

ABSTRACT

Title of Document: STRATEGY AND BIAS IN COMPREHENSION OF MULTIPLE TEXTS: HOW DO READERS WITH TOPIC BELIEFS USE STRATEGIES WHEN READING CONTROVERSIAL DOCUMENTS?

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Research on multiple text comprehension reveals key principles and elements of comprehension: readers' mental representation, cognitive text processing, and strategy use while reading multiple texts (Goldman, 2004; Rouet, 2006). However, many studies of multiple text comprehension fail to investigate the influence of reader bias. Grounded in both the literature on reading strategies and the social psychology literature on bias (e.g., Edwards & Smith, 1996), this study investigated how readers' topic beliefs influence comprehension strategies in relation to bias.

The participants for this study were 15 undergraduate students, chosen as they represented three distinct topic beliefs related to the Israeli-Palestinian conflict. There were 5 pro-Israel, 5, pro-Palestine, and 5 neutral participants. While thinking-aloud, participants read two maps and five texts about Israeli settlements in the West Bank, and the ongoing Palestinian-Israeli conflict. The texts and maps were presented in the iMTC

(internet-embedded Multiple-Text Comprehension measurement tool) environment (Kim & Cho, 2011). In addition, measures of participants' prior knowledge and topic beliefs were gathered, while their reading times and Internet searches were recorded by the iMTC. Participants' verbal reports were coded based on existing coding schemes for reading strategies (Goldman et al., 2012; Pressley & Afflerbach, 1995). Five families of strategy were determined: Considering text content, Acceptance and resistance, Monitoring, Evaluation, and Information need and search.

The study has three major findings. First, initial belief differences between groups of different beliefs increased after reading, meaning that participants showed biased assimilation processing during reading. Second, the participants' biased processing was not detected in the three types of reading measures: reading times, reading orders, and Internet searches. Finally, the study found that participants with different topic beliefs showed different strategic patterns in relation to bias. In particular, acceptance and resistance distinguished the three participant groups' strategic processing. Participants accepted belief-consistent text information and resisted belief-inconsistent text information. In addition, three cases of participants' biased strategy use were qualitatively analyzed. The analyses demonstrated that participants' topic beliefs played a role in creating an interpretive framework that evaluated, accepted, or resisted information during reading. The findings, limitations, implications for future research and instructional practices are discussed.

STRATEGY AND BIAS IN COMPREHENSION OF MULTIPLE TEXTS:
HOW DO READERS WITH TOPIC BELIEFS USE STRATEGIES
WHEN READING CONTROVERSIAL DOCUMENTS?

By

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Table of Contents

CHAPTER 1: INTRODUCTION	1
Problem Statement	1
Purpose of the Study	7
Research Questions	14
Key Concepts Related to Multiple Text Comprehension for this Study	16
Strategic Processing in Comprehension	16
Conceptualization of Multiple Text Comprehension	20
Biased Assimilation about a Controversial Issue	23
Definitions of Key Terms	27
CHAPTER 2: REVIEW OF LITERATURE	29
Research Perspectives on Comprehension of Multiple Texts	30
Mental Representation	32
Cognitive Text Processing	38
Strategy Use as Constructionist	46
Roles of Cognitive Resources in Comprehension	51
Prior Knowledge	51
Epistemic Beliefs	55
Metacognition	59
Text Processing Patterns in Comprehension	62
Recognition of Source Information	63
Reading Order	66
Searching for Additional Information	70
Biased Assimilation in Comprehending Controversial Information	74
CHAPTER 3: METHODS	82
Participants	82
Participant Selection	82
Group Assignment	85
Participant Characteristics	88
Materials	89
The iMTC Environment	96
Main Participant Task and Instruction	99
Main Participant Task	99
Instruction	100
Measures	101
Prior Knowledge	101
Topic-related Reader Belief	102
Belief Change	103
Self-Reflection	104

Reading Time and Reading Order	105
Internet Search	105
Strategy Use	106
Procedures	109
Data Analyses	111
Overview of Data Analysis	111
Developing Prior Knowledge Classification and Assessment	114
Transforming the Topic-related Reader Belief Responses into Composite Scores	119
Analyses of the Reading Time, Reading Order, and Internet Search	124
Coding and Analyzing Verbal Data	129
CHAPTER 4: RESULTS	140
An Overview of Data	140
Change of Topic-related Reader Belief after Comprehension	143
Change of Topic Belief	143
Belief Change in Relation with Topic Beliefs and Prior Knowledge	150
Aspects of Belief Change across Groups	154
Summary	159
Analysis of Reading Time, Reading Order, and Internet Search	160
Amount of Reading Time	161
Reading Order	165
Internet Search	168
Summary	172
Analysis of Strategic Processing	173
Types of Strategic Processing	173
Frequency of Participants' Strategic Processing: Acceptance and Resistance	182
Case Examples of Participants' Strategic Processing: Acceptance and Resistance	185
Case Analyses of Individual Participants in Relation to Beliefs	203
Participants' Reflection: Influence of Topic Belief on Comprehension	219
Summary	221
CHAPTER 5: DISCUSSION AND CONCLUSION	223
Theoretical Contributions	223
Roles of Reader Belief in Multiple Text Comprehension	224
Understanding Reader Bias	227
Methodological Contributions	234
Multiple Measurements of Comprehension	234
Tool Development (The iMTC Environment)	236
Limitations	237
Future Research on Reader Belief and Multiple Text Comprehension	239
Need for Study in More Extended Population with Diverse Topics	239
Conceptual Issues: Reader Belief and Prior Knowledge	241
Implication for Educational Practice	243

Appendices.....	245
Appendix A. Summary Table for the Literature Review of Multiple Text Comprehension	245
Appendix B. The Reading Material: Two Maps and Five Texts	254
Appendix C. The iMTC Environment	266
Appendix D. Think-Aloud Task Instruction	268
Appendix E. Pre-Reading Interview	269
Appendix F. Post-Reading Interview.....	270
Appendix G. Amount of Reading Time (Unit: Minutes).....	271
Appendix H. Reading Order Graphs.....	272
Appendix I. Result of All Participants' Encoded Data	275
Appendix J. Frequency of Participants' Strategy Use for Each Text	276
Appendix K. Raw Data of Participants Internet Search Words and Types	277
Appendix L. Participants' Topic Beliefs in the Pre-Reading and Post-Reading Sessions	278
Appendix M. Participants' Self-Reflection: Influence of Topic Belief on Comprehension	283
References.....	289

