know who.

Question: Did Diane announce that the book by some author sold millions of copies?

Expected answer: Yes

Target (long × island)

(1624) Some celebrity said that the architect won an award, but Charlie couldn't discover who.

Target (short × non-island)

(1625) The plumber correctly determined that the leak was caused by the loose pipe fitting, but the home owner didn't want to pay to have it fixed.

Filler (grammatical)

(1626) * The customers were quite upset because they could have had been eating dessert by now, but service was really slow.

Filler (ungrammatical)

(1627) * William was a hard worker, and he tried to complete that homework on time each time it was due.

Question: Was William a hard worker?

Expected answer: Yes

Filler (ungrammatical)

- (1628) Paula declared that some astronaut was boring, but Katie couldn't guess who.
Target (long × non-island)
- (1629) * The electrician incorrectly installed a new light fixture, and the carpenter has did so the black cabinet as well.
Filler (ungrammatical)
- (1630) ? Adam said that the note from some teacher expressed doubts about James, but Laurie didn't know who.
Target (long × island)
- (1631) Shelby declared that some judge caused civil unrest, but Zoe couldn't guess who.
Question: Did Shelby declare that some judge caused civil unrest? Expected answer: Yes
Target (long × non-island)
- (1632) Some critic asserted that the episode with the famous actor was widely despised, but Jane couldn't find out who.
Target (short × island)
- (1633) * The engineer correctly designed the bridge right materials, but the construction crew much wrong materials used.
Filler (ungrammatical)
- (1634) The postal worker justifiably wondered whether she could deliver all of the mail by the end of the day.
Question: Was the postal worker worried about delivering all of the mail? Expected answer: Yes
Filler (grammatical)
- (1635) Some diplomat claimed that the journalist undermined the government, but Nina couldn't discover who.
Target (short × non-island)
- (1636) The assistant placed the mail in the correct mailbox, but the director complained that the assistant got it wrong anyway.

Filler (grammatical)

(1637) Some individual reported that the new gadget from the inventor changed society for the better, but Brett couldn't find out who.

Target (short × island)

(1638) * All of the animals in the forest were right to be terrified from the logging company, even the ones that live underground.

Filler (ungrammatical)

(1639) Some investigator thought that the lawyer threatened to sue the company, but Brian couldn't recall who.

Target (short × non-island)

(1640) ? Miles thinks that the dress by some designer is worth a lot of money, but Mark couldn't determine who.

Target (long × island)

(1641) * Barbara correctly predicted that the company would go out of business even though they had a new product to sell at customers.

Question: Did the company stay in business?

Expected answer: No

Filler (ungrammatical)

(1642) * The parents of each child seemed to think that every child except for their own child would have any chance of winning the school contest.

Filler (ungrammatical)

(1643) Some journalist alleged that the post from the social media influencer was deceitful, but Ryan couldn't remember who.

Target (short × island)

(1644) * The store clerk sneakily charged the customer many extra money the warranty the computer.

Question: Did the store clerk charge charge the customer the fair amount?

Expected answer: No

Filler (ungrammatical)

(1645) Jeremy rightly thinks that the CEO was committing fraud, and Angela is investigating what kind of fraud it was.

Filler (grammatical)

B.5.2.3 List 3

(1646) * The engineer correctly designed the bridge right materials, but the construction crew much wrong materials used.

Filler (ungrammatical)

(1647) * The store clerk sneakily charged the customer many extra money the warranty the computer.

Question: Did the store clerk charge charge the customer the fair amount?

Expected answer: No

Filler (ungrammatical)

(1648) Some investor declared that the CEO caused all stock prices to plummet, but Tim couldn't remember who.

Target (short × non-island)

(1649) Some TV host declared that the proclamation from the judge caused civil unrest, but Zoe couldn't guess who.

Target (short × island)

(1650) * The electrician incorrectly installed a new light fixture, and the carpenter has did so the black cabinet as well.

Filler (ungrammatical)

(1651) The assistant placed the mail in the correct mailbox, but the director complained that the assistant got it wrong anyway.

Filler (grammatical)

(1652) * Alyssa and her friend doesn't often go out to eat together, but when she does, they get happy.

Filler (ungrammatical)

(1653) Brie believed that some senator destroyed the political union, but Jess couldn't determine who.

Question: Did Jess believe that some senator destroyed the political union?

Expected answer: No

Target (long × non-island)

(1654) * The parents of each child seemed to think that every child except for their own child would have any chance of winning the school contest.

Filler (ungrammatical)

(1655) Some health expert stated that the dish by the famous chef made Sarah sick, but Audrey couldn't confirm who.

Target (short × island)

(1656) Jeremy rightly thinks that the CEO was committing fraud, and Angela is investigating what kind of fraud it was.

Filler (grammatical)

(1657) Some individual reported that the inventor changed society for the better, but Brett couldn't find out who.

Target (short × non-island)

(1658) Some pundit declared that the interview with the famous astronaut was boring, but Katie couldn't guess who.

Question: Did someone declare that the interview with the famous astronaut was boring?

Expected answer: Yes

Target (short × island)

(1659) ? Mary thought that the notice from some lawyer threatened to sue the company, but Brian couldn't recall who.

Target (long × island)

(1660) * Barbara correctly predicted that the company would go out of business even though they had a new product to sell at customers.

Question: Did the company stay in business?

Expected answer: No

Filler (ungrammatical)

(1661) * Every designer desperately wanted the chance to showcase their work, but any designer could has.

Filler (ungrammatical)

(1662) The postal worker justifiably wondered whether she could deliver all of the mail by the end of the day.

Question: Was the postal worker worried about delivering all of the mail?

Expected answer: Yes

Filler (grammatical)

(1663) * The thing about the candidate's campaign is that it was doomed to be failure because everyone hated the candidate.

Filler (ungrammatical)

(1664) ? Phoebe said that the building by some architect won an award, but Charlie couldn't discover who.

Target (long × island)

(1665) * Only the residents of the county can voted on the ballot proposition the county.

Filler (ungrammatical)

(1666) * William was a hard worker, and he tried to complete that homework on time each time it was due.

Question: Was William a hard worker?

Expected answer: Yes

Filler (ungrammatical)

(1667) * The customers were quite upset because they could have had been eating dessert by now, but service was really slow.

Filler (ungrammatical)

(1668) Miles thinks that some designer is worth a lot of money, but Mark couldn't determine who.

Target (long × non-island)

(1669) Some critic asserted that the famous actor was widely despised, but Jane couldn't find out who.

Question: Did Jane assert that the famous actor is widely despised?

Expected answer: No

Target (short × non-island)

(1670) The plumber correctly determined that the leak was caused by the loose pipe fitting, but the home owner didn't want to pay to have it fixed.

Filler (grammatical)

(1671) ? Mark claimed that the news report by some journalist undermined the government, but Nina couldn't discover who.

Question: Did Mark claim the news report by some journalist undermined the government?

Expected answer: Yes

Target (long × island)

(1672) ? Julie proclaimed that the discovery by some scientist cured cancer, but Shannon couldn't recall who.

Target (long × island)

(1673) Diane announced that some author sold millions of copies, but Jim didn't know who.

Target (long × non-island)

(1674) * All of the animals in the forest were right to be terrified from the logging company, even the ones that live underground.

Filler (ungrammatical)

(1675) Some mediator stated that the announcement from the representative scared Sally, but Maya couldn't confirm who.

Target (short × island)

(1676) Some journalist alleged that the social media influencer was deceitful, but Ryan couldn't remember who.

Target (short × non-island)

(1677) Adam said that some teacher expressed doubts about James, but Laurie didn't know who.

B.5.2.4 List 4

(1678) * Barbara correctly predicted that the company would go out of business even though they had a new product to sell at customers.

Question: Did the company stay in business?

Expected answer: No

Filler (ungrammatical)

(1679) Some reporter thinks that the dress by the designer is worth a lot of money, but Mark couldn't determine who.

Target (short × island)

(1680) * The electrician incorrectly installed a new light fixture, and the carpenter has did so the black cabinet as well.

Filler (ungrammatical)

(1681) The postal worker justifiably wondered whether she could deliver all of the mail by the end of the day.

Question: Was the postal worker worried about delivering all of the mail?

Expected answer: Yes

Filler (grammatical)

(1682) * The customers were quite upset because they could have had been eating dessert by now, but service was really slow.

Filler (ungrammatical)

(1683) * Alyssa and her friend doesn't often go out to eat together, but when she does, they get happy.

Filler (ungrammatical)

(1684) ? Steve reported that the new gadget from some inventor changed society for the better, but Brett couldn't find out who.

Target (long × island)

(1685) Some activist believed that the meeting with the senator destroyed the political union, but Jess couldn't determine who.

Target (short × island)

(1686) ? Ashley declared that the announcement from some CEO caused all stock prices to plummet, but Tim couldn't remember who.

Target (long × island)

(1687) * All of the animals in the forest were right to be terrified from the logging company, even the ones that live underground.

Filler (ungrammatical)

(1688) * William was a hard worker, and he tried to complete that homework on time each time it was due.

Question: Was William a hard worker?

Expected answer: Yes

Filler (ungrammatical)

(1689) Phoebe said that some architect won an award, but Charlie couldn't discover who.

Target (long × non-island)

(1690) Jeremy rightly thinks that the CEO was committing fraud, and Angela is investigating what kind of fraud it was.

Filler (grammatical)

(1691) The plumber correctly determined that the leak was caused by the loose pipe fitting, but the home owner didn't want to pay to have it fixed.

Filler (grammatical)

(1692) * The engineer correctly designed the bridge right materials, but the construction crew much wrong materials used.

Filler (ungrammatical)

(1693) ? Albert alleged that the post from some social media influencer was deceitful, but Ryan couldn't remember who.

- Question: Did Ryan allege that the post from some social media influencer was deceitful? Expected answer: No
Target (long × island)
- (1694) * The store clerk sneakily charged the customer many extra money the warranty the computer.
Question: Did the store clerk charge charge the customer the fair amount? Expected answer: No
Filler (ungrammatical)
- (1695) * Every designer desperately wanted the chance to showcase their work, but any designer could has.
Filler (ungrammatical)
- (1696) ? Kari asserted that the episode with some actor was widely despised, but Jane couldn't find out who.
Target (long × island)
- (1697) Julie proclaimed that some scientist cured cancer, but Shannon couldn't recall who.
Target (long × non-island)
- (1698) Some mediator stated that the representative scared Sally, but Maya couldn't confirm who.
Target (short × non-island)
- (1699) * Only the residents of the county can voted on the ballot proposition the county.
Filler (ungrammatical)
- (1700) Mary thought that some lawyer threatened to sue the company, but Brian couldn't recall who.
Question: Did Mary think some lawyer threatened to sue the company? Expected answer: Yes
Target (long × non-island)
- (1701) * The parents of each child seemed to think that every child except for their own child would have any chance of winning the school contest.
Filler (ungrammatical)
- (1702) Some pundit declared that the famous astronaut was boring, but Katie couldn't guess who.
Target (short × non-island)

(1703) Mark claimed that some journalist undermined the government, but Nina couldn't discover who.

Target (long × non-island)

(1704) Some parent said that the note from the teacher expressed doubts about James, but Laurie didn't know who.

Question: Did Laurie say that the note from the teacher expressed doubts about James?

Expected answer: No

Target (short × island)

(1705) * The thing about the candidate's campaign is that it was doomed to be failure because everyone hated the candidate.

Filler (ungrammatical)

(1706) Some health expert stated that the famous chef made Sarah sick, but Audrey couldn't confirm who.

Question: Did someone say that the chef made Sarah sick?

Expected answer: Yes

Target (short × non-island)

(1707) Some TV host declared that the judge caused civil unrest, but Zoe couldn't guess who.

Target (short × non-island)

(1708) Some columnist announced that the book by the author sold millions of copies, but Jim didn't know who.

Target (short × island)

(1709) The assistant placed the mail in the correct mailbox, but the director complained that the assistant got it wrong anyway.

Filler (grammatical)

B.5.3 Experiment 5b: All target items

(1710) Subject island, Quartet 1

- a. Jane stated that some representative scared Sally, but Maya couldn't confirm his name.

- b. Jane stated that some representative scared Sally, but Maya couldn't confirm who.
- c. Jane stated that the announcement from some representative scared Sally, but Maya couldn't confirm his name.
- d. ? Jane stated that the announcement from some representative scared Sally, but Maya couldn't confirm who.

(1711) Subject island, Quartet 2

- a. Miles thinks that some designer is worth a lot of money, but Mark couldn't determine her name.
- b. Miles thinks that some designer is worth a lot of money, but Mark couldn't determine who.
- c. Miles thinks that the dress by some designer is worth a lot of money, but Mark couldn't determine her name.
- d. ? Miles thinks that the dress by some designer is worth a lot of money, but Mark couldn't determine who.

(1712) Subject island, Quartet 3

- a. Phoebe said that some architect won an award, but Charlie couldn't discover his name.
- b. Phoebe said that some architect won an award, but Charlie couldn't discover who.
- c. Phoebe said that the building by some architect won an award, but Charlie couldn't discover his name.
- d. ? Phoebe said that the building by some architect won an award, but Charlie couldn't discover who.

(1713) Subject island, Quartet 4

- a. Steve reported that some inventor changed society for the better, but Brett couldn't find out her name.

- b. Steve reported that some inventor changed society for the better, but Brett couldn't find out who.
- c. Steve reported that the new gadget from some inventor changed society for the better, but Brett couldn't find out her name.
- d. ? Steve reported that the new gadget from some inventor changed society for the better, but Brett couldn't find out who.

(1714) Subject island, Quartet 5

- a. Shelby declared that some judge caused civil unrest, but Zoe couldn't guess his name.
- b. Shelby declared that some judge caused civil unrest, but Zoe couldn't guess who.
- c. Shelby declared that the proclamation from some judge caused civil unrest, but Zoe couldn't guess his name.
- d. ? Shelby declared that the proclamation from some judge caused civil unrest, but Zoe couldn't guess who.

(1715) Subject island, Quartet 6

- a. Diane announced that some author sold millions of copies, but Jim didn't know his name.
- b. Diane announced that some author sold millions of copies, but Jim didn't know who.
- c. Diane announced that the book by some author sold millions of copies, but Jim didn't know his name.
- d. ? Diane announced that the book by some author sold millions of copies, but Jim didn't know who.

(1716) Subject island, Quartet 7

- a. Julie proclaimed that some scientist cured cancer, but Shannon couldn't recall his name.
- b. Julie proclaimed that some scientist cured cancer, but Shannon couldn't recall who.

- c. Julie proclaimed that the discovery by some scientist cured cancer, but Shannon couldn't recall his name.
- d. ? Julie proclaimed that the discovery by some scientist cured cancer, but Shannon couldn't recall who.

(1717) Subject island, Quartet 8

- a. Ashley declared that some CEO caused all stock prices to plummet, but Tim couldn't remember his name.
- b. Ashley declared that some CEO caused all stock prices to plummet, but Tim couldn't remember who.
- c. Ashley declared that the announcement from some CEO caused all stock prices to plummet, but Tim couldn't remember his name.
- d. ? Ashley declared that the announcement from some CEO caused all stock prices to plummet, but Tim couldn't remember who.

(1718) Subject island, Quartet 9

- a. Morgan stated that some chef made Sarah sick, but Audrey couldn't confirm his name.
- b. Morgan stated that some chef made Sarah sick, but Audrey couldn't confirm who.
- c. Morgan stated that the dish by some chef made Sarah sick, but Audrey couldn't confirm his name.
- d. ? Morgan stated that the dish by some chef made Sarah sick, but Audrey couldn't confirm who.

(1719) Subject island, Quartet 10

- a. Brie believed that some senator destroyed the political union, but Jess couldn't determine his name.
- b. Brie believed that some senator destroyed the political union, but Jess couldn't determine who.

- c. Brie believed that the meeting with some senator destroyed the political union, but Jess couldn't determine his name.
- d. ? Brie believed that the meeting with some senator destroyed the political union, but Jess couldn't determine who.

(1720) Subject island, Quartet 11

- a. Mark claimed that some journalist undermined the government, but Nina couldn't discover his name.
- b. Mark claimed that some journalist undermined the government, but Nina couldn't discover who.
- c. Mark claimed that the news report by some journalist undermined the government, but Nina couldn't discover his name.
- d. ? Mark claimed that the news report by some journalist undermined the government, but Nina couldn't discover who.

(1721) Subject island, Quartet 12

- a. Kari asserted that some actor was widely despised, but Jane couldn't find out his name.
- b. Kari asserted that some actor was widely despised, but Jane couldn't find out who.
- c. Kari asserted that the episode with some actor was widely despised, but Jane couldn't find out his name.
- d. ? Kari asserted that the episode with some actor was widely despised, but Jane couldn't find out who.

(1722) Subject island, Quartet 13

- a. Paula declared that some astronaut was boring, but Katie couldn't guess his name.
- b. Paula declared that some astronaut was boring, but Katie couldn't guess who.
- c. Paula declared that the interview with some astronaut was boring, but Katie couldn't guess his name.

- d. ? Paula declared that the interview with some astronaut was boring, but Katie couldn't guess who.

(1723) Subject island, Quartet 14

- a. Adam said that some teacher expressed doubts about James, but Laurie didn't know her name.
- b. Adam said that some teacher expressed doubts about James, but Laurie didn't know who.
- c. Adam said that the note from some teacher expressed doubts about James, but Laurie didn't know her name.
- d. ? Adam said that the note from some teacher expressed doubts about James, but Laurie didn't know who.

(1724) Subject island, Quartet 15

- a. Mary thought that some lawyer threatened to sue the company, but Brian couldn't recall his name.
- b. Mary thought that some lawyer threatened to sue the company, but Brian couldn't recall who.
- c. Mary thought that the notice from some lawyer threatened to sue the company, but Brian couldn't recall his name.
- d. ? Mary thought that the notice from some lawyer threatened to sue the company, but Brian couldn't recall who.

(1725) Subject island, Quartet 16

- a. Albert alleged that some social media influencer was deceitful, but Ryan couldn't remember her name.
- b. Albert alleged that some social media influencer was deceitful, but Ryan couldn't remember who.

- c. Albert alleged that the post from some social media influencer was deceitful, but Ryan couldn't remember her name.
- d. ? Albert alleged that the post from some social media influencer was deceitful, but Ryan couldn't remember who.

B.5.4 Experiment 5b: Lists with fillers in pseudorandomized order

B.5.4.1 List 1

(1726) Miles thinks that some designer is worth a lot of money, but Mark couldn't determine who.

Target (wh × non-island)

(1727) * The thing about the candidate's campaign is that it was doomed to be failure because everyone hated the candidate.

Filler (ungrammatical)

(1728) The postal worker justifiably wondered whether she could deliver all of the mail by the end of the day.

Question: Was the postal worker worried about delivering all of the mail?

Expected answer: Yes

Filler (grammatical)

(1729) Morgan stated that the dish by some chef made Sarah sick, but Audrey couldn't confirm his name.

Target (pronoun × island)

(1730) The plumber correctly determined that the leak was caused by the loose pipe fitting, but the home owner didn't want to pay to have it fixed.

Filler (grammatical)

(1731) Shelby declared that the proclamation from some judge caused civil unrest, but Zoe couldn't guess his name.

Target (pronoun × island)

- (1732) * Barbara correctly predicted that the company would go out of business even though they had a new product to sell at customers.
 Question: Did the company stay in business? Expected answer: No
 Filler (ungrammatical)
- (1733) Diane announced that some author sold millions of copies, but Jim didn't know who.
 Target (wh × non-island)
- (1734) * The electrician incorrectly installed a new light fixture, and the carpenter has did so the black cabinet as well.
 Filler (ungrammatical)
- (1735) * William was a hard worker, and he tried to complete that homework on time each time it was due.
 Question: Was William a hard worker? Expected answer: Yes
 Filler (ungrammatical)
- (1736) * Alyssa and her friend doesn't often go out to eat together, but when she does, they get happy.
 Filler (ungrammatical)
- (1737) * All of the animals in the forest were right to be terrified from the logging company, even the ones that live underground.
 Filler (ungrammatical)
- (1738) Ashley declared that some CEO caused all stock prices to plummet, but Tim couldn't remember his name.
 Target (pronoun × non-island)
- (1739) ? Mark claimed that the news report by some journalist undermined the government, but Nina couldn't discover who.
 Question: Did Mark claim the news report by some journalist undermined the government? Expected answer: Yes
 Target (wh × island)

(1740) * The parents of each child seemed to think that every child except for their own child would have any chance of winning the school contest.