List of Tables

Table 1. The Review of the Six Comprehension Models under the Three Research Perspective	31
Table 2. Profiles of the Biased Assimilation Studies.....	76
Table 3. Group Assignment Results Based on Participants' Interview	87
Table 4. Participant Demographics	89
Table 5. Text Materials in this Study.....	91
Table 6. The Number of Think-aloud Prompts Embedded in Each Text	108
Table 7. Individual Codes and Pseudonyms	114
Table 8. Classification of Participants' Prior Knowledge	115
Table 9. Participants' Prior Knowledge Distribution in the Three Groups	118
Table 10. The Number of Spoken Words Produced and Transcribed	131
Table 11. Existing Coding Schemes of Verbal Protocol Studies in Reading.....	133
Table 12. Verbal Coding Scheme for This Study.....	135
Table 13. Descriptive Statistics of the Three Belief Groups	142
Table 14. Raw Data of Participants' Response to Topic Belief Questions	144
Table 15. Individual Participants' Belief Difference, Belief Distance, and Change of Belief.....	145
Table 16. Excerpts of Participants' Interview about their Thoughts on Belief Change ..	151
Table 17. Descriptive Statistics: Amount of Reading Time	161
Table 18. The Reading Time Comparison Result: Test Statistics	163
Table 19. Descriptive Statistics of Internet Search.....	169
Table 20. Test Statistics of Nonparametric Test (Kruskal-Wallis One-Way Analysis of Variance).....	169
Table 21. Frequency of Searched Type	170
Table 22. Frequency and Percent of Searched Type across the Groups.....	171
Table 23. Examples of Considering Text Content.....	173
Table 24. Examples of Acceptance and Resistance.....	174
Table 25. Example of Monitoring.....	175
Table 26. Examples of Evaluation.....	176
Table 27. Examples of Information Need and Search	177
Table 28. Descriptive Statistics: Frequency of Strategy Use.....	178
Table 29. Kruskal-Wallis One-way ANOVA Test for the Strategic Processing across Groups.....	180
Table 30. The Results of Three Post-hoc Pairwise Comparisons Using the Mann-Whitney U Test for the Acceptance and Resistance.....	181
Table 31. Frequency (Percent) of Acceptance and Resistance per Each Text.....	183
Table 32. AC Strategy Pattern of Pro-Israel and Pro-Palestine Group.....	185
Table 33. Comparison of Verbal Reports between Mason (I3) and Jackson (P4) in Text 1 (Overview)	194
Table 34. Comparison of Verbal Reports between Mason (I3) and Jackson (P4) in Text 2 (Pro-Palestine Text)	196
Table 35. Comparison of Verbal Reports between Mason (I3) and Jackson (P4) in Text 3 (Pro-Israel Text).....	198

Table 36. Comparison of Verbal Reports between Mason (I3) and Jackson (P4) in Text 4 (Pro-Palestine Text)	200
Table 37. Comparison of Verbal Reports between Mason (I3) and Jackson (P4) in Text 5 (Pro-Israel Text).....	202
Table 38. Jayden’s R-E-R Pattern in a Belief-inconsistent Text	211
Table 39. Emily’s Verbal Reports on Source Evaluation	218
Table 40. Participant Selection in Terms of Prior Knowledge and Reader Beliefs.....	242

List of Figures

Figure 1. Representation of relevant studies of multiple text comprehension: Multiple text comprehension studies, Internet reading studies, biased assimilation studies, and the current study.....	8
Figure 2. An unbiased reading model of multiple texts representation on a controversial issue.....	24
Figure 3. A biased reading model of multiple texts representation on a controversial issue	26
Figure 4. Mental representations in single- and multiple-text comprehension (adapted van	37
Figure 5. Structural Building Framework in single- and multiple-texts (adapted from Gernsbacher, 1996).....	40
Figure 6. A simplified version of the MD-TRACE model (Adapted from Rouet & Britt, 2011).....	42
Figure 7. Constructively Responsive Reading model (adapted from Afflerbach & Cho, 2009; Pressley & Afflerbach, 1995).	49
Figure 8. Conceptualization of change intertext structure when a third text being introduced	73
Figure 9. Participant selection processes for this study.....	84
Figure 10. Text-Event relationship.....	94
Figure 11. Document Model with open Internet searching space in this study.....	96
Figure 12. Basic display functions of the iMTC.....	97
Figure 13. An Internet display of the iMTC.....	98
Figure 14. Overall procedure of this study.....	110
Figure 15. Belief difference scores represented on a Cartesian coordinate.....	121
Figure 16. An overview of the iMTC time log with subcomponents: action, time, duration, and description.....	124
Figure 17. A sample of the reading order graph.....	126
Figure 18. A procedure of coding and analyzing verbal data.....	130
Figure 19. Correspondences of the verbal comments to the target sentences	132
Figure 20. An example of strategy use matrix.....	137
Figure 21. An analytic framework of strategy use and bias	138
Figure 22. Visualization of thee participant groups' belief changes on a Cartesian coordinate	147
Figure 23. Scatterplot between belief change (ΔbD) and prior knowledge.....	150
Figure 24. Visual summary of influence of topic beliefs and prior knowledge on belief change in relation with bias	159
Figure 25. Box plots: amount of reading time to read.....	162
Figure 26. Reading order graphs	166
Figure 27. Bar graph of reading time for the three groups	167
Figure 28. Mean of frequency of think-aloud strategic processing.....	179
Figure 29. Bar graphs of acceptance and resistance frequency per text.....	184
Figure 30. A neutral participant's (Ethan, N3) example of unbiased reading.....	188
Figure 31. A pro-Palestine participant's (Abigail, P2) example of biased reading.....	189
Figure 32. Participants' think-aloud to two contrasting text passages	191

Figure 33. The three readers' verbal reporting timeline according to think-aloud prompt marks.....	206
Figure 34. A radar chart and table for the three readers' verbalization in multiple text comprehension	207

CHAPTER 1: INTRODUCTION

Problem Statement

In the 21st century information society, it is common to read several texts together, as when one is navigating, searching, and reading news articles on the Internet. Recently, the educational and social aspects of learning and teaching multiple documents comprehension have been a focus. For example, the *Reading Framework for 2009 National Assessment of Educational Progress* (National Assessment Governing Board, 2008), suggests that a “[c]ommon task for readers at all grades is integrating information across a set of texts” (NAGB, 2008, p. 11). The blueprint for the *Program for the International Student Assessment* (PISA) (OECD, 2009) also regards reading multiple documents as a critical literacy domain. The importance of multiple document comprehension is also reflected in the *Common Core State Standards* (National Governors Association Center for Best Practices [NGA Center] & Council of Chief State School Officers [CCSSO], 2010). According to the standards, fifth graders should “draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question” and “integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably” (NGA & CCSSO, 2010, p. 14).

The comprehension of multiple texts is a phenomenon that cannot be fully explained by research that investigates the comprehension of single texts. In the research of single-text comprehension, it is usually assumed that a text is coherently written to achieve a communicative purpose with expected readers; except in several special cases (e.g., artificially designed texts for experimental purpose), a reader comprehends a text that has a coherent perspective, goal, and main point. On the other hand, in reading

multiple-texts, this basic assumption is untenable. When reading multiple texts, readers may encounter difficulties and become distracted because texts are varied in terms of writing quality, authors' authority and stance, and credibility and persuasiveness. Even if a reader is proficient at comprehension of single texts, he or she may not be a good reader when reading multiple texts (Wineburg, 1991). For these reasons, researchers need to conduct research on multiple text comprehension to complement the voluminous research on single-text comprehension.

The concern with multiple document comprehension is not new. Nearly two decades ago, Tierney and Pearson (1994) recognized that "Our unitary view of text has been replaced by a multiple, intertextual construct" (p. 518). In addition, multiple text comprehension research has rapidly grown in twenty years. After preliminary works on this topic (e.g., Spivey & King, 1989; Wineburg, 1991), research has been conducted in diverse, specific knowledge domains including history education (VanSledright, 2002), science education (Bråten, Strømsø, & Britt, 2009) and cognitive psychology (Goldman, 2004; Rouet, 2006) as well as literacy studies (Hartman, 1995).

Despite growing research interest in the multiple-text comprehension, a multitude of multiple text comprehension studies leans toward specific research procedure and methods. For example, many research procedures in multiple text comprehension consist of the following steps (e.g., Bråten, Strømsø, & Sameulsteun, 2008; Rukavian & Daneman, 1996): (a) researchers ask participants to answer surveys or interview questions that they are interested in (e.g., epistemic beliefs, prior knowledge, metacognition); (b) researchers provide participants with print-based text materials to read; and (c) researchers measure participants' reading performance of multiple text

comprehension (e.g., sentence verification task). Data drawn from the procedures are analyzed and used to identify relationship between factors of interest (e.g., prior knowledge) and comprehension performance. Although the research approach is valuable to reveal many aspects of multiple text comprehension, three important issues remain in this research field, which should be the focus of ongoing research.

The first issue is lack of understanding of readers' strategic process during multiple text comprehension. For example, numerous correlation studies have been conducted in the area of multiple text comprehension (e.g., Bråten, Strømsø, & Britt, 2009; Maier & Richter, 2013; Wolfe & Goldman, 2005). These studies have investigated the relationship between *factors of interest* (e.g., sourcing skills, epistemology) and comprehension performance as represented by *test scores*. Thus, the correlation studies have given us insight into which factors are related to a comprehension product.

Assuming that research on multiple texts requires more time and effort than traditional single-text research, correlation studies are more feasible to implement. However, the correlation-oriented research paradigm does not support detailed accounts of the cognitive processes occurring in readers' minds as they make sense of texts. Researchers thus need more process-oriented studies that use techniques such as think-aloud protocols in order to collect data on readers' text processing (Afflerbach, 2000). Verbal reports, or think-alouds, and their analyses are a representative methodology to investigate readers' cognitive processes in their attempts to achieve comprehension of multiple texts.

Although some studies have used this method (Wineburg, 1991, 1998; Wolf & Goldman, 2005), the amount of verbal protocol studies is not sufficient to reveal readers' comprehension processes when reading multiple texts. The more process-oriented

investigations that are conducted, the deeper will we understand how readers analyze, compare and contrast, and synthesize across multiple texts. Studies that include think-aloud protocols can provide a richer perspective than a single method provides with (Magliano & Graesser, 1991).

A second issue relates to the fact that many theories of multiple text comprehension (e.g., Goldman, 2004; Perfetti, Britt, & Rouet, 1999; Rouet & Britt, 2011) have assumed *unbiased readers* who select, understand, and synthesize multiple sources of information in balanced, predictable ways. These studies do not describe readers' bias during comprehension, although they recognize the authors' bias. For example, Britt and Rouet (2012) mentioned writers' bias without considering reader's bias:

Using multiple documents is not just important because of the limits of any single document; it is also useful so as to not deceive students that an author or text could be complete and unbiased. Reading multiple interpretations or multiple theories highlights for students both the social nature of text and the complex relationships between documents and the content they present (p 281).

From this cognitive perspective, readers' main task in comprehension was considered to separate sources and integrate contents in order to construct a coherent mental representation, as balanced expert readers did (Britt, Perfetti, Sandak, & Rouet, 1999). The difference between good and poor readers was understood in terms of differential text processing such as sourcing skills (Wineburg, 1991), synthesizing strategies (Rouet, 2006), and evaluating and monitoring (Cho, 2011; Goldman, Braasch, Wiley, Graesser, & Brodowinska, 2012). In addition, a multitude of research identified importance of readers' cognitive factors such as prior knowledge (Bigot & Rouet, 1997), disciplinary expertise (Wineburg, 1991), and epistemic beliefs (Bråten, Britt, Strømsø &

Rouet, 2011) without much consideration of readers' beliefs, attitudes, and related biased processing.