Filler (ungrammatical)

(1741) Jane stated that the announcement from some representative scared Sally, but Maya couldn't confirm his name.

Target (pronoun × island)

(1742) Kari asserted that some actor was widely despised, but Jane couldn't find out his name.

Question: Did Jane assert that the famous actor is widely despised?

Expected answer: No

Target (pronoun × non-island)

(1743) ? Mary thought that the notice from some lawyer threatened to sue the company, but Brian couldn't recall who.

Target (wh × island)

(1744) * Every designer desperately wanted the chance to showcase their work, but any designer could has.

Filler (ungrammatical)

(1745) * The customers were quite upset because they could have had been eating dessert by now, but service was really slow.

Filler (ungrammatical)

(1746) Steve reported that some inventor changed society for the better, but Brett couldn't find out her name.

Target (pronoun × non-island)

(1747) Brie believed that some senator destroyed the political union, but Jess couldn't determine who.

Question: Did Jess believe that some senator destroyed the political union?

Expected answer: No

Target (wh × non-island)

- (1748) The assistant placed the mail in the correct mailbox, but the director complained that the assistant got it wrong anyway.
 Filler (grammatical)
- (1749) Adam said that some teacher expressed doubts about James, but Laurie didn't know who.
 Target (wh × non-island)
- (1750) Albert alleged that some social media influencer was deceitful, but Ryan couldn't remember her name.
 Target (pronoun × non-island)
- (1751) ? Julie proclaimed that the discovery by some scientist cured cancer, but Shannon couldn't recall who.
 Target (wh × island)
- (1752) * The store clerk sneakily charged the customer many extra money the warranty the computer.
 Question: Did the store clerk charge charge the customer the fair amount? Expected answer: No
 Filler (ungrammatical)
- (1753) Jeremy rightly thinks that the CEO was committing fraud, and Angela is investigating what kind of fraud it was.
 Filler (grammatical)
- (1754) ? Phoebe said that the building by some architect won an award, but Charlie couldn't discover who.
 Target (wh × island)
- (1755) * Only the residents of the county can voted on the ballot proposition the county.
 Filler (ungrammatical)
- (1756) Paula declared that the interview with some astronaut was boring, but Katie couldn't guess his name.
 Question: Did someone declare that the interview with the famous astronaut was boring? Expected answer: Yes
 Target (pronoun × island)

(1757) * The engineer correctly designed the bridge right materials, but the construction crew much wrong materials used.

Filler (ungrammatical)

B.5.4.2 List 2

(1758) * The parents of each child seemed to think that every child except for their own child would have any chance of winning the school contest.

Filler (ungrammatical)

(1759) Mary thought that some lawyer threatened to sue the company, but Brian couldn't recall who.

Question: Did Mary think some lawyer threatened to sue the company?

Expected answer: Yes

Target (wh × non-island)

(1760) The postal worker justifiably wondered whether she could deliver all of the mail by the end of the day.

Question: Was the postal worker worried about delivering all of the mail?

Expected answer: Yes

Filler (grammatical)

(1761) Jane stated that some representative scared Sally, but Maya couldn't confirm his name.

Target (pronoun × non-island)

(1762) * The customers were quite upset because they could have had been eating dessert by now, but service was really slow.

Filler (ungrammatical)

(1763) * Only the residents of the county can voted on the ballot proposition the county.

Filler (ungrammatical)

(1764) * The store clerk sneakily charged the customer many extra money the warranty the computer.

Question: Did the store clerk charge charge the customer the fair amount?

Expected answer: No

Filler (ungrammatical)

(1765) Paula declared that some astronaut was boring, but Katie couldn't guess his name.

Target (pronoun × non-island)

(1766) ? Steve reported that the new gadget from some inventor changed society for the better, but Brett couldn't find out who.

Target (wh × island)

(1767) The plumber correctly determined that the leak was caused by the loose pipe fitting, but the home owner didn't want to pay to have it fixed.

Filler (grammatical)

(1768) ? Ashley declared that the announcement from some CEO caused all stock prices to plummet, but Tim couldn't remember who.

Target (wh × island)

(1769) * The electrician incorrectly installed a new light fixture, and the carpenter has did so the black cabinet as well.

Filler (ungrammatical)

(1770) Morgan stated that some chef made Sarah sick, but Audrey couldn't confirm his name.

Question: Did someone say that the chef made Sarah sick?

Expected answer: Yes

Target (pronoun × non-island)

(1771) Mark claimed that some journalist undermined the government, but Nina couldn't discover who.

Target (wh × non-island)

(1772) * Barbara correctly predicted that the company would go out of business even though they had a new product to sell at customers.

Question: Did the company stay in business?

Expected answer: No

Filler (ungrammatical)

(1773) Shelby declared that some judge caused civil unrest, but Zoe couldn't guess his name.

Target (pronoun × non-island)

(1774) Miles thinks that the dress by some designer is worth a lot of money, but Mark couldn't determine her name.

Target (pronoun × island)

(1775) * The thing about the candidate's campaign is that it was doomed to be failure because everyone hated the candidate.

Filler (ungrammatical)

(1776) * William was a hard worker, and he tried to complete that homework on time each time it was due.

Question: Was William a hard worker?

Expected answer: Yes

Filler (ungrammatical)

(1777) Julie proclaimed that some scientist cured cancer, but Shannon couldn't recall who.

Target (wh × non-island)

(1778) ? Kari asserted that the episode with some actor was widely despised, but Jane couldn't find out who.

Target (wh × island)

(1779) Jeremy rightly thinks that the CEO was committing fraud, and Angela is investigating what kind of fraud it was.

Filler (grammatical)

(1780) Phoebe said that some architect won an award, but Charlie couldn't discover who.

Target (wh × non-island)

(1781) ? Albert alleged that the post from some social media influencer was deceitful, but Ryan couldn't remember who.

Question: Did Ryan allege that the post from some social media influencer was deceitful?

Expected answer: No

Target (wh × island)

(1782) Brie believed that the meeting with some senator destroyed the political union, but Jess couldn't determine his name.

Target (pronoun × island)

(1783) * The engineer correctly designed the bridge right materials, but the construction crew much wrong materials used.

Filler (ungrammatical)

(1784) * All of the animals in the forest were right to be terrified from the logging company, even the ones that live underground.

Filler (ungrammatical)

(1785) * Alyssa and her friend doesn't often go out to eat together, but when she does, they get happy.

Filler (ungrammatical)

(1786) Diane announced that the book by some author sold millions of copies, but Jim didn't know his name.

Target (pronoun × island)

(1787) The assistant placed the mail in the correct mailbox, but the director complained that the assistant got it wrong anyway.

Filler (grammatical)

(1788) Adam said that the note from some teacher expressed doubts about James, but Laurie didn't know her name.

Question: Did Laurie say that the note from the teacher expressed doubts about James?

Expected answer: No

Target (pronoun × island)

(1789) * Every designer desperately wanted the chance to showcase their work, but any designer could has.

Filler (ungrammatical)

B.5.4.3 List 3

(1790) The assistant placed the mail in the correct mailbox, but the director complained that the assistant got it wrong anyway.

Filler (grammatical)

(1791) Brie believed that some senator destroyed the political union, but Jess couldn't determine his name.

Target (pronoun × non-island)

(1792) Diane announced that some author sold millions of copies, but Jim didn't know his name.

Target (pronoun × non-island)

(1793) Kari asserted that some actor was widely despised, but Jane couldn't find out who.

Target (wh × non-island)

(1794) * All of the animals in the forest were right to be terrified from the logging company, even the ones that live underground.

Filler (ungrammatical)

(1795) Jeremy rightly thinks that the CEO was committing fraud, and Angela is investigating what kind of fraud it was.

Filler (grammatical)

(1796) Miles thinks that some designer is worth a lot of money, but Mark couldn't determine her name.

Question: Does someone think the designer is worth a lot of money?

Expected answer: Yes

Target (pronoun × non-island)

(1797) Mark claimed that the news report by some journalist undermined the government, but Nina couldn't discover his name.

Target (pronoun × island)

(1798) * Only the residents of the county can voted on the ballot proposition the county.

Filler (ungrammatical)

(1799) * The thing about the candidate's campaign is that it was doomed to be failure because everyone hated the candidate.

Filler (ungrammatical)

(1800) Adam said that some teacher expressed doubts about James, but Laurie didn't know her name.

Target (pronoun × non-island)

(1801) Steve reported that some inventor changed society for the better, but Brett couldn't find out who.

Question: Did Brett report that some inventor changed society for the better?

Expected answer: No

Target (wh × non-island)

(1802) * Alyssa and her friend doesn't often go out to eat together, but when she does, they get happy.

Filler (ungrammatical)

(1803) Julie proclaimed that the discovery by some scientist cured cancer, but Shannon couldn't recall his name.

Target (pronoun × island)

(1804) ? Shelby declared that the proclamation from some judge caused civil unrest, but Zoe couldn't guess who.

Target (wh × island)

(1805) ? Paula declared that the interview with some astronaut was boring, but Katie couldn't guess who.

Target (wh × island)

(1806) * The store clerk sneakily charged the customer many extra money the warranty the computer.

Question: Did the store clerk charge charge the customer the fair amount?

Expected answer: No

Filler (ungrammatical)

(1807) * The parents of each child seemed to think that every child except for their own child would have any chance of winning the school contest.

Filler (ungrammatical)

(1808) * William was a hard worker, and he tried to complete that homework on time each time it was due.

- Question: Was William a hard worker? Expected answer: Yes
 Filler (ungrammatical)
- (1809) * Barbara correctly predicted that the company would go out of business even though they had a new product to sell at customers.
 Question: Did the company stay in business? Expected answer: No
 Filler (ungrammatical)
- (1810) Ashley declared that some CEO caused all stock prices to plummet, but Tim couldn't remember who.
 Target (wh × non-island)
- (1811) * Every designer desperately wanted the chance to showcase their work, but any designer could has.
 Filler (ungrammatical)
- (1812) * The customers were quite upset because they could have had been eating dessert by now, but service was really slow.
 Filler (ungrammatical)
- (1813) ? Jane stated that the announcement from some representative scared Sally, but Maya couldn't confirm who.
 Question: Did Maya state the announcement from some representative scared Sally? Expected answer: No
 Target (wh × island)
- (1814) The plumber correctly determined that the leak was caused by the loose pipe fitting, but the home owner didn't want to pay to have it fixed.
 Filler (grammatical)
- (1815) * The engineer correctly designed the bridge right materials, but the construction crew much wrong materials used.
 Filler (ungrammatical)

(1816) The postal worker justifiably wondered whether she could deliver all of the mail by the end of the day.

Question: Was the postal worker worried about delivering all of the mail?

Expected answer: Yes

Filler (grammatical)

(1817) Albert alleged that some social media influencer was deceitful, but Ryan couldn't remember who.

Target (wh × non-island)

(1818) ? Morgan stated that the dish by some chef made Sarah sick, but Audrey couldn't confirm who.

Target (wh × island)

(1819) Phoebe said that the building by some architect won an award, but Charlie couldn't discover his name.

Question: Did someone say that the building won an award?

Expected answer: Yes

Target (pronoun × island)

(1820) * The electrician incorrectly installed a new light fixture, and the carpenter has did so the black cabinet as well.

Filler (ungrammatical)

(1821) Mary thought that the notice from some lawyer threatened to sue the company, but Brian couldn't recall his name.

Target (pronoun × island)

B.5.4.4 List 4

(1822) * Alyssa and her friend doesn't often go out to eat together, but when she does, they get happy.

Filler (ungrammatical)

(1823) Jane stated that some representative scared Sally, but Maya couldn't confirm who.

Target (wh × non-island)

(1824) Paula declared that some astronaut was boring, but Katie couldn't guess who.

Target (wh × non-island)

(1825) * The electrician incorrectly installed a new light fixture, and the carpenter has did so the black cabinet as well.

Filler (ungrammatical)

(1826) ? Miles thinks that the dress by some designer is worth a lot of money, but Mark couldn't determine who.

Target (wh × island)

(1827) ? Diane announced that the book by some author sold millions of copies, but Jim didn't know who.

Question: Did Diane announce that the book by some author sold millions of copies?

Expected answer: Yes

Target (wh × island)

(1828) Ashley declared that the announcement from some CEO caused all stock prices to plummet, but Tim couldn't remember his name.

Question: Did Tim declare that the announcement from the CEO caused stock prices to plummet? Expected answer: No

Target (pronoun × island)

(1829) * The engineer correctly designed the bridge right materials, but the construction crew much wrong materials used.

Filler (ungrammatical)

(1830) Mark claimed that some journalist undermined the government, but Nina couldn't discover his name.

Target (pronoun × non-island)

(1831) * Barbara correctly predicted that the company would go out of business even though they had a new product to sell at customers.

Question: Did the company stay in business?

Expected answer: No

Filler (ungrammatical)

(1832) Steve reported that the new gadget from some inventor changed society for the better, but Brett couldn't find out her name.

Target (pronoun × island)

(1833) The assistant placed the mail in the correct mailbox, but the director complained that the assistant got it wrong anyway.

Filler (grammatical)

(1834) * The thing about the candidate's campaign is that it was doomed to be failure because everyone hated the candidate.

Filler (ungrammatical)

(1835) ? Adam said that the note from some teacher expressed doubts about James, but Laurie didn't know who.

Target (wh × island)

(1836) The postal worker justifiably wondered whether she could deliver all of the mail by the end of the day.

Question: Was the postal worker worried about delivering all of the mail?

Expected answer: Yes

Filler (grammatical)

(1837) * Every designer desperately wanted the chance to showcase their work, but any designer could has.

Filler (ungrammatical)

(1838) * William was a hard worker, and he tried to complete that homework on time each time it was due.

Question: Was William a hard worker?

Expected answer: Yes

Filler (ungrammatical)

(1839) Jeremy rightly thinks that the CEO was committing fraud, and Angela is investigating what kind of fraud it was.

Filler (grammatical)

- (1840) * The store clerk sneakily charged the customer many extra money the warranty the computer.
 Question: Did the store clerk charge charge the customer the fair amount? Expected answer: No
 Filler (ungrammatical)
- (1841) Phoebe said that some architect won an award, but Charlie couldn't discover his name.
 Target (pronoun × non-island)
- (1842) Morgan stated that some chef made Sarah sick, but Audrey couldn't confirm who.
 Target (wh × non-island)
- (1843) The plumber correctly determined that the leak was caused by the loose pipe fitting, but the home owner didn't want to pay to have it fixed.
 Filler (grammatical)
- (1844) Julie proclaimed that some scientist cured cancer, but Shannon couldn't recall his name.
 Question: Did Shannon proclaim that the scientist cured cancer? Expected answer: No
 Target (pronoun × non-island)
- (1845) Albert alleged that the post from some social media influencer was deceitful, but Ryan couldn't remember her name.
 Target (pronoun × island)
- (1846) ? Brie believed that the meeting with some senator destroyed the political union, but Jess couldn't determine who.
 Target (wh × island)
- (1847) * Only the residents of the county can voted on the ballot proposition the county.
 Filler (ungrammatical)
- (1848) Kari asserted that the episode with some actor was widely despised, but Jane couldn't find out his name.
 Target (pronoun × island)
- (1849) Mary thought that some lawyer threatened to sue the company, but Brian couldn't recall his name.

Target (pronoun × non-island)

(1850) * The parents of each child seemed to think that every child except for their own child would have any chance of winning the school contest.

Filler (ungrammatical)

(1851) Shelby declared that some judge caused civil unrest, but Zoe couldn't guess who.

Question: Did Shelby declare that some judge caused civil unrest?

Expected answer: Yes

Target (wh × non-island)

(1852) * All of the animals in the forest were right to be terrified from the logging company, even the ones that live underground.

Filler (ungrammatical)

(1853) * The customers were quite upset because they could have had been eating dessert by now, but service was really slow.

Filler (ungrammatical)

Appendix C Bulgarian materials for experiment in Chapter 5

C.1 All target items

(1854) Subexperiment 1, Quartet 1

- a. Кого уведоми професорът, че ректорът ще те
Kogo uvedomi profesorăt, če rektorăt Ńte te
whom let-know the-professor.M that the-university-president.M will you.SG.ACC
назначи на работа есента?
naznači na rabota esenta?
appoint to work the-fall
'Who did the professor inform that the university president will hire you in the fall?'

- b. Кого каза професорът, че ректорът ще назначи на работа
Kogo kaza profesorăt, če rektorăt Ńte naznači na rabota
whom said the-professor.M that the-university-president.M will appoint to work
тази есен?
tazi esen?
this fall
'Who did the professor say that the university president will hire this fall?'

- c. Кого препоръча професорът на комисията, на която
Kogo preporăča profesorăt na komisijata, na kojato
whom recommended the-professor.M to the-committee.F to which.F
ректорът ще те представи?
rektorăt Ńte te predstavî?
the-university-president.M will you.SG.ACC introduce
'Who did the professor recommend to the committee, to which the university president will introduce you?'

- d. * Кого писа професорът на комисията, на която
 Kogo pisa profesorăt na komisijata, na kojato
 whom wrote the-professor.M at the-committee.F to which.F
 ректорът скоро ще представи?
 rektorăt skoro ŝte predstavi?
 the-university-president.M soon will introduce
 ‘Who did the professor write to the committee, to which the university president will soon introduce?’

(1855) Subexperiment 2, Quartet 1

- a. Кой кого осведоми вчера, че началникът ще те повиши
 Koj kogo osvedomi včera, čе načalnikăt ŝte te повиши
 who whom let-know yesterday that the-boss.M will you.SG.ACC promote
 следващия месец?
 sledvaštija mesec?
 next month
 ‘Who informed whom yesterday that the boss will promote you next month?’
- b. Кой кого обяви вчера, че началникът ще повиши след два месеца?
 Koj kogo objavi včera, čе načalnikăt ŝte повиши sled dva meseca?
 who whom declared yesterday that the-boss.M will promote after two months
 ‘Who declared yesterday that the boss will promote whom in two months?’
- c. Кой кого похвали на директорката, на която началникът ще те препоръча?
 Koj kogo pohvali na direktorkata, na kojato načalnikăt ŝte te препоръча?
 who whom praised to the-director.F to whom.F the-boss.M will you.SG.ACC
 препоръча?
 preporăča?
 recommend
 ‘Who praised whom to the director, to whom the boss will recommend you?’
- d. ? Кой кого звънна на директорката, на която началникът май ще препоръча?
 Koj kogo zvănna na direktorkata, na kojato načalnikăt maj ŝte препоръча?
 who whom phoned to the-director.F to whom.F the-boss.M maybe will
 препоръча?
 preporăča?
 recommend
 ‘Who called the director, to whom the boss will maybe recommend whom?’

(1856) Subexperiment 3, Quartet 1

- a. Кого смяташе футболистът, че треньорът ще уволни от отбора
 Kogo smjataše futbolistăt, će trenjorăt šte uvolni ot otbora
 whom thought the-soccer-player.M that the-trainer.M will fire from the-team
 след поредната загуба?
 sled porednata zaguba?
 after the-latest loss
 ‘Who did the soccer player think that the trainer will fire from the team after the latest loss?’
- b. Кой кого смяташе, че треньорът ще уволни от отбора след поредната
 Koj kogo smjataše, će trenjorăt šte uvolni ot otbora sled porednata
 who whom thought that the-trainer.M will fire from the-team after the-latest
 загуба?
 zaguba?
 loss
 ‘Who thought that the trainer will fire whom from the team after the latest loss?’
- c. * Кого съдейства футболистът на федерацията, на която треньорът
 Kogo sädejstva futbolistăt na federacijata na kojato trenjorăt
 whom helped the-soccer-player.M to the-federation.F to which.F the-trainer.M
 ще предложи за награда?
 šte predloži za nagrada?
 will offer for award
 ‘Who did the soccer player provide help to the federation, to which the trainer will suggest for an award?’
- d. ? Кой кого съдейства на федерацията, на която треньорът ще предложи
 Koj kogo sädejstva na federacijata na kojato trenjorăt šte predloži
 who whom helped to the-federation.F to which.F the-trainer.M will offer
 за награда?
 za nagrada?
 for award
 ‘Who did the soccer player provide help to the federation, to which the trainer will suggest whom for an award?’