When reading multiple texts about a controversial topic, readers rarely approach the task with the eyes of an unbiased reader. Readers already have specific knowledge, beliefs, and preferences toward a controversial topic before the actual reading of controversial texts (Murphy & Mason, 2006). From this perspective, readers are not immune to bias during comprehension process. Reader bias (biased assimilation) in comprehension context can be defined:

Readers' tendency to evaluate information they want to believe (belief-consistent information) as more valid, reliable, and important than information they prefer not to believe (belief-inconsistent information) (see, Ditto, Scepansky, Munro, & Apanovitch, & Lockhart, 1998; Greitemeyer, Fischer, Frey, & Shulz-Hart, 2009).

Among other factors, readers' topic beliefs and attitudes are main causes for the biased text processing. For example, Kardash and Howell (2000) investigated effects of topic beliefs (i.e., epistemological beliefs and topic-specific beliefs) on strategic processing, by showing that reader's topic beliefs were related to patterns of strategy use. In this study, readers stated more understanding of content from a belief-consistent text while they stated more judgment and decision to a belief-inconsistent text. Maier and Richter (2013) also suggested that both readers' prior knowledge and topic belief played a schema-like role in comprehending documents on controversial issues. The effect of topic beliefs toward a controversial topic have been investigated as *biased assimilation* in social psychology (Lord, Ross, & Lepper, 1979), *conceptual change* in science education (Chinn & Brewer, 1993), and *persuasion* in reading research (Chambliss & Garner, 1996). However, research on topic belief and biased processing in multiple text comprehension is nascent.

Finally, in multiple text comprehension research, many studies have been conducted using traditional print texts (e.g., Hartman, 1995; Kim & Millis, 2006; Mannes, 1994). In addition, for the sake of internal validity researchers control the number of texts, contents, and sources prior to their experiments. Research participants in these studies are required to read provided, paper texts. It is not common for readers to search for additional sources of information beyond given texts. This approach may enhance the internal validity of an experiment, but it is problematic in terms of external validity. In other words, Web-searches, hypertext and Internet reading are not always featured in studies of multiple-text comprehension. However, today's students often turn to these types of texts to better understand a topic.

In terms of research perspective, it is beneficial that two different research areas (i.e., "multiple-text comprehension", "Internet reading") have developed separately because they provide diverse perspectives on comprehension. However, we also need research that focuses on joint reading situations in which one reads multiple documents and searches the Internet simultaneously. Suppose that a graduate student has to write an integrative essay for her final term paper. While reading and reviewing several articles for the essay, it is highly likely that she will search for additional information via the Internet in order to strengthen her paper. Or, imagine that a reader who comes across sharply contentious issues reported and debated in a newspaper. It is expected that the reader may seek more information about the issues through the Internet. As such, given that online reading and multiple-text reading frequently occur together (Biddix, Chung, & Park, 2011), multiple text comprehension research that focuses on Internet searching should enhance our understanding of both.

Purpose of the Study

This study aims to extend previous studies of multiple text comprehension by: (a) Describing readers' bias and related strategy use in association with readers' beliefs while comprehending controversial texts, and (b) Examining readers' Internet searching patterns (e.g., frequency, duration, information content) in relation to the bias.

I claim that many studies of multiple text comprehension were conducted in print-based research contexts and assumed unbiased readers. In other words, research questions of these studies often revolve around unbiased reader's intertextual integration and comprehension across documents. For example, in multiple text comprehension research, researchers have focused on readers' connecting and synthesizing various documents by available textual information (e.g., source information) and prior knowledge (Bigot & Rouet, 2007; Bråten, Strømsø, & Britt, 2009; Britt et al., 1999; Goldman, 2004; Perfetti et al., 1999; Rouet, 2006; Lacroix, 1999). In this research tradition, reader bias was not discussed systematically, although authors' bias in texts was often noted (Britt & Rouet, 2012).

As seen in Figure 1, relevant studies of multiple text comprehension focused on readers' biased reading behavior and Internet searching. First, "Biased Assimilation Studies" in social psychology investigate readers' biased processing of controversial issues (e.g., Lord, Ross, & Lepper, 1979). Although researchers in this field do not focus on comprehension process in multiple texts, they investigate how participants understand more than one controversial text, according to participants' attitudes and beliefs.

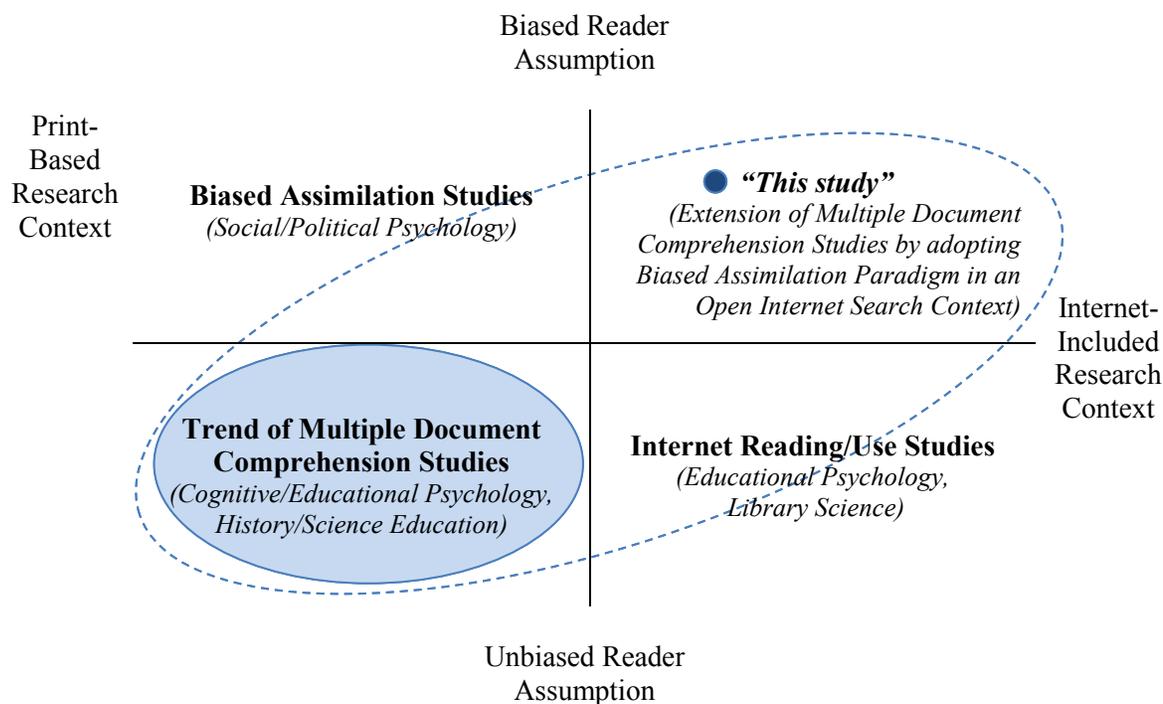


Figure 1. Representation of relevant studies of multiple text comprehension: Multiple text comprehension studies, Internet reading studies, biased assimilation studies, and the current study

Notes:

1. The trend of multiple document comprehension was based on the previous literature review (Kim, 2010). In this review total 27 studies were identified (Lower-Left quadrant): Afflerbach & VanSledright (2001), Bråten & Strømsø (2010), Bråten, Strømsø, & Britt (2009), Bråten, Strømsø, & Sameulsteun (2008), Bigot & Rouet (2007), Britt & Aglinskas (2002), Cerdán & Vidal-Abarca (2008), Maggioni, Fox & Alexander (2010), Hartman (1995), Kim & Millis (2006), Lacroix (1999), Mannes (1994), Manning, Goldman et al. (2008), Nokes, Dole, & Hacker (2007), Rouet, Britt, Mason, & Perfetti (1996), Rouet, Favart, Britt, & Perfetti (1997), Rukavina & Daneman (1996), Stahl, Hynd, Britton, McNish, & Bosquet (1996), Strømsø, Bråten & Sameulsteun (2003), Strømsø & Bråten (2009), Strømsø, Bråten, & Britt (2010), VanSledright (2002), Wiley & Voss (1999), Wineburg (1991, 1998), and Wolfe & Goldman (2005).
2. Examples of Biased Assimilation Studies (Upper-Left quadrant): Edwards & Smith (1996), Greitemeyer, Fischer, Frey, & Schulz-Hardt (2009), Hulsizer, Munro, Fagerlin, & Taylor (2004), Lord, Ross, & Lepper (1979), Maoz, Ward, Katz, & Ross (2002), Munro & Ditto (1997), Munro, Ditto, Lockhart et al. (2002), Plous (1991), and Taber & Lodge (2006).
3. Examples of Internet Reading/Use Studies (Lower-Right quadrant): Bilal & Kirby (2002), Coiro & Dobler (2007), Dyson & Haselgrove (2000), Goldman, Braasch, Wiley, Graesser, & Brodowinska (2012), Kuhlthau (1991), Mason, Boldrin, & Ariasi (2010), Salmerón, Cañas, Kintsch, & Fajardo (2005), and Zang & Duke (2008).
4. Examples of studies similar to this study (Upper-Right quadrant): Kardash & Howell (2000) and Kobayashi (2010).
5. The dotted circle will be an extensible area related to research of multiple document comprehension.

Second, “Internet Reading/Using studies” in the new literacy studies and library science examine readers’ comprehending hypertexts on the Websites and searching the Internet (e.g., Coiro & Dobler, 2007). Internet reading researchers recognize that readers frequently encounter multiple text comprehension in the Internet, comparing, juxtaposing, and synthesizing different sources of texts. The two types of studies also often include tasks of multiple document comprehension in their research, albeit their main research foci are different.

Previously, I reviewed 27 empirical studies of multiple text comprehension (Kim, 2010), and I detected a research trend with multiple text comprehension (Appendix A). Based on the review I identified, a first prominent research trend of multiple text comprehension is the implicit assumption of an unbiased reader. I use a term of the *unbiased reader* because the selected studies of multiple document comprehension rarely mentioned readers’ biased processing related to their attitude or belief. Rather, many of multiple text comprehension studies described either unbiased expert readers (e.g., historians) with excellent comprehension skills and strategies (e.g., Rouet, Favart, Britt, & Perfetti, 1997; Wineburg, 1991, 1998), or unbiased high school and undergraduate students with less skills and strategies than such experts (e.g., Rukavina & Daneman 1996; Stahl, Hynd, Britton, McNish, & Bosquet, 1996). Many researchers use unfamiliar reading topics in the studies of multiple texts comprehension, in order to investigate how readers understand and learn unfamiliar contents from multiple sources of texts (e.g., Britt & Rouet, 2012; Goldman, 2004). This is one reason that studies do not focus on readers’ bias in comprehension. For example, Goldman (2004) mentioned that:

By making this intertextual processing more explicit in research on reading and learning in classrooms, researchers will be better able to provide cognitive

accounts of learning and understanding from textual sources and to support the development of reading competencies that permit learners to engage in the complex comprehension activities called for in a knowledge society (p. 320).

In this sense, educational psychologists focus on experts' multiple text comprehension in order to identify successful cognitive factors for comprehension. As a result, their main research interest is unbiased readers who successfully learn multiple texts to achieve their goal.

However, perspectives of social psychologists and political scientists are different from those of the educational psychologists. Their focus is why social debates between different groups (e.g., political debates for a presidential election) are not easily negotiated, and why persuasion is difficult for the citizenry who has strong topic beliefs. One example of research topics in the social psychology is to examine whether the same issue is differently interpreted to different groups (Lord, Ross, & Lepper, 1979; Travis & Aronson, 2007). Research in social psychology literature indicates that people do not understand controversial issues as unbiased way. Rather, they interpret a social or political issue through their lenses of belief and attitude. In other words, people interpret belief-consistent information more favorably and positively than belief-inconsistent information; such biased process is called *biased assimilation* (Greitemeyer et al., 2009).