(1857) Subexperiment 1, Quartet 2

- a. Кого убеди журналистът, че главната редакторка ви премести в
 Kogo ubedi žurnalistăt, će glavnata redaktorka vi premesti v
 whom convinced the-journalist.M that the-main.F editor.F you.PL moved in

друг екип?
drug ekip?
another team

‘Who did the journalist convince that the editor-in-chief moved you to another team?’

- b. Кого поясни журналистът, че главната редакторка пак премести в
Kogo pojasni žurnalistät, че glavnata redaktorka pak premesti v
whom clarified the-journalist.M that the-main.F editor.F again moved in
друг екип?
drug ekip?
another team

‘Who did the journalist clarify that the editor-in-chief moved to another team again?’

- c. Кого разкри журналистът на следователя, при когото главната
Kogo razkri žurnalistät na sledovatelja, pri kogoto glavnata
whom revealed the-journalist.M to the-investigator.M to whom.M the-main.F
редакторка ви изпрати?
redaktorka vi izprati?
editor.F you.PL sent

‘Who did the journalist reveal to the investigator, to whom the editor-in-chief sent you?’

- d. * Кого позвъни журналистът на следователя, при когото главната
Kogo pozväni žurnalistät na sledovatelja, pri kogoto glavnata
whom telephoned the-journalist.M to the-investigator.M to whom.M the-main.F
редакторка пак изпрати?
redaktorka pak izprati?
editor.F again sent

‘Who did the journalist call the investigator, to whom the editor-in-chief sent again?’

(1858) Subexperiment 2, Quartet 2

- a. Кой кого увери, че новата служителка ви прехвърли в друга
Koj kogo uveri, че novata služitelka vi prehvärlı v druga
who whom assured that the-new.F administrator.F you.PL moved in another
специалност?
specialnost?
specialty

‘Who assured whom that the new administrator moved you to another specialty track?’

- b. Кой кого твърдеше, че новата служителка вече прехвърли в друга
Koj kogo tvärdeše, че novata služitelka veče prehvärlı v druga
who whom claimed that the-new.F administrator.F already moved in another

специалност?
specialnost?
specialty

‘Who claimed that the new administrator already moved whom to another specialty track?’

- c. Кой кого представи на кмета, при когото новата служителка
Koj kogo predstavi na kmeta, pri kogoto novata služitelka
who whom introduce to the-mayor.M to whom.M the-new.F administrator.F
ви покани?
vi pokani?
you.PL invited

‘Who introduced whom to the mayor, to whom the new administrator invited you?’

- d. ? Кой кого доносници на кмета, при когото новата служителка
Koj kogo donosniči na kmeta, pri kogoto novata služitelka
who whom make-report to the-mayor.M to whom.M the-new.F administrator.F
вече покани?
veče pokani?
already invited

‘Who made a malicious report to the mayor, to whom the new administrator already invited whom?’

(1859) Subexperiment 3, Quartet 2

- a. Кого предположи докторът, че медицинската сестра погрешно записа за
Kogo predpolaži doktorăt, če medicinskata sestra pogrešno zapisa za
whom supposed the-doctor.M that the-medical.F sister.F by-mistake signed for
друг час?
drug čas?
another hour

‘Who did the doctor think that the nurse signed up for another appointment by mistake?’

- b. Кой кого предположи, че медицинската сестра погрешно записа за друг
Koj kogo predpolaži, če medicinskata sestra pogrešno zapisa za drug
who whom supposed that the-medical.F sister.F by-mistake signed for another
час?
čas?
hour

‘Who thought that the nurse signed whom up for another appointment by mistake?’

- c. * Кого помогна докторът на физиотерапевта, при когото
 Kogo pomogna doktorät na fizioterapevta, pri kogoto
 whom helped the-doctor.M to the-physiotherapist.M to whom.M
 медицинската сестра погрешно препрати?
 medicinskata sestra pogrešno preprati?
 the-medical.F sister.F by-mistake sent
 ‘Who did the doctor help the physiotherapist, to whom the nurse sent by mistake?’
- d. ? Кой кого помогна на физиотерапевта, при когото медицинската сестра
 Koj kogo pomogna na fizioterapevta, pri kogoto medicinskata sestra
 who whom helped to the-physiotherapist.M to whom.M the-medical.F sister.F
 погрешно препрати?
 pogrešno preprati?
 by-mistake sent
 ‘Who helped the physiotherapist, to whom the nurse sent whom by mistake?’

(1860) Subexperiment 1, Quartet 3

- a. Кого излъга актьорът, че продуцентът те е взел за главната
 Kogo izläga aktjorät, че producentät te e vzел за glavната
 whom lie-to the-actor.M that the-producer.M you.SG.ACC is taken for the-main
 роля?
 rolja?
 role
 ‘Who did the actor lie to that the producer hired you for the leading role?’
- b. Кого реши актьорът, че продуцентът сигурно е взел за главната роля?
 Kogo reši aktjorät, че producentät sigurno e vzел за glavната rolja?
 whom decided the-actor.M that the-producer.M likely is taken for the-main role
 ‘Who did the actor decide that the producer likely hired for the leading role?’
- c. Кого запозна актьорът със сценаристката, на която продуцентът
 Kogo zapozna aktjorät säs scenaristkata, na kojato producentät
 whom acquainted the-actor.M with the-screenwriter.F to whom.F the-producer
 те е представил?
 te e predstavil?
 you.SG.ACC is introduced
 ‘Who did the actor introduce to the screenwriter, to whom the producer introduced
 you?’
- d. * Кого говори актьорът със сценаристката, на която продуцентът
 Kogo govori aktjorät säs scenaristkata, na kojato producentät
 whom spoke the-actor.M with the-screenwriter.F to whom.F the-producer

сигурно е представил?
sigurno e predstavil?
likely is introduced

‘Who did the actor speak to the screenwriter, to whom the producer likely introduced?’

(1861) Subexperiment 2, Quartet 3

- a. Кой кого заблуди, че министърът те е наел за личен
Koj kogo zabludi če ministărăt te e nael za ličen
who whom deceived that the-cabinet-minister.M you.SG.ACC is hired for personal
асистент?
asistent?
assistant

‘Who deceived whom that the cabinet minister hired you as his personal assistant?’

- b. Кой кого помисли, че министърът наскоро е наел за личен
Koj kogo pomisli če ministărăt naskoro e nael za ličen
who whom thought that the-cabinet-minister.M recently is hired for personal
асистент?
asistent?
assistant

‘Who thought that the cabinet minister hired whom as his personal assistant recently?’

- c. Кой кого свърза с посланичката, на която министърът
Koj kogo svărza s poslaničkata, na kojato ministurăt
who whom connected with the-ambassador.F to whom.F the-cabinet-minister.M
те е споменал?
te e spomenal?
you.SG.ACC is mentioned

‘Who put whom in touch with the ambassador, to whom the cabinet minister mentioned you?’

- d. ? Кой кого приказва с посланичката, на която министърът
Koj kogo prikazva s poslaničkata, na kojato ministurăt
who whom spoke with the-ambassador.F to whom.F the-cabinet-minister.M
наскоро е споменал?
naskoro e spomenal?
recently is mentioned

‘Who spoke with the ambassador, to whom the cabinet minister mentioned whom recently?’

(1862) Subexperiment 3, Quartet 3

- a. Кого помисли инвеститoрът, че банкeрът e избрал за съдружник в
 Kogo pomisli investorät, че bankerät e izbral za sädružnik v
 whom thought the-investor.M that the-banker.M is chosen for business-partner in
 компанията?
 kompanijata?
 the-company
 ‘Whom did the investor think that the banker chose as his business partner in the com-
 pany?’
- b. Кой кого помисли, че банкeрът e избрал за съдружник в
 Koj kogo pomisli че bankerät e izbral za sädružnik v
 who whom thought that the-banker.M is chosen for business-partner in
 компанията?
 kompanijata?
 the-company
 ‘Who thought that the banker chose whom as his business partner in the company?’
- c. * Кого разговаря инвеститoрът с депутатката, на която банкeрът e
 Kogo razgovarja investorät s deputatkata, na kojato bankerät e
 whom spoke the-investor.M with the-senator.F to whom.F the-banker.M is
 препоръчал настойчиво?
 preporäčal nastojčivo?
 recommended insistently
 ‘Who did the investor speak with the senator, to whom the banker recommended
 strongly?’
- d. ? Кой кого разговаря с депутатката, на която банкeрът e препоръчал
 Koj kogo razgovarja s deputatkata, na kojato bankerät e preporäčal
 who whom spoke with the-senator.F to whom.F the-banker.M is recommended
 настойчиво?
 nastojčivo?
 insistently
 ‘Who did the investor speak with the senator, to whom the banker recommended
 whom strongly?’

(1863) Subexperiment 1, Quartet 4

- a. Кого предупреди адвокатът, че прокурорът ще ви обвини за
 Kogo predupredi advokatät, че prokurořat šte vi obvini za
 whom warned the-lawyer.M that the-prosecutor.M will you.PL accuse for

грабежа в хотела?
grabeža v hotela?
the-robbery in the-hotel

‘Who did the lawyer warn that the prosecutor will accuse you of the robbery in the hotel?’

- b. Кого предположи адвокатът, че прокурорът ще обвини за грабежа
Kogo predpōloži advokatāt, če prokurorāt šte obvini za grabeža
whom thought the-lawyer.M that the-prosecutor.M will accuse for the-robbery
в хотела ви?
v hotela vi?
in the-hotel your.PL

‘Who did the lawyer think that the prosecutor will accuse of the robbery in your hotel?’

- c. Кого описа адвокатът на съдебните заседатели, на които
Kogo opisa advokatāt na sādebnite zasedатели, na koito
whom described the-lawyer.M to the-court.PL juror.PL to whom.PL
прокурорът ще ви представи?
prokurorāt šte vi predstavī?
the-prosecutor.M will you.PL introduce

‘Who did the lawyer describe to the jurors, to whom the prosecutor will introduce you?’

- d. * Кого досаждаше адвокатът на съдебните заседатели, на които
Kogo dosaždaše advokatāt na sādebnite zasedатели, na koito
whom annoyed the-lawyer.M to the-court.PL juror.PL to whom.PL
прокурорът ще представи днес?
prokurorāt šte predstavī dnes?
the-prosecutor.M will introduce today

‘Who did the lawyer annoy the jurors, to whom the prosecutor will introduce today?’

(1864) Subexperiment 2, Quartet 4

- a. Кой кого предизвести, че полицаят ще ви арестува за кражбата
Koj kogo predizvesti, če policajat šte vi arestuva za kražбата
who whom tell-in-advance that the-policeman.M will you.PL arrest for the-theft
от галерията?
ot galeriata?
from the-gallery

‘Who told whom in advance that the policeman will arrest you for the theft from the gallery?’

- b. Кой кого узна, че полицаят ще арестува за кражбата от
 Koj kogo uzna, če policajāt šte arestuva za kražbata ot
 who whom learned that the-policeman.M will arrest for the-theft from
 художествената галерия?
 hudožestvenata galeriata?
 the-art gallery
 ‘Who learned that the policeman will arrest whom for the theft from the art gallery?’
- c. Кой кого издаде на европейските следователи, на които
 Koj kogo izdade na evropejskite sledovateli, na koito
 who whom revealed to the-European.PL investigator.PL to whom.PL
 полицаят ще ви предаде?
 policajāt šte vi predade?
 the-policeman.M will you.PL turn-over
 ‘Who revealed whom to the European investigators, to whom the policeman will turn
 you over?’
- d. ? Кой кого подаде сигнал на европейските следователи, на които
 Koj kogo podade signal na evropejskite sledovateli, na koito
 who whom gave alert to the-European.PL investigator.PL to whom.PL
 полицаят ще предаде?
 policajāt šte predade?
 the-policeman.M will turn-over
 ‘Who alerted the European investigators, to whom the policeman will turn whom
 over?’

(1865) Subexperiment 3, Quartet 4

- a. Кого повярва репортьорът, че съдията ще осъди за измамата с
 Kogo povjarva reportjorāt, če sādijata šte osādi za izmamata s
 whom believed the-reporter.M that the-judge.M will sentence for the-fraud with
 кредитните карти?
 kreditnite karti?
 the-credit cards
 ‘Whom did the reporter believe that the judge will sentence for the credit card fraud?’
- b. Кой кого повярва, че съдията ще осъди за измамата с кредитните
 Koj kogo povjarva, če sādijata šte osādi za izmamata s kreditnite
 who whom believed that the-judge.M will sentence for the-fraud with the-credit
 карти?
 karti?
 cards

‘Who believed that the judge will sentence whom for the credit card fraud?’

- c. * Кого повярва репортьорът на експертните свидетели, на които съдията
Kogo povjarva reportjorăt na ekspertnite svideteli, na koito šadijata
who believed the-reporter.M to the-expert.PL witness.PL to whom.PL the-judge.M
после ще представи?
posle ŝte predstavı?
afterwards will present

‘Who did the reporter believe the expert witnesses, to whom the judge will present afterwards?’

- d. ? Кой кого повярва на експертните свидетели, на които съдията
Koj kogo povjarva na ekspertnite svideteli, na koito šadijata
who whom believed to the-expert.PL witness.PL to whom.PL the-judge.M
после ще представи?
posle ŝte predstavı?
afterwards will present

‘Who believed the expert witnesses, to whom the judge will present whom afterwards?’

(1866) Subexperiment 1, Quartet 5

- a. На кого докладва аптекарят, че лекарката ти предписа
Na kogo dokladva aptekarjat, ĉe lekarkata ti predpisa
to whom reported the-pharmacist.M that the-doctor.F you.SG.DAT prescribed
лекарство по погрешка?
lekarstvo po pogreška?
medicine.N by mistake

‘Who did the pharmacist report to that the doctor prescribed you medicine by mistake?’

- b. На кого предположи аптекарят, че лекарката пак предписа
Na kogo predpoloži aptekarjat, ĉe lekarkata pak predpisa
to whom suspected the-pharmacist.M that the-doctor.F again prescribed
лекарство по погрешка?
lekarstvo po pogreška?
medicine.N by mistake

‘Who did the pharmacist suspect that the doctor again prescribed medicine to by mistake?’

- c. На кого продаде аптекарят лекарство, което лекарката ти
Na kogo prodade aptekarjat lekarstvo, koeto lekarkata ti
to whom sold the-pharmacist.M medicine.N which.N the-doctor.F you.SG.DAT

предписа по погрешка?
predpisa po pogreška?
prescribed by mistake

‘Who did the pharmacist sell the medicine to, which the doctor prescribed to you by mistake?’

- d. * На кого изхвърли аптекарят лекарство, което лекарката пак
Na kogo izhvǎrli aptekarjat lekarstvo, koeto lekarkata pak
to whom threw-away the-pharmacist.M medicine.N which.N the-doctor.F again
предписа по погрешка?
predpisa po pogreška?
prescribed by mistake

‘Who did the pharmacist throw away the medicine, which the doctor again prescribed to by mistake?’

(1867) Subexperiment 2, Quartet 5

- a. Кой на кого сподели, че шефката ти постави невъзможна задача?
Koj na kogo spodeli, če šefkata ti postavi nevǎzmožna zadača?
who to whom shared that the-boss.F you.SG.DAT gave impossible task
‘Who shared with whom that the boss gave you an impossible task?’
- b. Кой на кого чу, че шефката отново постави невъзможна задача?
Koj na kogo ču, če šefkata otново postavi nevǎzmožna zadača?
who to whom heard that the-boss.F again gave impossible task
‘Who heard that the boss again gave whom an impossible task?’
- c. Кой на кого остави съобщение, което шефката после ти препрати?
Koj na kogo ostavi sǎobštenie, koeto šefkata после ti preprati?
who to whom left message.N which.N the-boss.F afterwards you.SG.DAT
preprati?
resent
‘Who left a message to whom, which the boss then resent to you?’
- d. ? Кой на кого чу съобщение, което шефката после препрати лично?
Koj na kogo ču sǎobštenie, koeto šefkata после preprati lično?
who to whom heard message.N which.N the-boss.F afterwards resent
лично?
lično?
personally
‘Who heard a message, which the boss then resent to whom personally?’

(1868) Subexperiment 3, Quartet 5

- a. На кого разбра барманът, че келнерката току-що сервира четвърта водка?
Na kogo razbra barmanăt, че kelnerkata toku-što servira četvărta vodka?
to whom learned the-barman.M that the-waitress.F just-now served fourth vodka?
vodka?
vodka
'To whom did the barman learn that the waitress served a fourth vodka just now?'
- b. Кой на кого разбра, че келнерката току-що сервира четвърта водка?
Koj na kogo razbra, че kelnerkata toku-što servira četvărta vodka?
who to whom learned that the-waitress.F just-now served fourth vodka
'Who learned that the waitress served a fourth vodka to whom just now?'
- c. * На кого харесваше барманът онова вино, което келнерката току-що сервира?
Na kogo haresvaše barmanăt onova vino, koeto kelnerkata toku-što servira?
to whom liked the-barman.M that wine.N which.N the-waitress.F just-now served
servira?
served
'Who did the barman like that wine, which the waitress served to just now?'
- d. ? Кой на кого харесваше онова вино, което келнерката току-що сервира?
Koj na kogo haresvaše onova vino, koeto kelnerkata toku-što servira?
who to whom liked that wine.N which.N the-waitress.F just-now served
'Who did like that wine, which the waitress served to whom just now?'

(1869) Subexperiment 1, Quartet 6

- a. На кого заяви директорът, че учителката по история ще ви напише лоши оценки?
Na kogo zajavi direktorăt, че učitelkata po istorija šte vi napiše loši ocenki?
to whom claimed the-principal.M that the-teacher.F on history will you.PL write bad grades
'Who did the principal say to that the history teacher will give you bad grades?'
- b. На кого помисли директорът, че учителката по история сигурно ще напише лоши оценки?
Na kogo pomisli direktorăt, че učitelkata po istorija sigurno šte napiše loši ocenki?
to whom thought the-principal.M that the-teacher.F on history likely will write bad grades

‘Who did the principal think that the history teacher will likely give bad grades to?’

- c. На кого каза директорът за оценките, които учителката по
Na kogo kaza direktorăt za ocenkite, koito učitelkata po
to whom said the-principal.M about the-grade.PL which.PL the-teacher.F on
история ще ви напише?
istorija ŝte vi napiŝe?
history will you.PL write

‘Who did the principal tell about the grades, which the history teacher will give you?’

- d. * На кого попита директорът за оценките, които учителката по
Na kogo popita direktorăt za ocenkite, koito učitelkata po
to whom asked the-principal.M about the-grade.PL which.PL the-teacher.F on
история сигурно ще напише?
istorija sigurno ŝte napiŝe?
history likely will write

‘Who did the principal inquire about the grades, which the history teacher will likely give to?’

(1870) Subexperiment 2, Quartet 6

- a. Кой на кого обеща, че управителката на магазина ще ви направи
Koj na kogo obeŝta, ŝe upravitelkata na magazina ŝte vi napravi
who to whom promised that the-manager.F of the-store will you.PL make
голяма отстъпка?
goljama otŝtăpka?
big discount

‘Who promised to whom that the store manager will give you a big discount?’

- b. Кой на кого научи, че управителката на магазина ще направи отстъпка в
Koj na kogo nauči, ŝe upravitelkata na magazina ŝte napravi otŝtăpka v
who to whom learned that the-manager.F of the-store will make discount in
цената?
cenata?
the-price

‘Who heard that the store manager will give a price reduction to whom?’

- c. Кой на кого посочи телевизори, които управителката на магазина ще
Koj na kogo posoči televizori, koito upravitelkata na magazina ŝte
who to whom pointed TV.PL which.PL the-manager.F of the-store will
ви продаде евтино?
vi prodade evtino?
you.PL sell cheaply

‘Who pointed out to whom TV sets, which the manager of the store will sell you cheap?’

- d. ? Кой на кого видя телевизори, които управителката на магазина ще продаде
Koj na kogo vidja televizori, koito upravitelkata na magazina šte prodade
who to whom saw TV.PL which.PL the-manager.F of the-store will sell
много евтино?
mnogo evtino?
very cheaply

‘Who saw TV sets, which the manager of the store will sell to whom very cheap?’

(1871) Subexperiment 3, Quartet 6

- a. На кого мислеше археологът, че ръководителката на експедицията ще
Na kogo misleše arheologät, če räkovoditelkata na ekspedicijata šte
to whom thought the-archeologist.M that the-leader.F of the-expedition will
повери ценните находки?
poveri cennite nahodki?
entrust the-valuable finds

‘Who did the archeologist think that the leader of the expedition will entrust the valuable finds to?’