In this way, social psychologists view that a human bias is an inevitable assumption in interpretation of complex and controversial social affairs, which is not much studied in the multiple text comprehension. However, since many of the biased assimilation studies in social psychology use merely two opposing short texts (e.g., several sentences for an argument) in order to identify readers' biased evaluation of texts (Edwards & Smith, 1996; Lord, Ross, & Lepper, 1979; Munro & Ditto, 1997), these

studies are limited to show readers' strategic processing with lengthy multiple texts. By combining these two approaches, the first purpose of this study is to investigate readers' strategic processing in a biased assimilation paradigm that considers reader's belief and bias in comprehension of multiple documents. This study may broaden our understanding of multiple document comprehension as depicted in Figure 1.

Second, most research on multiple text comprehension has been conducted in relation to the traditional, print-based format. Many studies use "closed text material" in which readers are asked to read given texts, provided by the researchers. In addition, text materials in these studies usually consist of pairs of contradictory texts. For example, in science reading, a text set about a climate change topic provides at least two different perspectives about a main cause, either of human pollution or natural phenomena (Bråten, Strømsø, & Samuelstuen, 2008). In history, a representative example is a debate whether the U.S. invasion in the Panama Canal was a legally justified action (Rouet, Favart, Britt, & Perfetti, 1997). The rationale for including contradictory, refutation texts is that researchers intend to identify if, and how, readers integrate various sources with the sharply different perspectives (Britt, Perfetti, Sandak, & Rouet, 1999).

The provision of already-set documents will be beneficial to researchers when a purpose of research is to identify reader's integration processes and products from different sources. However, this approach can have limited ecological validity. In the real world, readers may need more information than is provided by two predetermined texts, and search for it when reading such contradictory topics. Due to the technology development including widely available Internet environment, it is more common that readers search information via the Internet (Malloy & Gambrell, 2006). For that reason,

this study allows research participants to search information via the Internet whenever needed. I call this free-Internet-searching-environment during reading multiple texts as “open Internet search space.”

Designs that allow research participants to search for additional information during reading are not commonly used in traditional reading research. First, researchers preferring print-based reading conceptualize that searching for information is distinguishable from cognitive processes of comprehension (Guthrie, 1987; Guthrie & Kirsch, 1987). For example, Guthrie and Kirsch (1987) revealed that locating information within a text required different skills from reading comprehension. As a result, Guthrie and his colleagues (e.g., Dreher & Guthrie, 1990) proposed a cognitive searching model that consisted of several algorithms including identifying, selecting, and evaluating target information from text. This model differed considerably from traditional comprehension models. Second, Internet based-reading researchers focus on what they believe to be key characteristics of Internet reading tasks, locating information and understanding new media (e.g., search engine, hypertext structure), and may seem less interested in commonalities with print-based comprehension processes, such as identifying a main idea and inferring meaning between sentences. For instance, Leu and his colleagues (2004) argue that:

The new literacies of the Internet and other ICT include the skills, strategies, and dispositions necessary to successfully use and adapt to the rapidly changing information and communication technologies and contexts that continuously emerge in our world and influence all areas of our personal and professional lives. These new literacies allow us to use the Internet and other ICT to identify important questions, locate information, analyze the usefulness of that information, synthesize information to answer those questions, and then communicate the answers to others (p. 1570).

In other words, many of the *New Literacy* scholars attempt to identify new strategies and related phenomena in Internet reading—new characteristics of hypertext, searching patterns on the Internet, instant messaging and blogging, and social interaction within online community (Coiro, Knobel, Lankshear, & Leu, 2008; Rouet, Levonen, Dillon, & Spiro, 1996).

The two distinct research traditions, print-based reading and Internet-based reading, need to be considered together in the research context of the multiple text comprehension. As Rouet and Britt (2011) claim, readers may use external information resources (print and electronic resources) in order to achieve their goals. If a study assigns a set of fixed texts without permission to use external resources (e.g., searching for information on the Internet), it may lose insight how readers use the external resources during comprehension process. If another study allows readers to search for information without provision with a fixed set of text materials, it may gain only a partial understanding of the intertextual processing across texts due to readers' huge degree of freedom. Hence, I believe that a balanced approach provides a fixed set of texts but also allows searching for additional information. The open Internet searching space I design in this study is one of the balanced approaches.

An issue to consider in the open Internet searching space is that there may be huge individual differences in terms of comprehension processes and searching patterns. Since research participants have more degrees of freedom in the research environment, research in this context is more vulnerable to confounds and internal validity threats. Nevertheless, this approach has more ecological validity that contributes to better representation of reading behaviors in a real world. The research design of the open

Internet searching space enables us to see how readers comprehend multiple sources while adding more sources in their reading. To reveal these processes is my second research purpose.

Research Questions

The primary goal of this study is to investigate how readers' topic beliefs influence readers' comprehension process and strategy use in a biased or unbiased way. Exploration of this research question requires one preliminary condition: Readers should reveal bias after comprehension of multiple texts. Social psychology literature informs that belief polarization (i.e., a phenomenon of increased belief gaps between different groups after encountering controversial information) is counted as evidence of bias (Lord et al., 1979; Taber & Lodge, 1996).

Therefore, I address three research questions in the following order. First, I show whether readers' beliefs change after reading, as a preliminary question. Next, I address a research question about relationship between readers' topic beliefs and reading processing patterns (e.g., reading time, reading order, Internet search). Finally, exploration of relationship between readers' topic beliefs and strategy use is addressed.

1. Do readers' topic beliefs change after reading multiple controversial texts and Internet searching?

As a preliminary question, examination of readers' bias in comprehension is important for this study. Without an account of readers' bias that occurs in comprehension, it is hard to further analyze readers' biased assimilation process in comprehension. One way for checking occurrence of reader bias during comprehension is to investigate whether readers' beliefs change after reading

controversial information. Prior studies indicate that belief polarization (i.e., a phenomenon that participants' beliefs go to extreme after reading controversial texts) reveals participants' bias. When participants in previous studies read controversial texts, their beliefs became more extreme viewpoints as they interpret and search for information to fit their prior beliefs, resulting in reinforcement of their prior beliefs. Thus, the first investigation of this study is to identify whether readers' topic belief changes after reading both belief-consistent and belief-inconsistent texts.