- b. Кой на кого мислеше, че ръководителката на експедицията ще повери
Koj na kogo misleše, če räkovoditelkata na ekspedicijata šte poveri
who to whom thought that the-leader.F of the-expedition will entrust
ценните находки?
cennite nahodki?
the-valuable finds

‘Who thought that the leader of the expedition will entrust the valuable finds to whom?’

- c. * На кого забрави археологът за находките, които ръководителката
Na kogo zabravi arheologät za nahodkite, koito räkovoditelkata
to whom forgot the-archeologist.M about the-find.PL which.PL the-leader.F
на експедицията ще повери?
na ekspedicijata šte poveri?
of the-expedition will entrust

‘Who did the archeologist forget about the finds which the leader of the expedition will entrust to?’

- d. ? Кой на кого забрави за находките, които ръководителката на
 Кoj na kogo zabravi za nahodki, koito rākovoditelkata na
 who to whom forgot about the-find.PL which.PL the-leader.F of
 експедицията ще повери?
 ekspedicijata ŝte poveri?
 the-expedition will entrust
 ‘Who forgot about the finds which the leader of the expedition will entrust to whom?’

(1872) Subexperiment 1, Quartet 7

- a. На кого каза писателят, че литературният агент ще ти се
 Na kogo kaza pisateljat, ĉe literaturnijat agent ŝte ti se
 to whom said the-writer.M that the-literary.M agent.M will you.SG.DAT REFL
 обади?
 obadi?
 call
 ‘Who did the writer say to that the literary agent will call you?’
- b. На кого реши писателят, че литературният агент ще се обади сега?
 Na kogo reŝi pisateljat, ĉe literaturnijat agent ŝte se obadi sega?
 to whom decided the-writer.M that the-literary.M agent.M will REFL call now
 ‘Who did the writer decide that the literary agent will call now?’
- c. На кого посвети писателят книга, която литературният агент ще
 Na kogo posveti pisateljat kniga, kojato literaturnijat agent ŝte
 to whom dedicated the-writer.M book.F which.F the-literary.M agent.M will
 ти препоръча?
 ti preporāĉa?
 you.SG.DAT recommend
 ‘Who did the writer dedicate a book to, which the literary agent will recommend to
 you?’
- d. * На кого завърши писателят книга, която литературният агент
 Na kogo finished pisateljat kniga, kojato literaturnijat agent
 to whom finished the-writer.M book.F which.F the-literary.M agent.M
 веднага ще препоръча?
 vednaga ŝte preporāĉa?
 immediately will recommend
 ‘Who did the writer finish a book, which the literary agent will immediately recom-
 mend to?’

(1873) Subexperiment 2, Quartet 7

- a. Кой на кого гарантира, че фирменият представител ще ти
 Koj na kogo garantira, če firmenijat predstavitel šte ti
 who to whom guaranteed that the-company's.M representative.M will you.SG.DAT
 се извини?
 se izvini?
 REFL apologize
 'Who guaranteed to whom that the company representative will apologize to you?'
- b. Кой на кого очакваше, че фирменият представител скоро ще се
 Koj na kogo očakvaše, če firmenijat predstavitel skoro šte se
 who to whom expected that the-company's.M representative.M soon will REFL
 извини?
 izvini?
 apologize
 'Who expected that the company representative will soon apologize to whom?'
- c. Кой на кого гарантира промоция, която фирменият
 Koj na kogo garantira promocija, kojato firmenijat
 who to whom guaranteed promotional-offer.F which.F the-company's.M
 представител ще ти осигури?
 predstavitel šte ti osiguri?
 representative.M will you.SG.DAT provide
 'Who guaranteed whom the promotional offer, which the representative of the com-
 pany will provide to you?'
- d. ? Кой на кого забеляза промоция, която фирменият
 Koj na kogo zabeljaza promocija, kojato firmenijat
 who to whom noticed promotional-offer.F which.F the-company's.M
 представител май ще осигури?
 predstavitel maj šte osiguri?
 representative.M maybe will provide
 'Who noticed a promotional offer, which the representative of the company will maybe
 provide to whom?'

(1874) Subexperiment 3, Quartet 7

- a. На кого считаше критикът, че председателят на журито ще връчи
 Na kogo sčitaše kritikāt, če predsdateljat na žurito šte vrači
 to whom considered the-critic.M that the-chairman.M of the-jury will present
 награда?
 nagrada?
 award

‘To whom did the critic think that the chair of the jury will present an award?’

- b. Кой на кого считаше, че председателят на журито ще връчи награда?
Koj na kogo sčitaše, že predsedateljat na žurito šte vrači nagrada?
who to whom considered that the-chairman.M of the-jury will present award
‘Who thought that the chair of the jury will present an award to whom?’
- c. * На кого позна критикът наградата, която председателят на журито ще
Na kogo pozna kritikāt nagradata, kojato predsedateljat na žurito šte
to whom guessed the-critic.M the-award.F which.F the-chairman.M of the-jury will
връчи?
vračī?
present
‘To whom did the critic guess the award, which the chair of the jury will present?’
- d. ? Кой на кого позна наградата, която председателят на журито ще връчи?
Koj na kogo pozna nagradata, kojato predsedateljat na žurito šte vrači?
who to whom guessed the-award.F which.F the-chairman.M of the-jury will present
‘Who knew the award, which the chair of the jury will present to whom?’

(1875) Subexperiment 1, Quartet 8

- a. На кого обясни режисьорът, че театралната актриса ви е разказала
Na kogo objasni režisjorāt, že teatralnata aktrisa vi e razkazala
to whom explained the-director.M that the-theater.F actress.F you.PL is narrated
пиесата?
piesata?
the-play
‘Who did the director explain to that the theater actress has narrated the play to you?’
- b. На кого помисли режисьорът, че театралната актриса вече е разказала
Na kogo pomisli režisjorāt, že teatralnata aktrisa veče e razkazala
to whom thought the-director.M that the-theater.F actress.F already is narrated
пиесата?
piesata?
the-play
‘Who did the director think that the theater actress has already narrated the play to?’
- c. На кого обясни режисьорът пиесата, която театралната актриса ви
Na kogo objasni režisjorāt piesata, kojato teatralnata aktrisa vi
to whom explained the-director.M the-play.F which.F the-theater.F actress.F you.PL
е разказала?
e razkazala?
is narrated

‘Who did the director explain the play to, which the theater actress has already narrated to you?’

- d. * На кого одобри режисьорът пиесата, която театралната актриса вече
Na kogo odobri režisjorăt piesata, kojato teatralnata aktrisa veče
to whom approved the-director.M the-play.F which.F the-theater.F actress.F already
е разказала?
e razkazala?
is narrated

‘Who did the director approve of the play, which the theater actress has already narrated to?’

(1876) Subexperiment 2, Quartet 8

- a. Кой на кого съобщи, че филмовата звезда ви е изпратила покана?
Koj na kogo säobšti, če filmovata zvezda vi e izpratila pokana?
who to whom announced that the-movie.F star.F you.PL is sent invitation
‘Who announced to whom that the movie star has sent you an invitation?’
- b. Кой на кого сънува, че филмовата звезда лично е изпратила покана?
Koj na kogo sänuva, če filmovata zvezda lično e izpratila pokana?
who to whom dreamed that the-movie.F star.F personally is sent invitation
‘Who dreamed that the movie star has personally sent an invitation to whom?’
- c. Кой на кого показва покана, която филмовата звезда ви е изпратила?
Koj na kogo pokaza pokana, kojato filmovata zvezda vi e izpratila?
who to whom showed invitation.F which.F the-movie.F star.F you.PL is sent
‘Who showed whom of the invitation which the movie star has sent you?’
- d. ? Кой на кого намери покана, която филмовата звезда лично е
Koj na kogo nameri pokana, kojato filmovata zvezda lično e
who to whom found invitation.F which.F the-movie.F star.F personally is
изпратила?
izpratila?
sent

‘Who found an invitation which the movie star has personally sent to whom?’

(1877) Subexperiment 3, Quartet 8

- a. На кого разбра фотографът, че известната дизайнерка е
Na kogo razbra fotografăt, če izvestnata dizajnerka e
to whom understood the-photographer.M that the-famous.F designer.F is

продала колекцията си?
prodala kolekcijata si?
sold the-collection REFL

‘Who did the photographer understand that the famous designer has sold her collection to?’

- b. Кой на кого разбра, че известната дизайнерка е продала колекцията
Кoj на kogo razbra, че izvestnata dizajnerka e prodala kolekcijata
who to whom understood that the-famous.F designer.F is sold the-collection
си?
si?
REFL

‘Who understood that the famous designer has sold her collection to whom?’

- c. * На кого снима фотографът колекция, която известната
Na kogo snima fotografat kolekcija, kojato izvestnata
to whom took-pictures-of the-photographer.M collection.F which.PL the-famous.F
дизайнерка току-що е продала?
dizajnerka toku-što e prodala?
designer.F just-now is sold

‘Who did the photographer take pictures of a collection, which the famous designer has sold to just now?’

- d. ? Кой на кого снима колекция, която известната дизайнерка
Кoj на kogo snima kolekcija, kojato izvestnata dizajnerka
who to whom took-pictures-of collection.F which.PL the-famous.F designer.F
току-що е продала?
toku-što e prodala?
just-now is sold

‘Who took pictures of a collection, which the famous designer has sold to whom just now?’

C.2 Lists with fillers in pseudorandomized order

C.2.1 List 1

- (1878) * С кого не беше сигурна за успеха Надя, въпреки че беше разговаряла?
with whom not was sure about the-success Nadja although that was spoken
‘Who was Nadja not sure about the success, although she had spoken with?’

CONDITION: Filler (ungrammatical)

- (1879) На кого посвети писателят книга, която литературният агент ще ти
Na kogo posveti pisateljat kniga, kojato literaturnijat agent šte ti
to whom dedicated the-writer.M book.F which.F the-literary.M agent.M will you.SG.DAT
препоръча?
preporăĉa?
recommend

‘Who did the writer dedicate a book to, which the literary agent will recommend to you?’

CONDITION: Target (short × island)

- (1880) Не можех да си спомня къде съм виждала този човек преди.
not was-able to REFL remember where am seen.F this man before
‘I couldn’t remember where I had seen this man before.’

CONDITION: Filler (grammatical)

- (1881) На кого заяви директорът, че учителката по история ще ви напише
Na kogo zajavi direktorăt, ĉe učitelkata po istorija šte vi napiše
to whom claimed the-principal.M that the-teacher.F on history will you.PL write
лоши оценки?
loši ocenki?
bad grades

‘Who did the principal say to that the history teacher will give you bad grades?’

CONDITION: Target (short × non-island)

- (1882) * Кого съдейства футболистът на федерацията, на която треньорът ще
Kogo sădejstva futbolistăt na federacijata na kojato trenjorăt šte
whom helped the-soccer-player.M to the-federation.F to which.F the-trainer.M will
предложи за награда?
predloži za nagrada?
offer for award

‘Who did the soccer player provide help to the federation, to which the trainer will suggest for an award?’

CONDITION: Target (one × island)

- (1883) Какво ще им отговориш, ако ти предложат членство в техния съюз?
what will them answer.2.SG if you offer.3.PL membership in their union
‘What will you answer them if they offer you membership in their union?’

CONDITION: Filler (grammatical)

- (1884) * Ще отидем при човека, когото бяхме говорили за, че ще помогне ни.
 will go.I.PL to the-man who had.I.PL spoken.I.PL about that will help.3.SG us
 ‘We will go see the man, who we had talked about that he will help us.’
 CONDITION: Filler (ungrammatical)
- (1885) * Кого кой се чудеха приятелите, дали ще покани да танцува на
 whom who REFL wondered the-friends whether will invite.3.SG to dance.3.SG at
 абитуриенския бал?
 the-prom ball
 ‘Who did the friends wonder whether he will invite whom to dance at the prom?’
 CONDITION: Filler (ungrammatical)
- (1886) Кого предположи адвокатът, че прокурорът ще обвини за грабежа в
 Kogo predpolaži advokatăt, че prokurořăt ŝte obvini za grabeža v
 whom thought the-lawyer.M that the-prosecutor.M will accuse for the-robbery in
 хотела ви?
 hotela vi?
 the-hotel your.PL
 ‘Who did the lawyer think that the prosecutor will accuse of the robbery in your hotel?’
 CONDITION: Target (long × non-island)
- (1887) * Някой открадна трофея, който Мария участва в състезанието, защото
 someone stole the-trophy which Maria participated in the-competition because
 искаше да получи.
 wanted.3.SG to receive.3.SG
 ‘Someone stole the trophy, which Maria participated in the competition because she wanted
 to receive.’
 CONDITION: Filler (ungrammatical)
- (1888) Кой на кого обеща, че управителката на магазина ще ви направи голяма
 Кој на kogo obeŝta, че upravitelkata na magazina ŝte vi napravi goljama
 who to whom promised that the-manager.F of the-store will you.PL make big
 отстъпка?
 otstăpka?
 discount
 ‘Who promised to whom that the store manager will give you a big discount?’
 CONDITION: Target (short × non-island)

- (1889) * Колко милиона си доволен, защото изграждането на космическа станция
 how-many millions are.2.SG pleased because the-building of space station
 няма да струва?
 will-not to cost.3.SG
 ‘How many millions are you pleased because the building of a space station is not going to cost?’
 CONDITION: Filler (ungrammatical)
- (1890) * На кого кой питаха родителите класната, дали е помогнал на
 to whom who asked-3.PL the-parents the-teacher.F whether is helped.M on
 контролното?
 the-test
 ‘Who did the parents ask the teacher whether he helped whom on the test?’
 CONDITION: Filler (ungrammatical)
- (1891) * Нямаше съсед, когото Димо да не се беше похвалил на с придобивка си.
 not-was neighbor who Dimo to not REFL had bragged to with acquisition REFL
 ‘There was no neighbor, to whom Dimo had not bragged about his new acquisition.’
 CONDITION: Filler (ungrammatical)
- (1892) * Коя разбра Борис, дето му приятелката ще гледат пиеса довечера театър
 which.F learned.3.SG Boris that his girlfriend.3.SG will see.3.PL play tonight theater
 новия?
 the-new
 ‘Which play did Boris learn that his girlfriend will see tonight in the new theater?’
 CONDITION: Filler (ungrammatical)
- (1893) * На кого ще получи брат ти покана за работа, ако го представят?
 to whom will receive brother yours invitation for job if him introduce-3.PL
 ‘Who will your brother receive a job offer if they introduce him to?’
 CONDITION: Filler (ungrammatical)
- (1894) Кой може да ме посъветва дали да остана в отбора?
 who can.3.SG to me advize.3.SG whether to remain.3.SG in the-team
 ‘Who can advise me whether to remain on the team?’
 CONDITION: Filler (grammatical)
- (1895) Избирателите би трябвало много добре да си помислят за кого ще гласуват.
 the-voters would have-to very well to REFL think.3.PL for whom will vote.3.PL

‘The voters should think very hard who to vote for.’

CONDITION: Filler (grammatical)

- (1896) * Кого до нея достигна вестта, че са преизбрали за още един мандат?
who to her reached the-news that are re-elected for yet-another one term
‘Who did the news reach her that they re-elected for one more term?’

CONDITION: Filler (ungrammatical)

- (1897) * Какво кой не си спомняше секретарката, че ѝ беше поръчал?
what who not REFL remembered the-secretary.F that her was asked
‘Who didn’t the secretary remember had asked of her what?’

CONDITION: Filler (ungrammatical)

- (1898) * Европейско художникът обяви началото своето турне с изложба
European the-artist announced the-beginning self’s tour with exhibition
маслени картина зад столицата.
oil.PL painting.SG behind the-capital
‘The artist announced the beginning of his European tour with an exhibition of oil paintings
in the capital city.’

CONDITION: Filler (ungrammatical)

- (1899) Въпреки че е на 70 години, известният рок-музикант продължава да изнася
although that is at 70 years the-famous rock-musician continues to give
концерти.
concerts
‘Although he is 70 years-old, the famous rock musician continues to perform at concerts.’

CONDITION: Filler (grammatical)

- (1900) * След тегленето числа печелившите, парична награди тотализатора не
after the-drawing number.PL the-winning.PL monetary.SG award.PL the-lottery not
ще продължат да расте.
will continue.PL to grow.SG
‘After the drawing of the winning numbers, the monetary award of the lottery will not con-
tinue to rise.’

CONDITION: Filler (ungrammatical)

- (1901) Кой кога ще реши към коя коалиция да се присъедини партията преди
 who when will decide.3.SG to which coalition to REFL join.3.SG the-party before
 изборите?
 the-elections
 ‘Who will decide when which coalition the party should join before the elections?’
 CONDITION: Filler (grammatical)
- (1902) * Чухме за сметките, които министърът опроверга съобщението, че
 heard.I.PL about the-accounts which the-minister denied the-announcement that
 държи в швейцарски банки.
 keep.3.SG in Swiss banks
 ‘We heard about the accounts, which the minister denied the announcement that he keeps in
 Swiss banks.’
 CONDITION: Filler (ungrammatical)
- (1903) * Любимо Виктор сготви твоето ястие, а забрави сложи подправки сервира студено
 favorite Viktor cooked your-the dish but forgot put spices served cold
 съвсем.
 entirely
 ‘Viktor cooked your favorite dish, but he forgot to put seasoning and served it completely
 cold.’
 CONDITION: Filler (ungrammatical)
- (1904) На кого показва детската лекарка как да захрани бебето си със
 to whom showed.3.SG the-child doctor how to start-feeding the-baby REFL with
 зеленчукови пюрета?
 vegetable purees
 ‘Who did the pediatrician show to how to start feeding their baby with vegetable purees?’
 CONDITION: Filler (grammatical)
- (1905) * Какво е получил императорът предсказанието на пророчицата, че неговият син ще
 what is received the-emperor the-prophecy of the-prophetess that his son will
 завладее?
 conquer
 ‘What has the emperor received the prophecy of the prophetess that his son will conquer?’
 CONDITION: Filler (ungrammatical)

- (1906) * Ветеринарят каза, дето кученце малкото бяха здрава, след когато прегледа го внимателно.
 the-veterinarian said that dog.N the-little.N were healthy.PL after when examined it carefully
 ‘The vet said that the little dog is healthy after s/he examined it carefully.’
 CONDITION: Filler (ungrammatical)
- (1907) * Колко шампанско сега го е срам Пламен, защото изпи на рождения ден?
 how-much champagne now him is shame Plamen because drank.3.SG at the-birth day
 ‘How much champagne is Plamen now ashamed because he drank at the birthday party?’
 CONDITION: Filler (ungrammatical)
- (1908) Кого повярва репортьорът, че съдията ще осъди за измамата с кредитните карти?
 Kogo povjarva reportjorăt, če sădijata šte osădi za izmamata s kreditnite karti?
 whom believed the-reporter.M that the-judge.M will sentence for the-fraud with the-credit cards
 ‘Whom did the reporter believe that the judge will sentence for the credit card fraud?’
 CONDITION: Target (one × non-island)
- (1909) ? Кой кого звънна на директорката, на която началникът май ще препоръча?
 Koj kogo zvăнна na direktorkata, na kojato načalnikăt maj šte preporăča?
 who whom phoned to the-director.F to whom.F the-boss.M maybe will recommend
 ‘Who called the director, to whom the boss will maybe recommend whom?’
 CONDITION: Target (long × island)
- (1910) * На кой ще ходите курорт морска тази годината преди като заминете под Индия?
 to which.M will go.2.PL resort.M sea.F this the-year before when leave.2.PL under India
 ‘Which sea resort will you go to this year before you leave for India?’
 CONDITION: Filler (ungrammatical)
- (1911) * Кого изложиха в галерията рисунка на, преди че обявих я на търг?
 who exhibited.3.PL in the-gallery drawing of before that announced.I.SG it at auction
 ‘Who did they exhibit a drawing by at the gallery, before they were to announce it at auction?’

CONDITION: Filler (ungrammatical)

- (1912) Често виждаше в кафенето младата жена, която явно живееше в
often saw.3.SG in the-coffee-shop the-young woman who evidently lived.3.SG in
квартала.
the-neighborhood
'In the coffee shop he/she often saw the young woman, who apparently lived in the neighbor-
hood.'

CONDITION: Filler (grammatical)

- (1913) * На кого изхвърли аптекарят лекарство, което лекарката пак предписа
Na kogo izhvǎrli aptekarjat lekarstvo, koeto lekarkata pak predpisa
to whom threw-away the-pharmacist.M medicine.N which.N the-doctor.F again prescribed
по погрешка?
po pogreška?
by mistake
'Who did the pharmacist throw away the medicine, which the doctor again prescribed to by
mistake?'

CONDITION: Target (long × island)

- (1914) * На кого харесваше барманът онова вино, което келнерката току-що
Na kogo haresvaše barmanăt onova vino, koeto kelnerkata toku-što
to whom liked the-barman.M that wine.N which.N the-waitress.F just-now
сервира?
servira?
served
'Who did the barman like that wine, which the waitress served to just now?'

CONDITION: Target (one × island)

- (1915) * Какво е доволна пенсионерката от новината, че правителството ще увеличи
what is pleased the-pensioner from the-news that the-government will increase
следващата година?
the-next year
'What is the pensioner pleased with the news that the government will increase next year?'

CONDITION: Filler (ungrammatical)

- (1916) Явно му се говореше, защото ме спря и ми предложи цигара.
clearly him REFL talk.3.SG because me stopped.3.SG and me offered.3.SG cigarette
'He clearly wanted to talk because he stopped me and offered me a cigarette.'

CONDITION: Filler (grammatical)

- (1917) * Кого писа професорът на комисията, на която ректорът
Kogo pisa profesorăt na komisijata, na kojato rektorăt
whom wrote the-professor.M at the-committee.F to which.F the-university-president.M
скоро ще представи?
skoro ŝte predstavī?
soon will introduce
'Who did the professor write to the committee, to which the university president will soon
introduce?'

CONDITION: Target (long × island)

- (1918) Кой кого предположи, че медицинската сестра погрешно записа за друг час?
Koj kogo predpoloži, ĉe medicinskata sestra pogrešno zapisa za drug ĉas?
who whom supposed that the-medical.F sister.F by-mistake signed for another hour
'Who thought that the nurse signed whom up for another appointment by mistake?'

CONDITION: Target (two × non-island)

- (1919) * Съдия пловдивският ръководи ще следващата мач между ЦСКА,
referee the-Plovdiv.Adj supervise will the-next.F game.M between CSKA
съобщиха телевизията.
announced-3.PL TV
'The referee from Plovdiv will supervise the next game between CSKA (and X), it was an-
nounced on TV.'

CONDITION: Filler (ungrammatical)

- (1920) * Студентката намери книгата, която фактът, че все още продават, ме учуди.
the-student.F found the-book which the-fact that allways still sell.3.PL me surprised
'The student found the book, which the fact that they still sell surprised me.'

CONDITION: Filler (ungrammatical)

- (1921) Кой кого свърза с посланичката, на която министърът
Koj kogo svărza s poslaniĉkata, na kojato ministurăt
who whom connected with the-ambassador.F to whom.F the-cabinet-minister.M
те е споменал?
te e spomenal?
you.SG.ACC is mentioned
'Who put whom in touch with the ambassador, to whom the cabinet minister mentioned
you?'

CONDITION: Target (short × island)

- (1922) Кой кого увери, че новата служителка ви прехвърли в друга
Koj kogo uveri, че novata služitelka vi prehvārli v druga
who whom assured that the-new.F administrator.F you.PL moved in another
специалност?
specialnost?
specialty

‘Who assured whom that the new administrator moved you to another specialty track?’

CONDITION: Target (short × non-island)

- (1923) * Какво липсата на ти попречи да възстановиш по-бързи грипа, която
what the-lack of you prevented.3.SG to recover.2.SG faster.ADJ.PL the-flue.M which.F
изкара през зимата?
had.2.SG during the-winter

‘What did the lack of prevent you from recovering faster after the flu, which you had in the winter?’

CONDITION: Filler (ungrammatical)

- (1924) * Какво откриха дълги опит учените метод за борба със,
what discovered.3.PL long.PL experiment.SG the-scientists method for fighting with
която е болест неизлечим?
which.F is disease.F incurable.M

‘What did the scientists, after long experiments, discover a method for fighting with, which is an incurable disease that has been incurable?’

CONDITION: Filler (ungrammatical)

- (1925) * Скъпата се скъса при прането тениска червена, но той реши търси
the-expensive.F REFL tore during washing t-shirt.F red-F but he decided look-for
друг такъв.
another.M such-one.M

‘The expensive t-shirt tore during washing, but he decided to look for another similar one.’

CONDITION: Filler (ungrammatical)

- (1926) На кого помисли режисьорът, че театралната актриса вече е разказала
Na kogo pomisli režisjorāt, че teatralnata aktrisa veče e razkazala
to whom thought the-director.M that the-theater.F actress.F already is narrated
пиесата?
piesata?
the-play

‘Who did the director think that the theater actress has already narrated the play to?’

CONDITION: Target (long × non-island)

- (1927) Председателят на министерския съвет не се яви на
the-chair of the-minister council not REFL appeared.3.SG at
прес-конференцията, която сам беше свикал.
the-press-conference which himself was arranged.3.SG

‘The prime minister did not appear at the press conference, which he himself had arranged.’

CONDITION: Filler (grammatical)

- (1928) Кого запозна актьорът със сценаристката, на която продуцентът
Kogo zapozna aktjorăt säs scenaristkata, na kojato producentăt
whom acquainted the-actor.M with the-screenwriter.F to whom.F the-producer
те е представил?
te e predstavil?
you.SG.ACC is introduced

‘Who did the actor introduce to the screenwriter, to whom the producer introduced you?’

CONDITION: Target (short × island)

- (1929) Кой кого попита тази сутрин дали хотелът предлага на клиентите
who whom asked.3.SG this morning whether the-hotel offer.3.SG to the-clients
безплатни услуги?
complementary services

‘Who asked whom this morning whether the hotel offers its clients complementary services?’

CONDITION: Filler (grammatical)

- (1930) * Къде мислиш, че надеждата, че ще го приемат, го крепеше гимназията?
where think.2.SG that the-hope that will him accept him supported high-school

‘Where do you think that the hope that he will be accepted gave him strength in high school?’

CONDITION: Filler (ungrammatical)

- (1931) Кого убеди журналистът, че главната редакторка ви премести в друг
Kogo ubedi žurnalistăt, če glavnata redaktorka vi premesti v drug
whom convinced the-journalist.M that the-main.F editor.F you.PL moved in another
екип?
ekip?
team

‘Who did the journalist convince that the editor-in-chief moved you to another team?’

CONDITION: Target (short × non-island)

- (1932) Някой каза на Владо, че попът имал най-хубавата ракия в селото.
 someone said to Vlado that the-priest had the-best brandy in the-village
 ‘Someone said to Vlado that the priest had the best brandy in the village.’
 CONDITION: Filler (grammatical)
- (1933) *Кои препоръча ти жена му Иван италианска филми, без да е ги
 which.PL recommended you wife his Ivan Italian.SG movie.PL without to is them
 гледали?
 seen.PL
 ‘Which Italian movies did Ivan’s wife recommend you without seeing them?’
 CONDITION: Filler (ungrammatical)
- (1934) Кметът на Бургас обеща, че ремонтът на морската градина ще приключи
 the-mayor of Burgas promised that the-rennovation of the-sea garden will finish
 скоро.
 soon
 ‘The mayor of Burgas promised that the rennovation of the waterfront park will finish soon.’
 CONDITION: Filler (grammatical)
- (1935) Кой на кого сънува, че филмовата звезда лично е изпратила покана?
 Koj na kogo sǎnuva, ĉe filmovata zvezda liĉno e izpratila pokana?
 who to whom dreamed that the-movie.F star.F personally is sent invitation
 ‘Who dreamed that the movie star has personally sent an invitation to whom?’
 CONDITION: Target (long × non-island)
- (1936) Кой на кого мислеше, че ръководителката на експедицията ще повери ценните
 Koj na kogo misleše, ĉe rǎkovoditelkata na ekspedicijata šte poveri cennite
 who to whom thought that the-leader.F of the-expedition will entrust the-valuable
 находки?
 nahodki?
 finds
 ‘Who thought that the leader of the expedition will entrust the valuable finds to whom?’
 CONDITION: Target (two × non-island)
- (1937) Пътниците във всички нощни влакове, които пресичат границите на Балканите,
 the-passengers in all night trains which cross the-borders of the-Balkans
 си приличат.
 REFL look-alike
 ‘The passengers in the night trains that cross the borders of the Balkans look alike.’

CONDITION: Filler (grammatical)

- (1938) Кой на кого гарантира промоция, която фирменият представител
Koj na kogo garantira promocija, kojato firmenijat predstavitel
who to whom guaranteed promotional-offer.F which.F the-company's.M representative.M
ще ти осигури?
šte ti osiguri?
will you.SG.DAT provide
'Who guaranteed whom the promotional offer, which the representative of the company will provide to you?'

CONDITION: Target (short × island)

- (1939) * Най-накрая прочетох статията, която авторът на причини скандал като се
finally read.I.SG the-article which the-author of caused a-scandal when REFL
сби рецензента.
fought the-reviewer
'Finally I read the article, which the author of caused a scandal as he started a fight with the reviewer.'

CONDITION: Filler (ungrammatical)

- (1940) ? Кой на кого чу съобщение, което шефката после препрати лично?
Koj na kogo ču sãobštenie, koeto šefkata posle preprati lično?
who to whom heard message.N which.N the-boss.F afterwards resent personally
'Who heard a message, which the boss then resent to whom personally?'

CONDITION: Target (long × island)

- (1941) ? Кой кого разговаря с депутатката, на която банкерът е препоръчал
Koj kogo razgovarja s deputatkata, na kojato bankerät e preporãčal
who whom spoke with the-senator.F to whom.F the-banker.M is recommended
настойчиво?
nastojčivo?
insistently
'Who did the investor speak with the senator, to whom the banker recommended whom strongly?'

CONDITION: Target (two × island)

- (1942) * Какво беше особено впечатлена публиката, защото Елена беше изобретила в 6-ти
what was particularly impressed the-audience because Elena had discovered in 6th

клас?
grade

‘What was the audience particularly impressed because Elena had invented in 6th grade?’

CONDITION: Filler (ungrammatical)

- (1943) На Атанас му се стори, че ченгето пред посолството го гледа
to Atanas him REFL appeared that the-cop in-front-of the-embassy him looks-at
подозрително.
with-suspicion

‘It appeared to Atanas that the cop in front of the embassy is looking at him with suspicion.’

CONDITION: Filler (grammatical)

- (1944) Шефът на охраната разказа какви мерки се вземат срещу кражбите на
the-boss of the-security told.3.SG what measures REFL take.3.PL against the-theft of
гориво.
petrol

‘The head of security described what measures are being taken to prevent the theft of petrol.’

CONDITION: Filler (grammatical)

- (1945) ? Кой на кого позна наградата, която председателят на журито ще връчи?
Koj na kogo pozna nagradata, kojato predsdateljat na žurito šte vrāči?
who to whom guessed the-award.F which.F the-chairman.M of the-jury will present

‘Who knew the award, which the chair of the jury will present to whom?’

CONDITION: Target (two × island)

- (1946) Кой си поръча самолет за милиони, въпреки че кралството му затъва в
who REFL ordered.3.SG airplane for millions although that the-kingdom his drowns in
дългове?
debts

‘Who ordered for himself a plane costing millions, although his kingdom is drowning in debt?’

CONDITION: Filler (grammatical)

- (1947) Кой кого узна, че полицаят ще арестува за кражбата от
Koj kogo uzna, če policajat šte arestuva za kražbata ot
who whom learned that the-policeman.M will arrest for the-theft from
художествената галерия?
hudožestvenata galeriata?
the-art gallery

‘Who learned that the policeman will arrest whom for the theft from the art gallery?’

CONDITION: Target (long × non-island)

- (1948) След поредния провал реших, че трябва да приема радикално нов подход.
after the-latest failure decided.I.SG that must to adopt.I.SG radically new approach
‘After the latest failure, I decided that I have to adopt a radically new approach.’

CONDITION: Filler (grammatical)

- (1949) На кого разбра фотографът, че известната дизайнерка е продала
Na kogo razbra fotografăt, ĉe izvestnata dizajnerka e prodala
to whom understood the-photographer.M that the-famous.F designer.F is sold
колекцията си?
kolekcijata si?
the-collection REFL

‘Who did the photographer understand that the famous designer has sold her collection to?’

CONDITION: Target (one × non-island)

C.2.2 List 2

- (1950) * Някой открадна трофея, който Мария участва в състезанието, защото
someone stole the-trophy which Maria participated in the-competition because
искаше да получи.
wanted.3.SG to receive.3.SG

‘Someone stole the trophy, which Maria participated in the competition because she wanted to receive.’

CONDITION: Filler (ungrammatical)

- (1951) Кого каза професорът, че ректорът ще назначи на работа тази
Kogo kaza profesorăt, ĉe rektorăt ŝte naznaĉi na rabota тази
whom said the-professor.M that the-university-president.M will appoint to work this
есен?
esen?
fall

‘Who did the professor say that the university president will hire this fall?’

CONDITION: Target (long × non-island)

- (1952) Кого описа адвокатът на съдебните заседатели, на които прокурорът
 Kogo opisa advokatăt na sădebnite zasedатели, na koito prokurorăt
 whom described the-lawyer.M to the-court.PL juror.PL to whom.PL the-prosecutor.M
 ще ви представи?
 šte vi predstavi?
 will you.PL introduce
 ‘Who did the lawyer describe to the jurors, to whom the prosecutor will introduce you?’
 CONDITION: Target (short × island)
- (1953) * На кой ще ходите курорт морска тази годината преди като заминете под
 to which.M will go.2.PL resort.M sea.F this the-year before when leave.2.PL under
 Индия?
 India
 ‘Which sea resort will you go to this year before you leave for India?’
 CONDITION: Filler (ungrammatical)
- (1954) * Какво кой не си спомняше секретарката, че ѝ беше поръчал?
 what who not REFL remembered the-secretary.F that her was asked
 ‘Who didn’t the secretary remember had asked of her what?’
 CONDITION: Filler (ungrammatical)
- (1955) * Ветеринарят каза, дето кученце малкото бяха здрава, след когато прегледа го
 the-veterinarian said that dog.N the-little.N were healthy.PL after when examined it
 внимателно.
 carefully
 ‘The vet said that the little dog is healthy after s/he examined it carefully.’
 CONDITION: Filler (ungrammatical)
- (1956) Кой кого заблуди, че министърът те е наел за личен
 Koj kogo zabludi šte ministărăt te e nael za ličen
 who whom deceived that the-cabinet-minister.M you.SG.ACC is hired for personal
 асистент?
 asistent?
 assistant
 ‘Who deceived whom that the cabinet minister hired you as his personal assistant?’
 CONDITION: Target (short × non-island)
- (1957) Избирателите би трябвало много добре да си помислят за кого ще гласуват.
 the-voters would have-to very well to REFL think.3.PL for whom will vote.3.PL
 ‘The voters should think very hard who to vote for.’

CONDITION: Filler (grammatical)

- (1958) * Къде мислиш, че надеждата, че ще го приемат, го крепеше гимназията?
where think.2.SG that the-hope that will him accept him supported high-school
'Where do you think that the hope that he will be accepted gave him strength in high school?'

CONDITION: Filler (ungrammatical)

- (1959) ? Кой на кого снима колекция, която известната дизайнерка току-що е
Koj na kogo snima kolekcija, kojato izvestnata dizajnerka toku-što e
who to whom took-pictures-of collection.F which.PL the-famous.F designer.F just-now is
продала?
prodala?
sold
'Who took pictures of a collection, which the famous designer has sold to whom just now?'

CONDITION: Target (two × island)

- (1960) * Съдия пловдивският ръководи ще следващата мач между ЦСКА,
referee the-Plovdiv.Adj supervise will the-next.F game.M between CSKA
съобщиха телевизията.
announced-3.PL TV
'The referee from Plovdiv will supervise the next game between CSKA (and X), it was announced on TV.'

CONDITION: Filler (ungrammatical)

- (1961) * След тегленето числа печелившите, парична награди тотализатора не
after the-drawing number.PL the-winning.PL monetary.SG award.PL the-lottery not
ще продължат да расте.
will continue.PL to grow.SG
'After the drawing of the winning numbers, the monetary award of the lottery will not continue to rise.'

CONDITION: Filler (ungrammatical)

- (1962) На кого предположи аптекарят, че лекарката пак предписа лекарство
Na kogo predpolaži artekarjat, če lekarkata pak predpisa lekarstvo
to whom suspected the-pharmacist.M that the-doctor.F again prescribed medicine.N
по погрешка?
po pogreška?
by mistake
'Who did the pharmacist suspect that the doctor again prescribed medicine to by mistake?'

CONDITION: Target (long × non-island)

- (1963) На кого разбра барманът, че келнерката току-що сервира четвърта водка?
Na kogo razbra barmanăt, ĉe kelnerkata toku-što servira ĉetvărta vodka?
to whom learned the-barman.M that the-waitress.F just-now served fourth vodka
'To whom did the barman learn that the waitress served a fourth vodka just now?'

CONDITION: Target (one × non-island)

- (1964) На кого показва детската лекарка как да захрани бебето си със
to whom showed.3.SG the-child doctor how to start-feeding the-baby REFL with
зеленчукови пюрета?
vegetable purees
'Who did the pediatrician show to how to start feeding their baby with vegetable purees?'

CONDITION: Filler (grammatical)

- (1965) Кой на кого считаше, че председателят на журито ще връчи награда?
Koj na kogo sĉitaše, ĉe predsedateljat na žurito šte vřăĉi nagrada?
who to whom considered that the-chairman.M of the-jury will present award
'Who thought that the chair of the jury will present an award to whom?'

CONDITION: Target (two × non-island)

- (1966) * Европейско художникът обяви началото своето турне с изложба
European the-artist announced the-beginning self's tour with exhibition
маслени картина зад столицата.
oil.PL painting.SG behind the-capital
'The artist announced the beginning of his European tour with an exhibition of oil paintings
in the capital city.'

CONDITION: Filler (ungrammatical)

- (1967) * Скъпата се скъса при прането тениска червена, но той реши търси
the-expensive.F REFL tore during washing t-shirt.F red-F but he decided look-for
друг такъв.
another.M such-one.M
'The expensive t-shirt tore during washing, but he decided to look for another similar one.'

CONDITION: Filler (ungrammatical)

- (1968) * С кого не беше сигурна за успеха Надя, въпреки че беше разговаряла?
with whom not was sure about the-success Nadja although that was spoken
'Who was Nadja not sure about the success, although she had spoken with?'

CONDITION: Filler (ungrammatical)

- (1969) * Какво е получил императорът предсказанието на пророчицата, че неговият син ще
what is received the-emperor the-prophecy of the-prophetess that his son will
завладее?
conquer
'What has the emperor received the prophecy of the prophetess that his son will conquer?'

CONDITION: Filler (ungrammatical)

- (1970) ? Кой кого повярва на експертните свидетели, на които съдията после ще
Koj kogo povjarva na ekspertnite svideteli, na koito sadijata после ще
представи?
predstavi?
present
'Who believed the expert witnesses, to whom the judge will present whom afterwards?'

CONDITION: Target (two × island)

- (1971) Кой кого обяви вчера, че началникът ще повиши след два месеца?
Koj kogo objavi včera, čе načalnikāt šte повиši sled dva meseca?
who whom declared yesterday that the-boss.M will promote after two months
'Who declared yesterday that the boss will promote whom in two months?'

CONDITION: Target (long × non-island)

- (1972) След поредния провал реших, че трябва да приема радикално нов подход.
after the-latest failure decided.I.SG that must to adopt.I.SG radically new approach
'After the latest failure, I decided that I have to adopt a radically new approach.'

CONDITION: Filler (grammatical)

- (1973) ? Кой кого доносници на кмета, при когото новата служителка вече
Koj kogo donosniči na kmeta, pri kogoto novata služitelka вече
покани?
pokani?
invited
'Who made a malicious report to the mayor, to whom the new administrator already invited
whom?'