2. Do readers with strong beliefs exhibit different reading patterns (e.g., reading time, reading order, and Internet search) from those with weak or neutral beliefs?

While the first research question seeks to identify readers' bias occurrence after comprehension, the second question focuses on how readers with different topic beliefs show different reading process patterns in reading time, reading order, and Internet search. First, I will check difference of amount of reading time across groups. Next, I will examine participants' reading order patterns in relation with readers' topic beliefs. Finally, participants' Internet search patterns will be examined. In addition, I will explore whether identified differences in the reading patterns relate to readers' bias.

3. How do individual differences in reader bias influence strategy use during comprehension of multiple texts?

I seek to examine relationship between participants' topic beliefs and patterns of strategy use during comprehension. Research on biased assimilation in the social psychology literature show that readers with strong topic belief favor belief-

consistent information over belief-inconsistent. When reading belief-inconsistent information, they took longer time with more critical approach. However, the previous studies used short texts and sentences (e.g., 16 sentence-length arguments). In addition, researchers do not focus on participants' patterns of strategy use when comprehending multiple texts. I will investigate how readers with different topic beliefs use strategic efforts in reading multiple texts with long-lengths, with analysis of think-aloud protocol. In addition, I will also explore whether identified differences in the participants' strategy use relate to readers' bias.

Key Concepts Related to Multiple Text Comprehension for this Study

In this section, three key concepts related to multiple text comprehension are described. First, I discuss meaning of strategic processing in comprehension. Next, comprehension of multiple texts is described in relation to, and compared with, comprehension of single texts. Last, I describe the concept of the biased assimilation of information. I believe that the three concepts are essential to explain the complex nature of multiple text comprehension.

Strategic Processing in Comprehension

This study aims to investigate readers' strategic processing in multiple text comprehension. What does *strategic processing* in comprehension mean? In this study, I intend to use strategic processing as readers' constructive strategy use during comprehension. This section describes an origin of strategy, meaning of the strategy in comprehension, and relationship between strategic processing and research on comprehension.

Strategy originates from an ancient Greek word, “Strategos” (στρατηγός), meaning an elected military general in Greece (Britannica Online, n.d.). In the military fields, strategy is used to describe plans and means to achieve a victory (goal). The United States Department of Defense (DOD) *Dictionary of Military Terms* (n.d.) defines the strategy as:

A prudent idea or set of ideas for employing the instruments of national power in a synchronized and integrated fashion to achieve theater, national, and/or multinational objectives.

The idea of the strategy, purposeful plans and activities toward a goal, is a useful concept to explain human behaviors and decision making, so that many areas including economics, politics, sports, and psychology adopt the term. In a broad sense, in education strategy usually indicates two meanings, instructional strategy and learning strategy in order to achieve a pre-planned goal (Alexander, Graham, & Harris, 1998). In reading situation, strategy is more detailed conceptualized as readers’ “deliberate, goal-direct attempts to control and modify the reader’s efforts to decode texts, understand words, and construct meaning of text” (Afflerbach, Pearson & Paris, 2008, p. 368).

The strategic processing in reading comprehension connotes at least three meanings: effortful, goal-driven, and flexible process. First, strategic processing is an *effortful (deliberate)* process. It is distinguished from a memory-based, automatic process during comprehension. While the memory-based process is speedy and automatic, the strategic processing is a slow and effortful process. Van den Broek and his colleagues (van den Broek et al., 2005) distinguished the two types of processes in comprehension:

In the discourse processing literature, two sets of processes have been proposed as providing the foundation for the identification of such meaningful connections: memory-based processes and constructionist processes. According to the

memory-based view of text processing, as a text is read, information in the text (and any other information already activated in working memory) will trigger a spread of activation through the reader's knowledge base, activating associated information... According to the constructionist view, readers have explicit and implicit goals or standards they actively attempt to satisfy when they read a text. These goals or standards have been labeled as a search/effort after meaning (p. 301).

Second, the strategic processing is a *goal-driven* process. The idea that readers are strategic comprehenders appears in the concept of search-after-meaning (Graesser, Singer, & Trabasso, 1994). Graesser and his colleagues (1994) propose constructionist theory in which "readers attempt to construct a meaning representation that addresses the reader's goals, that is coherent at both local and global levels" (p. 371). To specify, Graesser et al. propose three constructionist assumptions in their constructionist theory: (a) reader goal assumption, (b) coherence assumption, and (c) explanation assumption. All these assumptions posit that readers are goal-driven, strategic comprehenders who construct meaning from text in order to make sense to them.

Third, the strategic processing is a *flexible* process. The notion of strategic processing is also discussed in van Dijk and Kintsch's (1983) seminal book, *Strategies of discourse comprehension*. In this work, van Dijk and Kintsch argue that strategic process is flexible and thus differs from pre-set "algorithmic, rule-governed processes" because there is "no unique representation of the text" (p. 11). One reason for no unique text representation in a text is that that meaning of text comes from an amalgam between text and reader characteristics (e.g., reading goal). The authors point out the active roles of readers in text comprehension:

Strategic analysis depends not only on textual characteristics, but also on characteristics of the language user, such as his or her goals or world knowledge. This may mean that a reader of a text will try to reconstruct not only the intended

meaning of the text as signaled by the writer in various ways in the text or context but also a meaning that is most relevant to his or her own interests and goals (p. 11).

According to van Dijk and Kintsch, reading is not pre-determined, automatic processes in which readers follow what a text says. Rather, reading consists of a series of flexible strategic processes in order to construct and reconstruct meaning for readers' goals.

Research describes good readers as strategic (Long, Oppy, & Seely, 1994), and strategic processing enhances successful comprehension (Bereiter & Bird, 1985; Coté, Goldman, & Saul, 1998; Salmerón, Cañas, Kintsch, & Fajardo, 2005). Research on strategic processing in comprehension examines readers' strategy use in relationship with their purpose (Pressley & Afflerbach, 1995). The research also includes when and how readers use (what types of) strategies for what purpose. Due to the reading researchers' focus on this topic, reading research accumulates psychological evidence about effectiveness of readers' strategic processes and behaviors in comprehension. For example, researchers learn that proficient readers are strategic: They set a goal before reading, use inference to fill the gaps that a text does not describe explicitly, relate reading contents to prior knowledge, detect and fix reading difficulties, and evaluate source information (Afflerbach & Cho, 2009; Fox, 2009; Pressley & Afflerbach, 2005).