CONDITION: Target (long × island)

- (1974) * Нямахте съсед, когото Димо да не се беше похвалил на с придобивка си.
 not-was neighbor who Dimo to not REFL had bragged to with acquisition REFL
 ‘There was no neighbor, to whom Dimo had not bragged about his new acquisition.’
 CONDITION: Filler (ungrammatical)
- (1975) Кого смяташе футболистът, че треньорът ще уволни от отбора след
 Kogo smjataše futbolistăt, če trenjorăt šte uvolni ot otbora sled
 whom thought the-soccer-player.M that the-trainer.M will fire from the-team after
 поредната загуба?
 porednata zaguba?
 the-latest loss
 ‘Who did the soccer player think that the trainer will fire from the team after the latest loss?’
 CONDITION: Target (one × non-island)
- (1976) * Какво беше особено впечатлена публиката, защото Елена беше изобретила в 6-ти
 what was particularly impressed the-audience because Elena had discovered in 6th
 клас?
 grade
 ‘What was the audience particularly impressed because Elena had invented in 6th grade?’
 CONDITION: Filler (ungrammatical)
- (1977) * Какво откриха дълги опит учените метод за борба със,
 what discovered.3.PL long.PL experiment.SG the-scientists method for fighting with
 която е болест неизлечим?
 which.F is disease.F incurable.M
 ‘What did the scientists, after long experiments, discover a method for fighting with, which
 is an incurable disease that has been incurable?’
 CONDITION: Filler (ungrammatical)
- (1978) Кой може да ме посъветва дали да остана в отбора?
 who can.3.SG to me advize.3.SG whether to remain.3.SG in the-team
 ‘Who can advise me whether to remain on the team?’
 CONDITION: Filler (grammatical)
- (1979) * Кого позвъни журналистът на следователя, при когото главната
 Kogo pozvāni žurnalistăt na sledovatelja, pri kogoto glavnata
 whom telephoned the-journalist.M to the-investigator.M to whom.M the-main.F

- редакторка пак изпрати?
 redaktorka pak izprati?
 editor.F again sent
 ‘Who did the journalist call the investigator, to whom the editor-in-chief sent again?’
 CONDITION: Target (long × island)
- (1980) Кой си поръча самолет за милиони, въпреки че кралството му затъва в дългове?
 who REFL ordered.3.SG airplane for millions although that the-kingdom his drowns in debts
 ‘Who ordered for himself a plane costing millions, although his kingdom is drowning in debt?’
 CONDITION: Filler (grammatical)
- (1981) На кого каза писателят, че литературният агент ще ти се обади?
 Na kogo kaza pisateljat, че literaturnijat agent šte ti se obadi?
 to whom said the-writer.M that the-literary.M agent.M will you.SG.DAT REFL call
 ‘Who did the writer say to that the literary agent will call you?’
 CONDITION: Target (short × non-island)
- (1982) Кой на кого гарантира, че фирменият представител ще ти се извини?
 Koj na kogo garantira, че firmenijat predstavitel šte ti se izvini?
 who to whom guaranteed that the-company’s.M representative.M will you.SG.DAT REFL apologize
 ‘Who guaranteed to whom that the company representative will apologize to you?’
 CONDITION: Target (short × non-island)
- (1983) Пътниците във всички нощни влакове, които пресичат границите на Балканите, си приличат.
 the-passengers in all night trains which cross the-borders of the-Balkans REFL look-alike
 ‘The passengers in the night trains that cross the borders of the Balkans look alike.’
 CONDITION: Filler (grammatical)
- (1984) * Ще отидем при човека, когото бяхме говорили за, че ще помогне ни.
 will go.I.PL to the-man who had.I.PL spoken.I.PL about that will help.3.SG us
 ‘We will go see the man, who we had talked about that he will help us.’

CONDITION: Filler (ungrammatical)

- (1985) На кого обясни режисьорът пиесата, която театралната актриса ви е
Na kogo objasni režisjorăt piesata, kojato teatralnata aktrisa vi e
to whom explained the-director.M the-play.F which.F the-theater.F actress.F you.PL is
разказала?
razkazala?
narrated
'Who did the director explain the play to, which the theater actress has already narrated to
you?'

CONDITION: Target (short × island)

- (1986) Кой кого издаде на европейските следователи, на които полицаят ще
Koj kogo izdade na evropejskite sledovateli, na koito policajat ŝte
who whom revealed to the-European.PL investigator.PL to whom.PL the-policeman.M will
ви предаде?
vi predade?
you.PL turn-over
'Who revealed whom to the European investigators, to whom the policeman will turn you
over?'

CONDITION: Target (short × island)

- (1987) * Кого кой се чудеха приятелите, дали ще покани да танцува на
whom who REFL wondered the-friends whether will invite.3.SG to dance.3.SG at
абитуриенския бал?
the-prom ball
'Who did the friends wonder whether he will invite whom to dance at the prom?'

CONDITION: Filler (ungrammatical)

- (1988) Явно му се говореше, защото ме спря и ми предложи цигара.
clearly him REFL talk.3.SG because me stopped.3.SG and me offered.3.SG cigarette
'He clearly wanted to talk because he stopped me and offered me a cigarette.'

CONDITION: Filler (grammatical)

- (1989) На Атанас му се стори, че ченгето пред посолството го гледа
to Atanas him REFL appeared that the-cop in-front-of the-embassy him looks-at
подозрително.
with-suspicion
'It appeared to Atanas that the cop in front of the embassy is looking at him with suspicion.'

CONDITION: Filler (grammatical)

- (1990) * Кого изложиха в галерията рисунка на, преди че обявих я на търг?
who exhibited.3.PL in the-gallery drawing of before that announced.1.SG it at auction
'Who did they exhibit a drawing by at the gallery, before they were to announce it at auction?'

CONDITION: Filler (ungrammatical)

- (1991) * Какво е доволна пенсионерката от новината, че правителството ще увеличи следващата година?
what is pleased the-pensioner from the-news that the-government will increase the-next year
'What is the pensioner pleased with the news that the government will increase next year?'

CONDITION: Filler (ungrammatical)

- (1992) ? Кой на кого видя телевизори, които управителката на магазина ще продаде
Koj na kogo vidja televizori, koito upravitelkata na magazina šte prodade
who to whom saw TV.PL which.PL the-manager.F of the-store will sell
много евтино?
mnogo evtino?
very cheaply
'Who saw TV sets, which the manager of the store will sell to whom very cheap?'

CONDITION: Target (long × island)

- (1993) * Коя разбра Борис, дето му приятелката ще гледат пиеса довечера театър новия?
which.F learned.3.SG Boris that his girlfriend.3.SG will see.3.PL play tonight theater the-new
'Which play did Boris learn that his girlfriend will see tonight in the new theater?'

CONDITION: Filler (ungrammatical)

- (1994) * Най-накрая прочетох статията, която авторът на причини скандал като се
finally read.1.SG the-article which the-author of caused a-scandal when REFL
сби рецензента.
fought the-reviewer
'Finally I read the article, which the author of caused a scandal as he started a fight with the reviewer.'

CONDITION: Filler (ungrammatical)

- (1995) Кой на кого показа покана, която филмовата звезда ви е изпратила?
 Koj na kogo pokaza pokana, kojato filmovata zvezda vi e izpratila?
 who to whom showed invitation.F which.F the-movie.F star.F you.PL is sent
 ‘Who showed whom of the invitation which the movie star has sent you?’
 CONDITION: Target (short × island)
- (1996) Някой каза на Владо, че попът имал най-хубавата ракия в селото.
 someone said to Vlado that the-priest had the-best brandy in the-village
 ‘Someone said to Vlado that the priest had the best brandy in the village.’
 CONDITION: Filler (grammatical)
- (1997) Кого излъга актьорът, че продуцентът те е взел за главната роля?
 Kogo izlāga aktjorāt, če producentāt te e vzел za glavnata rolja?
 whom lie-to the-actor.M that the-producer.M you.SG.ACC is taken for the-main role
 ‘Who did the actor lie to that the producer hired you for the leading role?’
 CONDITION: Target (short × non-island)
- (1998) * На кого забрави археологът за находките, които ръководителката на
 Na kogo zabravi arheologāt za nahodkite, koito rākovoditelkata na
 to whom forgot the-archeologist.M about the-find.PL which.PL the-leader.F of
 експедицията ще повери?
 ekspedicijata šte poveri?
 the-expedition will entrust
 ‘Who did the archeologist forget about the finds which the leader of the expedition will entrust to?’
 CONDITION: Target (one × island)
- (1999) * Колко милиона си доволен, защото изграждането на космическа станция
 how-many millions are.2.SG pleased because the-building of space station
 няма да струва?
 will-not to cost.3.SG
 ‘How many millions are you pleased because the building of a space station is not going to cost?’
 CONDITION: Filler (ungrammatical)
- (2000) * Любимо Виктор сготви твоето ястие, а забрави сложи подправки сервира студено
 favorite Viktor cooked your-the dish but forgot put spices served cold
 съвсем.
 entirely

‘Viktor cooked your favorite dish, but he forgot to put seasoning and served it completely cold.’

CONDITION: Filler (ungrammatical)

- (2001) Председателят на министерския съвет не се яви на
the-chair of the-minister council not REFL appeared.3.SG at
прес-конференцията, която сам беше свикал.
the-press-conference which himself was arranged.3.SG
‘The prime minister did not appear at the press conference, which he himself had arranged.’

CONDITION: Filler (grammatical)

- (2002) * Кого до нея достигна вестта, че са преизбрали за още един мандат?
who to her reached the-news that are re-elected for yet-another one term
‘Who did the news reach her that they re-elected for one more term?’

CONDITION: Filler (ungrammatical)

- (2003) Кой на кого чу, че шефката отново постави невъзможна задача?
Koj na kogo ču, če šefkata otново postavi nevъzmožna zadača?
who to whom heard that the-boss.F again gave impossible task
‘Who heard that the boss again gave whom an impossible task?’

CONDITION: Target (long × non-island)

- (2004) * Студентката намери книгата, която фактът, че все още продават, ме учуди.
the-student.F found the-book which the-fact that allways still sell.3.PL me surprised
‘The student found the book, which the fact that they still sell surprised me.’

CONDITION: Filler (ungrammatical)

- (2005) Не можех да си спомня къде съм виждала този човек преди.
not was-able to REFL remember where am seen.F this man before
‘I couldn’t remember where I had seen this man before.’

CONDITION: Filler (grammatical)

- (2006) Често виждаше в кафенето младата жена, която явно живееше в
often saw.3.SG in the-coffee-shop the-young woman who evidently lived.3.SG in
квартала.
the-neighborhood
‘In the coffee shop he/she often saw the young woman, who apparently lived in the neighborhood.’

CONDITION: Filler (grammatical)

- (2007) * Колко шампанско сега го е срам Пламен, защото изпи на рождения ден?
how-much champagne now him is shame Plamen because drank.3.SG at the-birth day
'How much champagne is Plamen now ashamed because he drank at the birthday party?'

CONDITION: Filler (ungrammatical)

- (2008) Какво ще им отговориш, ако ти предложат членство в техния съюз?
what will them answer.2.SG if you offer.3.PL membership in their union
'What will you answer them if they offer you membership in their union?'

CONDITION: Filler (grammatical)

- (2009) * На кого кой питаха родителите класната, дали е помогнал на контролното?
to whom who asked-3.PL the-parents the-teacher.F whether is helped.M on the-test
'Who did the parents ask the teacher whether he helped whom on the test?'

CONDITION: Filler (ungrammatical)

- (2010) Въпреки че е на 70 години, известният рок-музикант продължава да изнася концерти.
although that is at 70 years the-famous rock-musician continues to give concerts
'Although he is 70 years-old, the famous rock musician continues to perform at concerts.'

CONDITION: Filler (grammatical)

- (2011) * Кого помогна докторът на физиотерапевта, при когото медицинската сестра погрешно препрати?
Kogo pomogna doktorät na fizioterapevta, pri kogoto medicinskata
whom helped the-doctor.M to the-physiotherapist.M to whom.M the-medical.F
sestra pogrešno preprati?
sister.F by-mistake sent
'Who did the doctor help the physiotherapist, to whom the nurse sent by mistake?'

CONDITION: Target (one × island)

- (2012) Кой кого попита тази сутрин дали хотелът предлага на клиентите
who whom asked.3.SG this morning whether the-hotel offer.3.SG to the-clients

- безплатни услуги?
complementary services
'Who asked whom this morning whether the hotel offers its clients complementary services?'
- CONDITION: Filler (grammatical)
- (2013) * Чухме за сметките, които министърът опроверга съобщението, че
heard.I.PL about the-accounts which the-minister denied the-announcement that
държи в швейцарски банки.
keep.3.SG in Swiss banks
'We heard about the accounts, which the minister denied the announcement that he keeps in
Swiss banks.'
- CONDITION: Filler (ungrammatical)
- (2014) * На кого попита директорът за оценките, които учителката по история
Na kogo popita direktorăt za ocenkite, koito učitelkata po istorija
to whom asked the-principal.M about the-grade.PL which.PL the-teacher.F on history
сигурно ще напише?
sigurno šte napiše?
likely will write
'Who did the principal inquire about the grades, which the history teacher will likely give to?'
- CONDITION: Target (long × island)
- (2015) * На кого ще получи брат ти покана за работа, ако го представят?
to whom will receive brother yours invitation for job if him introduce-3.PL
'Who will your brother receive a job offer if they introduce him to?'
- CONDITION: Filler (ungrammatical)
- (2016) Шефът на охраната разказа какви мерки се вземат срещу кражбите на
the-boss of the-security told.3.SG what measures REFL take.3.PL against the-theft of
гориво.
petrol
'The head of security described what measures are being taken to prevent the theft of petrol.'
- CONDITION: Filler (grammatical)
- (2017) Кой кого помисли, че банкерът е избрал за съдружник в компанията?
Koj kogo pomisli če bankerăt e izbral za sãdružnik v kompanijata?
who whom thought that the-banker.M is chosen for business-partner in the-company
'Who thought that the banker chose whom as his business partner in the company?'

CONDITION: Target (two × non-island)

- (2018) * Какво липсата на ти попречи да възстановиш по-бързи грипа, която
what the-lack of you prevented.3.SG to recover.2.SG faster.ADJ.PL the-flue.M which.F
изкара през зимата?
had.2.SG during the-winter
'What did the lack of prevent you from recovering faster after the flue, which you had in the winter?'

CONDITION: Filler (ungrammatical)

- (2019) * Кои препоръча ти жена му Иван италианска филми, без да е ги
which.PL recommended you wife his Ivan Italian.SG movie.PL without to is them
гледали?
seen.PL
'Which Italian movies did Ivan's wife recommend you without seeing them?'

CONDITION: Filler (ungrammatical)

- (2020) Кметът на Бургас обеща, че ремонтът на морската градина ще приключи
the-mayor of Burgas promised that the-rennovation of the-sea garden will finish
скоро.
soon
'The mayor of Burgas promised that the rennovation of the waterfront park will finish soon.'

CONDITION: Filler (grammatical)

- (2021) Кой кога ще реши към коя коалиция да се присъедини партията преди
who when will decide.3.SG to which coalition to REFL join.3.SG the-party before
изборите?
the-elections
'Who will decide when which coalition the party should join before the elections?'

CONDITION: Filler (grammatical)

C.2.3 List 3

- (2022) Председателят на министерския съвет не се яви на
the-chair of the-minister council not REFL appeared.3.SG at
прес-конференцията, която сам беше свикал.
the-press-conference which himself was arranged.3.SG
'The prime minister did not appear at the press conference, which he himself had arranged.'

CONDITION: Filler (grammatical)

- (2023) Кметът на Бургас обеща, че ремонтът на морската градина ще приключи скоро.
the-mayor of Burgas promised that the-rennovation of the-sea garden will finish soon
'The mayor of Burgas promised that the rennovation of the waterfront park will finish soon.'

CONDITION: Filler (grammatical)

- (2024) * След тегленето числа печелившите, парична награди тотализатора не ще продължат да расте.
after the-drawing number.PL the-winning.PL monetary.SG award.PL the-lottery not will continue.PL to grow.SG
'After the drawing of the winning numbers, the monetary award of the lottery will not continue to rise.'

CONDITION: Filler (ungrammatical)

- (2025) * Ветеринарят каза, дето кученце малкото бяха здрава, след когато прегледа го внимателно.
the-veterinarian said that dog.N the-little.N were healthy.PL after when examined it carefully
'The vet said that the little dog is healthy after s/he examined it carefully.'

CONDITION: Filler (ungrammatical)

- (2026) Шефът на охраната разказа какви мерки се вземат срещу кражбите на гориво.
the-boss of the-security told.3.SG what measures REFL take.3.PL against the-theft of petrol
'The head of security described what measures are being taken to prevent the theft of petrol.'

CONDITION: Filler (grammatical)

- (2027) * Европейско художникът обяви началото своето турне с изложба маслени картина зад столицата.
European the-artist announced the-beginning self's tour with exhibition oil.PL painting.SG behind the-capital
'The artist announced the beginning of his European tour with an exhibition of oil paintings in the capital city.'

CONDITION: Filler (ungrammatical)

- (2028) * Кого разговаря инвеститорът с депутатката, на която банкерът е
 Kogo razgovarja investorät s deputatkata, na kojato bankerät e
 whom spoke the-investor.M with the-senator.F to whom.F the-banker.M is
 препоръчал настойчиво?
 preporáčal nastojčivo?
 recommended insistently
 ‘Who did the investor speak with the senator, to whom the banker recommended strongly?’
 CONDITION: Target (one × island)
- (2029) ? Кой кого съдейства на федерацията, на която треньорът ще предложи за
 Koj kogo sädejstva na federacijata na kojato trenjorät šte predložì za
 who whom helped to the-federation.F to which.F the-trainer.M will offer for
 награда?
 nagrada?
 award
 ‘Who did the soccer player provide help to the federation, to which the trainer will suggest
 whom for an award?’
 CONDITION: Target (two × island)
- (2030) * На кого кой питаха родителите класната, дали е помогнал на
 to whom who asked-3.PL the-parents the-teacher.F whether is helped.M on
 контролното?
 the-test
 ‘Who did the parents ask the teacher whether he helped whom on the test?’
 CONDITION: Filler (ungrammatical)
- (2031) На кого показва детската лекарка как да захрани бебето си със
 to whom showed.3.SG the-child doctor how to start-feeding the-baby REFL with
 зеленчукови пюре?
 vegetable purees
 ‘Who did the pediatrician show to how to start feeding their baby with vegetable purees?’
 CONDITION: Filler (grammatical)
- (2032) Въпреки че е на 70 години, известният рок-музикант продължава да изнася
 although that is at 70 years the-famous rock-musician continues to give
 концерти.
 concerts
 ‘Although he is 70 years-old, the famous rock musician continues to perform at concerts.’
 CONDITION: Filler (grammatical)

- (2033) * Нямахте съсед, когото Димо да не се беше похвалил на с придобивка си.
 not-was neighbor who Dimo to not REFL had bragged to with acquisition REFL
 ‘There was no neighbor, to whom Dimo had not bragged about his new acquisition.’

CONDITION: Filler (ungrammatical)

- (2034) На кого продаде аптекарят лекарство, което лекарката ти
 Na kogo prodade apтекarjat lekarstvo, koeto lekarkata ti
 to whom sold the-pharmacist.M medicine.N which.N the-doctor.F you.SG.DAT
 предписа по погрешка?
 predpisa po pogreška?
 prescribed by mistake

‘Who did the pharmacist sell the medicine to, which the doctor prescribed to you by mistake?’

CONDITION: Target (short × island)

- (2035) * Кого изложиха в галерията рисунка на, преди че обявих я на търг?
 who exhibited.3.PL in the-gallery drawing of before that announced.I.SG it at auction
 ‘Who did they exhibit a drawing by at the gallery, before they were to announce it at auction?’

CONDITION: Filler (ungrammatical)

- (2036) Пътниците във всички нощни влакове, които пресичат границите на Балканите,
 the-passengers in all night trains which cross the-borders of the-Balkans
 си приличат.
 REFL look-alike

‘The passengers in the night trains that cross the borders of the Balkans look alike.’

CONDITION: Filler (grammatical)

- (2037) ? Кой на кого харесваше онова вино, което келнерката току-що сервира?
 Koj na kogo haresvaše onova vino, koeto kelnerkata toku-što servira?
 who to whom liked that wine.N which.N the-waitress.F just-now served
 ‘Who did like that wine, which the waitress served to whom just now?’

CONDITION: Target (two × island)

- (2038) Кой кого похвали на директорката, на която началникът ще те
 Koj kogo pohvali na direktorkata, na kojato načalnikāt šte te
 who whom praised to the-director.F to whom.F the-boss.M will you.SG.ACC
 препоръча?
 preporāča?
 recommend

‘Who praised whom to the director, to whom the boss will recommend you?’

CONDITION: Target (short × island)

- (2039) Кой си поръча самолет за милиони, въпреки че кралството му затъва в дългове?
who REFL ordered.3.SG airplane for millions although that the-kingdom his drowns in debts
debts
'Who ordered for himself a plane costing millions, although his kingdom is drowning in debt?'

CONDITION: Filler (grammatical)

- (2040) * Съдия пловдивският ръководи ще следващата мач между ЦСКА, съобщиха телевизията.
referee the-Plovdiv.Adj supervise will the-next.F game.M between CSKA announced-3.PL TV
announced-3.PL TV
'The referee from Plovdiv will supervise the next game between CSKA (and X), it was announced on TV.'

CONDITION: Filler (ungrammatical)

- (2041) ? Кой на кого забеляза промоция, която фирменият представител
Кoj на kogo zabeljaza promocija, kojato firmenijat predstavitel
who to whom noticed promotional-offer.F which.F the-company's.M representative.M
май ще осигури?
maj šte osiguri?
maybe will provide
'Who noticed a promotional offer, which the representative of the company will maybe provide to whom?'

CONDITION: Target (long × island)

- (2042) На Атанас му се стори, че ченгето пред посолството го гледа подозрително.
to Atanas him REFL appeared that the-cop in-front-of the-embassy him looks-at with-suspicion
with-suspicion
'It appeared to Atanas that the cop in front of the embassy is looking at him with suspicion.'

CONDITION: Filler (grammatical)

- (2043) Кой кога ще реши към коя коалиция да се присъедини партията преди изборите?
who when will decide.3.SG to which coalition to REFL join.3.SG the-party before the-elections
the-elections

‘Who will decide when which coalition the party should join before the elections?’

CONDITION: Filler (grammatical)

- (2044) Кой може да ме посъветва дали да остана в отбора?
who can.3.SG to me advise.3.SG whether to remain.3.SG in the-team
‘Who can advise me whether to remain on the team?’

CONDITION: Filler (grammatical)

- (2045) * Какво беше особено впечатлена публиката, защото Елена беше изобретила в 6-ти клас?
what was particularly impressed the-audience because Elena had discovered in 6th grade
‘What was the audience particularly impressed because Elena had invented in 6th grade?’

CONDITION: Filler (ungrammatical)

- (2046) * Скъпата се скъса при прането тениска червена, но той реши търси друг такъв.
the-expensive.F REFL tore during washing t-shirt.F red-F but he decided look-for another.M such-one.M
‘The expensive t-shirt tore during washing, but he decided to look for another similar one.’

CONDITION: Filler (ungrammatical)

- (2047) * Любимо Виктор сготви твоето ястие, а забрави сложи подправки сервира студено съвсем.
favorite Viktor cooked your-the dish but forgot put spices served cold entirely
‘Viktor cooked your favorite dish, but he forgot to put seasoning and served it completely cold.’

CONDITION: Filler (ungrammatical)

- (2048) След поредния провал реших, че трябва да приема радикално нов подход.
after the-latest failure decided.I.SG that must to adopt.I.SG radically new approach
‘After the latest failure, I decided that I have to adopt a radically new approach.’

CONDITION: Filler (grammatical)

- (2049) * На кого завърши писателят книга, която литературният агент веднага ще
Na kogo finished pisateljat kniga, kojato literaturnijat agent vednaga šte
to whom finished the-writer.M book.F which.F the-literary.M agent.M immediately will

препоръча?
preporăĉa?
recommend

‘Who did the writer finish a book, which the literary agent will immediately recommend to?’

CONDITION: Target (long × island)

- (2050) Кого препоръча професорът на комисията, на която
Kogo preporăĉa profesorăt na komisijata, na kojato
whom recommended the-professor.M to the-committee.F to which.F
ректорът ще те представи?
rektorăt Ńte te predstavî?
the-university-president.M will you.SG.ACC introduce

‘Who did the professor recommend to the committee, to which the university president will introduce you?’

CONDITION: Target (short × island)

- (2051) Какво ще им отговориш, ако ти предложат членство в техния съюз?
what will them answer.2.SG if you offer.3.PL membership in their union
‘What will you answer them if they offer you membership in their union?’

CONDITION: Filler (grammatical)

- (2052) На кого мислеше археологът, че ръководителката на експедицията ще
Na kogo misleše arheologăt, ĉe răkovoditelkata na ekspedicijata Ńte
to whom thought the-archeologist.M that the-leader.F of the-expedition will
повери ценните находки?
poverî cennite nahodki?
entrust the-valuable finds

‘Who did the archeologist think that the leader of the expedition will entrust the valuable finds to?’

CONDITION: Target (one × non-island)

- (2053) * Какво кой не си спомняше секретарката, че ѝ беше поръчал?
what who not REFL remembered the-secretary.F that her was asked
‘Who didn’t the secretary remember had asked of her what?’

CONDITION: Filler (ungrammatical)

- (2054) * Какво е получил императорът предсказанието на пророчицата, че неговият син ще
what is received the-emperor the-prophecy of the-prophetess that his son will

завладее?
conquer

‘What has the emperor received the prophecy of the prophetess that his son will conquer?’

CONDITION: Filler (ungrammatical)

- (2055) * Кой препоръча ти жена му Иван италианска филми, без да е ги
which.PL recommended you wife his Ivan Italian.SG movie.PL without to is them
гледали?
seen.PL

‘Which Italian movies did Ivan’s wife recommend you without seeing them?’

CONDITION: Filler (ungrammatical)

- (2056) Кой на кого остави съобщение, което шефката после ти препрати?
Koj na kogo ostavi sãobštienie, koeto šefkata после ti препрати?
who to whom left message.N which.N the-boss.F afterwards you.SG.DAT resent

‘Who left a message to whom, which the boss then resent to you?’

CONDITION: Target (short × island)

- (2057) * Какво е доволна пенсионерката от новината, че правителството ще увеличи
what is pleased the-pensioner from the-news that the-government will increase
следващата година?
the-next year

‘What is the pensioner pleased with the news that the government will increase next year?’

CONDITION: Filler (ungrammatical)

- (2058) * Колко шампанско сега го е срам Пламен, защото изпи на рождения
how-much champagne now him is shame Plamen because drank.3.SG at the-birth
ден?
day

‘How much champagne is Plamen now ashamed because he drank at the birthday party?’

CONDITION: Filler (ungrammatical)

- (2059) * Кого до нея достигна вестта, че са преизбрали за още един мандат?
who to her reached the-news that are re-elected for yet-another one term

‘Who did the news reach her that they re-elected for one more term?’

CONDITION: Filler (ungrammatical)

(2060) * Какво липсата на ти попречи да възстановиш по-бързи грипа, която
what the-lack of you prevented.3.SG to recover.2.SG faster.ADJ.PL the-flue.M which.F
изкара през зимата?
had.2.SG during the-winter
'What did the lack of prevent you from recovering faster after the flue, which you had in the
winter?'

CONDITION: Filler (ungrammatical)

(2061) * Ще отидем при човека, когото бяхме говорили за, че ще помогне ни.
will go.I.PL to the-man who had.I.PL spoken.I.PL about that will help.3.SG us
'We will go see the man, who we had talked about that he will help us.'

CONDITION: Filler (ungrammatical)

(2062) Кого поясни журналистът, че главната редакторка пак премести в друг
Kogo pojasni žurnalistät, če glavната redaktorka pak premesti v drug
whom clarified the-journalist.M that the-main.F editor.F again moved in another
екип?
ekip?
team
'Who did the journalist clarify that the editor-in-chief moved to another team again?'

CONDITION: Target (long × non-island)

(2063) Кого предположи докторът, че медицинската сестра погрешно записа за
Kogo predpolaži doktorät, če medicinskata sestra pogrešno zapisa za
whom supposed the-doctor.M that the-medical.F sister.F by-mistake signed for
друг час?
drug čas?
another hour

'Who did the doctor think that the nurse signed up for another appointment by mistake?'

CONDITION: Target (one × non-island)

(2064) Кой кого попита тази сутрин дали хотелът предлага на клиентите
who whom asked.3.SG this morning whether the-hotel offer.3.SG to the-clients
безплатни услуги?
complementary services

'Who asked whom this morning whether the hotel offers its clients complementary services?'

CONDITION: Filler (grammatical)

- (2065) На кого обясни режисьорът, че театралната актриса ви е разказала
 Na kogo objasni režisjorät, že teatralnata aktrisa vi e razkazala
 to whom explained the-director.M that the-theater.F actress.F you.PL is narrated
 пиесата?
 piesata?
 the-play
 ‘Who did the director explain to that the theater actress has narrated the play to you?’
 CONDITION: Target (short × non-island)
- (2066) * На кого ще получи брат ти покана за работа, ако го представят?
 to whom will receive brother yours invitation for job if him introduce-3.PL
 ‘Who will your brother receive a job offer if they introduce him to?’
 CONDITION: Filler (ungrammatical)
- (2067) Не можех да си спомня къде съм виждала този човек преди.
 not was-able to REFL remember where am seen.F this man before
 ‘I couldn’t remember where I had seen this man before.’
 CONDITION: Filler (grammatical)
- (2068) * С кого не беше сигурна за успеха Надя, въпреки че беше разговаряла?
 with whom not was sure about the-success Nadja although that was spoken
 ‘Who was Nadja not sure about the success, although she had spoken with?’
 CONDITION: Filler (ungrammatical)
- (2069) * На кого позна критикът наградата, която председателят на журито ще
 Na kogo pozna kritikät nagradata, kojato predsedeljat na žurito šte
 to whom guessed the-critic.M the-award.F which.F the-chairman.M of the-jury will
 връчи?
 vräči?
 present
 ‘To whom did the critic guess the award, which the chair of the jury will present?’
 CONDITION: Target (one × island)
- (2070) * Кого говори актьорът със сценаристката, на която продуцентът сигурно е
 Kogo govori aktjorät säš scenaristkata, na kojato producentät sigurno e
 whom spoke the-actor.M with the-screenwriter.F to whom.F the-producer likely is
 представил?
 predstavil?
 introduced
 ‘Who did the actor speak to the screenwriter, to whom the producer likely introduced?’

CONDITION: Target (long × island)

- (2071) Избирателите би трябвало много добре да си помислят за кого ще гласуват.
the-voters would have-to very well to REFL think.3.PL for whom will vote.3.PL
'The voters should think very hard who to vote for.'

CONDITION: Filler (grammatical)

- (2072) * Къде мислиш, че надеждата, че ще го приемат, го крепеше гимназията?
where think.2.SG that the-hope that will him accept him supported high-school
'Where do you think that the hope that he will be accepted gave him strength in high school?'

CONDITION: Filler (ungrammatical)

- (2073) ? Кой кого приказва с посланичката, на която министърът наскоро е споменал?
Кой kogo prikazva s poslaničkata, na kojato ministurăt naskoro e споменал?
spomenal?
mentioned
'Who spoke with the ambassador, to whom the cabinet minister mentioned whom recently?'

CONDITION: Target (long × island)

- (2074) * Най-накрая прочетох статията, която авторът на причини скандал като се сби рецензента.
finally read.I.SG the-article which the-author of caused a-scandal when REFL fought the-reviewer
'Finally I read the article, which the author of caused a scandal as he started a fight with the reviewer.'

CONDITION: Filler (ungrammatical)

- (2075) * На кой ще ходите курорт морска тази годината преди като заминете под Индия?
to which.M will go.2.PL resort.M sea.F this the-year before when leave.2.PL under India
'Which sea resort will you go to this year before you leave for India?'

CONDITION: Filler (ungrammatical)

- (2076) * Студентката намери книгата, която фактът, че все още продават, ме учуди.
the-student.F found the-book which the-fact that always still sell.3.PL me surprised
'The student found the book, which the fact that they still sell surprised me.'

CONDITION: Filler (ungrammatical)

- (2077) Кой кого предизвести, че полицаят ще ви арестува за кражбата от
Koj kogo predizvesti, че policajat šte vi arestuva za kražbata ot
who whom tell-in-advance that the-policeman.M will you.PL arrest for the-theft from
галерията?
galeriata?
the-gallery
'Who told whom in advance that the policeman will arrest you for the theft from the gallery?'

CONDITION: Target (short × non-island)

- (2078) Кой на кого научи, че управителката на магазина ще направи отстъпка в цената?
Koj na kogo nauči, че upravitelkata na magazina šte napravi otstāpka v cenata?
who to whom learned that the-manager.F of the-store will make discount in the-price
'Who heard that the store manager will give a price reduction to whom?'

CONDITION: Target (long × non-island)

- (2079) Явно му се говореше, защото ме спря и ми предложи цигара.
clearly him REFL talk.3.SG because me stopped.3.SG and me offered.3.SG cigarette
'He clearly wanted to talk because he stopped me and offered me a cigarette.'

CONDITION: Filler (grammatical)

- (2080) Кой кого твърдеше, че новата служителка вече прехвърли в друга
Koj kogo tvārdeše, че novata služitelka veče prehvärlī v druga
who whom claimed that the-new.F administrator.F already moved in another
специалност?
specialnost?
specialty
'Who claimed that the new administrator already moved whom to another specialty track?'

CONDITION: Target (long × non-island)

- (2081) Някой каза на Владо, че попът имал най-хубавата ракия в селото.
someone said to Vlado that the-priest had the-best brandy in the-village
'Someone said to Vlado that the priest had the best brandy in the village.'

CONDITION: Filler (grammatical)

- (2082) Кой на кого съобщи, че филмовата звезда ви е изпратила покана?
Koj na kogo sāobšti, че filmovata zvezda vi e izpratila pokana?
who to whom announced that the-movie.F star.F you.PL is sent invitation
'Who announced to whom that the movie star has sent you an invitation?'

CONDITION: Target (short × non-island)

- (2083) * Кого кой се чудеха приятелите, дали ще покани да танцува на
whom who REFL wondered the-friends whether will invite.3.SG to dance.3.SG at
абитуриенския бал?
the-prom ball
'Who did the friends wonder whether he will invite whom to dance at the prom?'

CONDITION: Filler (ungrammatical)

- (2084) Кой кого повярва, че съдията ще осъди за измамата с кредитните карти?
Koj kogo povjarva, če sādijata šte osādi za izmamata s kreditnite karti?
who whom believed that the-judge.M will sentence for the-fraud with the-credit cards
'Who believed that the judge will sentence whom for the credit card fraud?'

CONDITION: Target (two × non-island)

- (2085) * Какво откриха дълги опит учените метод за борба със,
what discovered.3.PL long.PL experiment.SG the-scientists method for fighting with
която е болест неизлечим?
which.F is disease.F incurable.M
'What did the scientists, after long experiments, discover a method for fighting with, which
is an incurable disease that has been incurable?'

CONDITION: Filler (ungrammatical)

- (2086) На кого помисли директорът, че учителката по история сигурно ще напише
Na kogo pomisli direktorāt, če učitelkata po istorija sigurno šte napiše
to whom thought the-principal.M that the-teacher.F on history likely will write
лоши оценки?
loši ocenki?
bad grades
'Who did the principal think that the history teacher will likely give bad grades to?'

CONDITION: Target (long × non-island)

- (2087) * Колко милиона си доволен, защото изграждането на космическа станция
how-many millions are.2.SG pleased because the-building of space station
няма да струва?
will-not to cost.3.SG
'How many millions are you pleased because the building of a space station is not going to
cost?'

CONDITION: Filler (ungrammatical)

(2088) * Коя разбра Борис, дето му приятелката ще гледат пиеса довечера театър
which.F learned.3.SG Boris that his girlfriend.3.SG will see.3.PL play tonight theater
новия?
the-new

‘Which play did Boris learn that his girlfriend will see tonight in the new theater?’

CONDITION: Filler (ungrammatical)

(2089) Кого предупреди адвокатът, че прокурорът ще ви обвини за грабежа
Kogo predupredi advokatăt, ĉe prokurorăt ŝte vi obvini za grabeža
whom warned the-lawyer.M that the-prosecutor.M will you.PL accuse for the-robbery
в хотела?
v hotela?
in the-hotel

‘Who did the lawyer warn that the prosecutor will accuse you of the robbery in the hotel?’

CONDITION: Target (short × non-island)

(2090) * Някой открадна трофея, който Мария участва в състезанието, защото
someone stole the-trophy which Maria participated in the-competition because
искаше да получи.
wanted.3.SG to receive.3.SG

‘Someone stole the trophy, which Maria participated in the competition because she wanted to receive.’

CONDITION: Filler (ungrammatical)

(2091) * Чухме за сметките, които министърът опроверга съобщението, че
heard.I.PL about the-accounts which the-minister denied the-announcement that
държи в швейцарски банки.
keep.3.SG in Swiss banks

‘We heard about the accounts, which the minister denied the announcement that he keeps in Swiss banks.’

CONDITION: Filler (ungrammatical)

(2092) Често виждаше в кафенето младата жена, която явно живееше в
often saw.3.SG in the-coffee-shop the-young woman who evidently lived.3.SG in
квартала.
the-neighborhood

‘In the coffee shop he/she often saw the young woman, who apparently lived in the neighborhood.’

CONDITION: Filler (grammatical)

- (2093) Кой на кого разбра, че известната дизайнерка е продала колекцията си?
Koj na kogo razbra, че известната dizajnerka e prodala kolekcijata si?
who to whom understood that the-famous.F designer.F is sold the-collection REFL
'Who understood that the famous designer has sold her collection to whom?'

CONDITION: Target (two × non-island)

C.2.4 List 4

- (2094) * Нямаше съсед, когото Димо да не се беше похвалил на с придобивка си.
not-was neighbor who Dimo to not REFL had bragged to with acquisition REFL
'There was no neighbor, to whom Dimo had not bragged about his new acquisition.'

CONDITION: Filler (ungrammatical)

- (2095) * На кого одобри режисьорът пиесата, която театралната актриса вече е
Na kogo одобри režisjorät piesata, kojato teatralnata aktrisa veče e
to whom approved the-director.M the-play.F which.F the-theater.F actress.F already is
разказала?
razkazala?
narrated
'Who did the director approve of the play, which the theater actress has already narrated to?'

CONDITION: Target (long × island)

- (2096) Кой кого попита тази сутрин дали хотелът предлага на клиентите
who whom asked.3.SG this morning whether the-hotel offer.3.SG to the-clients
безплатни услуги?
complementary services
'Who asked whom this morning whether the hotel offers its clients complementary services?'

CONDITION: Filler (grammatical)

- (2097) Шефът на охраната разказа какви мерки се вземат срещу кражбите на
the-boss of the-security told.3.SG what measures REFL take.3.PL against the-theft of
гориво.
petrol
'The head of security described what measures are being taken to prevent the theft of petrol.'

CONDITION: Filler (grammatical)

- (2098) Кой си поръча самолет за милиони, въпреки че кралството му затъва в дългове?
 who REFL ordered.3.SG airplane for millions although that the-kingdom his drowns in debts
 ‘Who ordered for himself a plane costing millions, although his kingdom is drowning in debt?’
 CONDITION: Filler (grammatical)
- (2099) * С кого не беше сигурна за успеха Надя, въпреки че беше разговаряла?
 with whom not was sure about the-success Nadja although that was spoken
 ‘Who was Nadja not sure about the success, although she had spoken with?’
 CONDITION: Filler (ungrammatical)
- (2100) * Кого досаждаше адвокатът на съдебните заседатели, на които прокурорът ще представи днес?
 Kogo dosaždaše advokatāt na sādebnite zasedатели, na koito prokurořāt
 whom annoyed the-lawyer.M to the-court.PL juror.PL to whom.PL the-prosecutor.M
 ще представи днес?
 ŝte predstavī dnes?
 will introduce today
 ‘Who did the lawyer annoy the jurors, to whom the prosecutor will introduce today?’
 CONDITION: Target (long × island)
- (2101) На кого докладва аптекарят, че лекарката ти предписа лекарство по погрешка?
 Na kogo dokladva aptekarjat, ĉe lekarkata ti predpisa
 to whom reported the-pharmacist.M that the-doctor.F you.SG.DAT prescribed
 лекарство по погрешка?
 lekarstvo po pogreška?
 medicine.N by mistake
 ‘Who did the pharmacist report to that the doctor prescribed you medicine by mistake?’
 CONDITION: Target (short × non-island)
- (2102) * Кого изложиха в галерията рисунка на, преди че обявих я на търг?
 who exhibited.3.PL in the-gallery drawing of before that announced.I.SG it at auction
 ‘Who did they exhibit a drawing by at the gallery, before they were to announce it at auction?’
 CONDITION: Filler (ungrammatical)
- (2103) Кого помисли инвеститорът, че банкерът е избрал за съдружник в
 Kogo pomisli investorāt, ĉe bankerāt e izbral za sādružnik v
 whom thought the-investor.M that the-banker.M is chosen for business-partner in

компанията?
kompanijata?
the-company

‘Whom did the investor think that the banker chose as his business partner in the company?’

CONDITION: Target (one × non-island)

(2104) Какво ще им отговориш, ако ти предложат членство в техния съюз?
what will them answer.2.SG if you offer.3.PL membership in their union

‘What will you answer them if they offer you membership in their union?’

CONDITION: Filler (grammatical)

(2105) * Колко шампанско сега го е срам Пламен, защото изпи на рождения
how-much champagne now him is shame Plamen because drank.3.SG at the-birth
ден?
day

‘How much champagne is Plamen now ashamed because he drank at the birthday party?’

CONDITION: Filler (ungrammatical)

(2106) На кого показва детската лекарка как да захрани бебето си със
to whom showed.3.SG the-child doctor how to start-feeding the-baby REFL with
зеленчукови пюрета?
vegetable purees

‘Who did the pediatrician show to how to start feeding their baby with vegetable purees?’

CONDITION: Filler (grammatical)

(2107) Въпреки че е на 70 години, известният рок-музикант продължава да изнася
although that is at 70 years the-famous rock-musician continues to give
концерти.
concerts

‘Although he is 70 years-old, the famous rock musician continues to perform at concerts.’

CONDITION: Filler (grammatical)

(2108) * Какво беше особено впечатлена публиката, защото Елена беше изобретила в 6-ти
what was particularly impressed the-audience because Elena had discovered in 6th
клас?
grade

‘What was the audience particularly impressed because Elena had invented in 6th grade?’

CONDITION: Filler (ungrammatical)

- (2109) * Европейско художникът обяви началото своето турне с изложба
 European the-artist announced the-beginning self's tour with exhibition
 маслени картина зад столицата.
 oil.PL painting.SG behind the-capital
 ‘The artist announced the beginning of his European tour with an exhibition of oil paintings
 in the capital city.’

CONDITION: Filler (ungrammatical)

- (2110) * Какво липсата на ти попречи да възстановиш по-бързи грипа, която
 what the-lack of you prevented.3.SG to recover.2.SG faster.ADJ.PL the-flue.M which.F
 изкара през зимата?
 had.2.SG during the-winter
 ‘What did the lack of prevent you from recovering faster after the flue, which you had in the
 winter?’

CONDITION: Filler (ungrammatical)

- (2111) * Кого кой се чудеха приятелите, дали ще покани да танцува на
 whom who REFL wondered the-friends whether will invite.3.SG to dance.3.SG at
 абитуриенския бал?
 the-prom ball
 ‘Who did the friends wonder whether he will invite whom to dance at the prom?’

CONDITION: Filler (ungrammatical)

- (2112) Пътниците във всички нощни влакове, които пресичат границите на Балканите,
 the-passengers in all night trains which cross the-borders of the-Balkans
 си приличат.
 REFL look-alike
 ‘The passengers in the night trains that cross the borders of the Balkans look alike.’

CONDITION: Filler (grammatical)

- (2113) Кой кого осведоми вчера, че началникът ще те повиши следващия
 Koj kogo osvedomi včera, če načalnikāt šte te poviši sledvaštija
 who whom let-know yesterday that the-boss.M will you.SG.ACC promote next
 месец?
 mesec?
 month
 ‘Who informed whom yesterday that the boss will promote you next month?’

CONDITION: Target (short × non-island)

- (2114) Явно му се говореше, защото ме спря и ми предложи цигара.
clearly him REFL talk.3.SG because me stopped.3.SG and me offered.3.SG cigarette
'He clearly wanted to talk because he stopped me and offered me a cigarette.'

CONDITION: Filler (grammatical)

- (2115) Кого разкри журналистът на следователя, при когото главната
Kogo razkri žurnalistăt na sledovatelja, pri kogoto glavnata
whom revealed the-journalist.M to the-investigator.M to whom.M the-main.F
редакторка ви изпрати?
redaktorka vi izprati?
editor.F you.PL sent

'Who did the journalist reveal to the investigator, to whom the editor-in-chief sent you?'

CONDITION: Target (short × island)

- (2116) Кого реши актьорът, че продуцентът сигурно е взел за главната роля?
Kogo reši aktjorăt, če producentăt sigurno e vzel za glavnata rolja?
whom decided the-actor.M that the-producer.M likely is taken for the-main role
'Who did the actor decide that the producer likely hired for the leading role?'

CONDITION: Target (long × non-island)

- (2117) * На кого ще получи брат ти покана за работа, ако го представят?
to whom will receive brother yours invitation for job if him introduce-3.PL
'Who will your brother receive a job offer if they introduce him to?'

CONDITION: Filler (ungrammatical)

- (2118) * Кои препоръча ти жена му Иван италианска филми, без да е ги
which.PL recommended you wife his Ivan Italian.SG movie.PL without to is them
гледали?
seen.PL

'Which Italian movies did Ivan's wife recommend you without seeing them?'

CONDITION: Filler (ungrammatical)

- (2119) * Къде мислиш, че надеждата, че ще го приемат, го крепеше гимназията?
where think.2.SG that the-hope that will him accept him supported high-school
'Where do you think that the hope that he will be accepted gave him strength in high school?'

CONDITION: Filler (ungrammatical)

- (2120) * Какво откриха дълги опит учените метод за борба със,
 what discovered.3.PL long.PL experiment.SG the-scientists method for fighting with
 която е болест неизлечим?
 which.F is disease.F incurable.M
 ‘What did the scientists, after long experiments, discover a method for fighting with, which
 is an incurable disease that has been incurable?’
 CONDITION: Filler (ungrammatical)
- (2121) Кой на кого посочи телевизори, които управителката на магазина ще ви
 Koj na kogo posoči televizori, koito upravitelkata na magazina šte vi
 who to whom pointed TV.PL which.PL the-manager.F of the-store will you.PL
 продаде евтино?
 prodade evtino?
 sell cheaply
 ‘Who pointed out to whom TV sets, which the manager of the store will sell you cheap?’
 CONDITION: Target (short × island)
- (2122) * На кой ще ходите курорт морска тази годината преди като заминете под
 to which.M will go.2.PL resort.M sea.F this the-year before when leave.2.PL under
 Индия?
 India
 ‘Which sea resort will you go to this year before you leave for India?’
 CONDITION: Filler (ungrammatical)
- (2123) Кой кого помисли, че министърът наскоро е наел за личен асистент?
 Koj kogo pomisli če ministărăt naskoro e nael za ličen asistent?
 who whom thought that the-cabinet-minister.M recently is hired for personal assistant
 ‘Who thought that the cabinet minister hired whom as his personal assistant recently?’
 CONDITION: Target (long × non-island)
- (2124) Кой кога ще реши към коя коалиция да се присъедини партията преди
 who when will decide.3.SG to which coalition to REFL join.3.SG the-party before
 изборите?
 the-elections
 ‘Who will decide when which coalition the party should join before the elections?’
 CONDITION: Filler (grammatical)
- (2125) * Какво кой не си спомняше секретарката, че ѝ беше поръчал?
 what who not REFL remembered the-secretary.F that her was asked

‘Who didn’t the secretary remember had asked of her what?’

CONDITION: Filler (ungrammatical)

- (2126) Кой на кого разбра, че келнерката току-що сервира четвърта водка?
Koj na kogo razbra, че kelnerkata toku-što servira četvărta vodka?
who to whom learned that the-waitress.F just-now served fourth vodka
‘Who learned that the waitress served a fourth vodka to whom just now?’

CONDITION: Target (two × non-island)

- (2127) * Ветеринарят каза, дето кученце малкото бяха здрава, след когато прегледа го
the-veterinarian said that dog.N the-little.N were healthy.PL after when examined it
внимателно.
carefully
‘The vet said that the little dog is healthy after s/he examined it carefully.’

CONDITION: Filler (ungrammatical)

- (2128) * Какво е доволна пенсионерката от новината, че правителството ще увеличи
what is pleased the-pensioner from the-news that the-government will increase
следващата година?
the-next year
‘What is the pensioner pleased with the news that the government will increase next year?’

CONDITION: Filler (ungrammatical)

- (2129) Кметът на Бургас обеща, че ремонтът на морската градина ще приключи
the-mayor of Burgas promised that the-rennovation of the-sea garden will finish
скоро.
soon
‘The mayor of Burgas promised that the rennovation of the waterfront park will finish soon.’

CONDITION: Filler (grammatical)

- (2130) * Ще отидем при човека, когото бяхме говорили за, че ще помогне ни.
will go.I.PL to the-man who had.I.PL spoken.I.PL about that will help.3.SG us
‘We will go see the man, who we had talked about that he will help us.’

CONDITION: Filler (ungrammatical)

- (2131) Кой кого смяташе, че треньорът ще уволни от отбора след поредната
Koj kogo smjataše, че trenjorăt šte uvolni ot otbora sled porednata
who whom thought that the-trainer.M will fire from the-team after the-latest

- загуба?
zaguba?
loss
'Who thought that the trainer will fire whom from the team after the latest loss?'
- CONDITION: Target (two × non-island)
- (2132) Не можех да си спомня къде съм виждала този човек преди.
not was-able to REFL remember where am seen.F this man before
'I couldn't remember where I had seen this man before.'
- CONDITION: Filler (grammatical)
- (2133) Кого уведоми професорът, че ректорът ще те назначи
Kogo uvedomi profesorät, če rektorät šte te naznači
whom let-know the-professor.M that the-university-president.M will you.SG.ACC appoint
на работа есента?
na rabota esenta?
to work the-fall
'Who did the professor inform that the university president will hire you in the fall?'
- CONDITION: Target (short × non-island)
- (2134) * Какво е получил императорът предсказанието на пророчицата, че неговият син ще
what is received the-emperor the-prophecy of the-prophetess that his son will
завладее?
conquer
'What has the emperor received the prophecy of the prophetess that his son will conquer?'
- CONDITION: Filler (ungrammatical)
- (2135) ? Кой кого помогна на физиотерапевта, при когото медицинската сестра
Koj kogo pomogna na fizioterapevta, pri kogoto medicinskata sestra
who whom helped to the-physiotherapist.M to whom.M the-medical.F sister.F
погрешно препрати?
pogrešno preprati?
by-mistake sent
'Who helped the physiotherapist, to whom the nurse sent whom by mistake?'
- CONDITION: Target (two × island)
- (2136) Председателят на министерския съвет не се яви на
the-chair of the-minster council not REFL appeared.3.SG at
прес-конференцията, която сам беше свикал.
the-press-conference which himself was arranged.3.SG

‘The prime minister did not appear at the press conference, which he himself had arranged.’

CONDITION: Filler (grammatical)

- (2137) Кой кого представи на кмета, при когото новата служителка ви
Koj kogo predstavi na kmeta, pri kogoto novata služitelka vi
who whom introduce to the-mayor.M to whom.M the-new.F administrator.F you.PL
покани?
pokani?
invited

‘Who introduced whom to the mayor, to whom the new administrator invited you?’

CONDITION: Target (short × island)

- (2138) Избирателите би трябвало много добре да си помислят за кого ще гласуват.
the-voters would have-to very well to REFL think.3.PL for whom will vote.3.PL

‘The voters should think very hard who to vote for.’

CONDITION: Filler (grammatical)

- (2139) * Скъпата се скъса при прането тениска червена, но той реши търси
the-expensive.F REFL tore during washing t-shirt.F red-F but he decided look-for
друг такъв.
another.M such-one.M

‘The expensive t-shirt tore during washing, but he decided to look for another similar one.’

CONDITION: Filler (ungrammatical)

- (2140) * Най-накрая прочетох статията, която авторът на причини скандал като се
finally read.I.SG the-article which the-author of caused a-scandal when REFL
сби рецензента.
fought the-reviewer

‘Finally I read the article, which the author of caused a scandal as he started a fight with the reviewer.’

CONDITION: Filler (ungrammatical)

- (2141) * На кого снима фотографът колекция, която известната
Na kogo snima fotografăt kolekcija, kojato izvestnata
to whom took-pictures-of the-photographer.M collection.F which.PL the-famous.F
дизайнерка току-що е продала?
dizajnerka toku-što e prodala?
designer.F just-now is sold

‘Who did the photographer take pictures of a collection, which the famous designer has sold to just now?’

CONDITION: Target (one × island)

- (2142) * Някой открадна трофея, който Мария участва в състезанието, защото someone stole the-trophy which Maria participated in the-competition because искаше да получи. wanted.3.SG to receive.3.SG
‘Someone stole the trophy, which Maria participated in the competition because she wanted to receive.’

CONDITION: Filler (ungrammatical)

- (2143) Кой на кого сподели, че шефката ти постави невъзможна задача? Koj na kogo spodeli, че шефката ti postavi nevъzможна задача? who to whom shared that the-boss.F you.SG.DAT gave impossible task
‘Who shared with whom that the boss gave you an impossible task?’

CONDITION: Target (short × non-island)

- (2144) * Кого до нея достигна вестта, че са преизбрали за още един мандат? who to her reached the-news that are re-elected for yet-another one term
‘Who did the news reach her that they re-elected for one more term?’

CONDITION: Filler (ungrammatical)

- (2145) * Коя разбра Борис, дето му приятелката ще гледат пиеса довечера театър which.F learned.3.SG Boris that his girlfriend.3.SG will see.3.PL play tonight theater новия? the-new
‘Which play did Boris learn that his girlfriend will see tonight in the new theater?’

CONDITION: Filler (ungrammatical)

- (2146) Кой на кого очакваше, че фирменият представител скоро ще се извини? Koj na kogo oчakваше, че фирменият predstavitel skoro ще се izvini? who to whom expected that the-company’s.M representative.M soon will REFL apologize

‘Who expected that the company representative will soon apologize to whom?’

CONDITION: Target (long × non-island)

- (2147) Кой може да ме посъветва дали да остана в отбора?
 who can.3.SG to me advize.3.SG whether to remain.3.SG in the-team
 ‘Who can advise me whether to remain on the team?’
 CONDITION: Filler (grammatical)
- (2148) ? Кой кого подаде сигнал на европейските следователи, на които
 Koj kogo podade signal na evropejskite sledovateli, na koito
 who whom gave alert to the-European.PL investigator.PL to whom.PL
 полицаят ще предаде?
 policajat šte predade?
 the-policeman.M will turn-over
 ‘Who alerted the European investigators, to whom the policeman will turn whom over?’
 CONDITION: Target (long × island)
- (2149) * Съдия пловдивският ръководи ще следващата мач между ЦСКА,
 referee the-Plovdiv.Adj supervise will the-next.F game.M between CSKA
 съобщиха телевизията.
 announced-3.PL TV
 ‘The referee from Plovdiv will supervise the next game between CSKA (and X), it was announced on TV.’
 CONDITION: Filler (ungrammatical)
- (2150) На Атанас му се стори, че ченгето пред посолството го гледа
 to Atanas him REFL appeared that the-cop in-front-of-the-embassy him looks-at
 подозрително.
 with-suspicion
 ‘It appeared to Atanas that the cop in front of the embassy is looking at him with suspicion.’
 CONDITION: Filler (grammatical)
- (2151) На кого каза директорът за оценките, които учителката по история ще
 Na kogo kaza direktorät za ocenkite, koito učitelkata po istorija šte
 to whom said the-principal.M about the-grade.PL which.PL the-teacher.F on history will
 ви напише?
 vi napiše?
 you.PL write
 ‘Who did the principal tell about the grades, which the history teacher will give you?’
 CONDITION: Target (short × island)

- (2152) * На кого кой питаха родителите класната, дали е помогнал на
 to whom who asked-3.PL the-parents the-teacher.F whether is helped.M on
 контролното?
 the-test
 ‘Who did the parents ask the teacher whether he helped whom on the test?’
 CONDITION: Filler (ungrammatical)
- (2153) * Любимо Виктор сготви твоето ястие, а забрави сложи подправки сервира студено
 favorite Viktor cooked your-the dish but forgot put spices served cold
 съвсем.
 entirely
 ‘Viktor cooked your favorite dish, but he forgot to put seasoning and served it completely
 cold.’
 CONDITION: Filler (ungrammatical)
- (2154) След поредния провал реших, че трябва да приема радикално нов подход.
 after the-latest failure decided.I.SG that must to adopt.I.SG radically new approach
 ‘After the latest failure, I decided that I have to adopt a radically new approach.’
 CONDITION: Filler (grammatical)
- (2155) * Кого повярва репортьорът на експертните свидетели, на които съдията
 Kogo povjarva reportjorăt na ekspertnite svideteli, na koito sãdijata
 who believed the-reporter.M to the-expert.PL witness.PL to whom.PL the-judge.M
 после ще представи?
 posle ŝte predstavì?
 afterwards will present
 ‘Who did the reporter believe the expert witnesses, to whom the judge will present after-
 wards?’
 CONDITION: Target (one × island)
- (2156) На кого считаше критикът, че председателят на журито ще връчи награда?
 Na kogo sçitaŝe kritikăt, çe predsedateljat na žurito ŝte vrãçi nagrada?
 to whom considered the-critic.M that the-chairman.M of the-jury will present award
 ‘To whom did the critic think that the chair of the jury will present an award?’
 CONDITION: Target (one × non-island)
- (2157) * След тегленето числа печелившите, парична награди тотализатора не
 after the-drawing number.PL the-winning.PL monetary.SG award.PL the-lottery not

ще продължат да расте.
will continue.PL to grow.SG

‘After the drawing of the winning numbers, the monetary award of the lottery will not continue to rise.’

CONDITION: Filler (ungrammatical)

- (2158) ? Кой на кого намери покана, която филмовата звезда лично е изпратила?
Koj na kogo nameri pokana, kojato filmovata zvezda lično e izpratila?
who to whom found invitation.F which.F the-movie.F star.F personally is sent
‘Who found an invitation which the movie star has personally sent to whom?’

CONDITION: Target (long × island)

- (2159) Някой каза на Владо, че попът имал най-хубавата ракия в селото.
someone said to Vlado that the-priest had the-best brandy in the-village
‘Someone said to Vlado that the priest had the best brandy in the village.’

CONDITION: Filler (grammatical)

- (2160) ? Кой на кого забрави за находките, които ръководителката на експедицията
Koj na kogo zabravi za nahodki, koito rākovoditelkata na ekspedicijata
who to whom forgot about the-find.PL which.PL the-leader.F of the-expedition
ще повери?
šte poveri?
will entrust
‘Who forgot about the finds which the leader of the expedition will entrust to whom?’

CONDITION: Target (two × island)

- (2161) * Чухме за сметките, които министърът опроверга съобщението, че
heard.I.PL about the-accounts which the-minister denied the-announcement that
държа в швейцарски банки.
keep.3.SG in Swiss banks
‘We heard about the accounts, which the minister denied the announcement that he keeps in Swiss banks.’

CONDITION: Filler (ungrammatical)

- (2162) На кого реши писателят, че литературният агент ще се обади сега?
Na kogo reši pisateljat, če literaturnijat agent šte se obadi sega?
to whom decided the-writer.M that the-literary.M agent.M will REFL call now
‘Who did the writer decide that the literary agent will call now?’

CONDITION: Target (long × non-island)

- (2163) Често виждаше в кафенето младата жена, която явно живееше в
often saw.3.SG in the-coffee-shop the-young woman who evidently lived.3.SG in
квартала.
the-neighborhood
'In the coffee shop he/she often saw the young woman, who apparently lived in the neighbor-
hood.'

CONDITION: Filler (grammatical)

- (2164) * Колко милиона си доволен, защото изграждането на космическа станция
how-many millions are.2.SG pleased because the-building of space station
няма да струва?
will-not to cost.3.SG
'How many millions are you pleased because the building of a space station is not going to
cost?'

CONDITION: Filler (ungrammatical)

- (2165) * Студентката намери книгата, която фактът, че все още продават, ме учуди.
the-student.F found the-book which the-fact that allways still sell.3.PL me surprised
'The student found the book, which the fact that they still sell surprised me.'

CONDITION: Filler (ungrammatical)

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