Nevertheless, there is a lack of research in particular areas of readers' strategic processing. One is how readers use strategic processing when they read multiple texts. Although several studies are conducted in this area (e.g., Wolfe & Goldman, 2005; Wineburg, 1991), research on strategic processing in multiple text comprehension is still scant. Rather, many studies of multiple text comprehension are correlation studies that measure target variables (e.g., prior knowledge, epistemology, and trust of sources) and

outcome measures (i.e., comprehension) (Kim, 2010). Statistical analyses of the correlation, including regression models, reveal sources of individual difference in readers' comprehension of multiple texts. While these studies are valuable, the correlation studies do not reveal readers' strategic processing in reading multiple texts. In the 21st century, easy access to Internet and the variance in quality of texts require specific reader's mindset and strategy. Research on readers' strategic processing in multiple text comprehension is, therefore, worth conducting in more depth.

Conceptualization of Multiple Text Comprehension

This study assumes that reading multiple texts is closely related to, but not the same as, reading single texts. Researchers of multiple text comprehension argue that comprehension process of multiple texts is more complex than process of single texts (Goldman, 2004). Comparison of theories between single texts and multiple text comprehension indicates that how comprehension of multiple texts is differently conceptualized and understood.

Despite the ongoing debates, in general we have agreed upon a definition of reading comprehension, "constructing meaning from text" (Harris & Hodges, 1995; NICHD, 2000; Snow, 2002). Under this definition, an active role of a reader is emphasized: a text is simply a combination of printed marks on pages unless a reader interacts with it (Rosenblatt, 1978). The meaning within a text is not automatically transmitted to a reader but the reader exerts mental effort in order to construct meaning. Similarly, multiple text comprehension can be thought of as "constructing meaning from *multiple texts*." However, this definition is too broad to show detailed characteristics of multiple text comprehension and it does not distinguish any difference between

comprehensions of single- and multiple-texts. As such, we need to establish more a detailed definition that accounts for the complex nature of multiple-text comprehension. For example, readers should identify meaning of each text and connect meanings across texts. Given that multiple texts are usually varied in terms of perspectives, foci, assumptions, and details (Rouet, 2006), readers may face considerable challenge to connect meanings across texts. However, in single-text comprehension readers focus only one text, so they do not need to compare and synthesize textual information across texts. When conceptualizing multiple-text comprehension, therefore, it is essential to know how readers understand, analyze, and synthesize from different sources of textual information (Perfetti, 1997).

It is pertinent to note that there are two traditions of research of multiple text comprehension. First, post-structural literary scholars oppose traditional idea that meanings in written texts are created by solely authors' intention. Rather, the literary scholars pay attention to close associations between texts, or "intertextuality" (Irwin, 1988). Intertextuality (Kristeva, 1986) relates to how one text's meaning can be defined in the relationship with other texts. Kristeva posits, "Any text is constructed as a mosaic of quotations; any text is the absorption and transformation of another" (Kristeva, 1986, p. 37). Furthermore, Barthes (1977) declares in his *Death of the authors* that an author is not a creator of a meaning in his or her book but an orchestra conductor of already expressed ideas from other books. For the intertextuality scholars (e.g., Barthes, 1977; Kristeva, 1986), a text's meaning cannot be determined solely by a writer's intention of meaning creation. Rather, it appears that a text's meaning is determined by relationship

with other texts. In this sense, the idea of intertextuality provides a theoretical ground that constructing meaning from multiple texts is possible due to its intertextual nature.

While the literary scholars are interested in the cross-textual nature of multiple texts, psychologists investigate comprehension processes and mental representations of multiple texts. For example, Rouet and his colleagues (Perfetti, Britt, and Rouet, 1999; Rouet, 2006) propose a theoretical model of multiple text comprehension because previous reading theories of single texts (e.g., van Dijk & Kintsch, 1983) are not sufficient to explain the nature of the multiple text comprehension. For those psychologists, comprehension of multiple texts demands additional cognitive complexity than comprehension of single texts. At first, readers working with multiple texts have to construct meaning from each text, as in the case of single text comprehension. However, multiple text comprehension requires additional comprehension processes: The readers have to identify cross-textual relationships between texts, which including linkage to each text in terms of content and source information. However, this is not the final stage in the comprehension processes. The reader must also use prior knowledge and experience in order to build a situation model that are represented from the multiple texts.

Both intertextual and psychological perspectives provide a basis to define multiple text comprehension. The intertextuality perspective brings us an idea that all texts are interwoven in a textual-web, so construction of meaning within a text is influenced by other texts. The psychological perspective suggests an idea how the intertextual processes work: they are based on readers' identification of cross-textual relationship between texts, and between texts and a reader. Based on these works, I define multiple text comprehension as follows:

Multiple text comprehension is a reader's construction of meaning from more than one text. When comprehending multiple texts, the reader has to understand that one textual meaning is related to other texts. Next, the reader not only comprehends each text separately but connects one text with other texts. After identifying the textual relationship between texts, the reader relates his or her prior knowledge and experience to the documents in order to construct a global meaning across texts. The construction processes of global meaning from multiple texts are defined as multiple text comprehension

Biased Assimilation about a Controversial Issue

Many studies of multiple text comprehension rely on the research findings from experts' reading and reasoning with multiple documents. For example, Wineburg (1991) conducted an expert-novice study that investigated strategy use during comprehension of multiple texts. While historians (expert) were able to distinguish sources and made intertextual connections based on importance of sources, high school students (novices) lacked source sensitivity, making a relatively poor integration between documents. Similar findings have been replicated in this area (Bigot & Rouet, 2007; Rouet, Favart, Britt, & Perfetti, 1997; Stahl, Hynd, Britton, McNish, & Bosquet, 1996).

Since many theories of documents comprehension focus *on expert readers' learning* with multiple documents, researchers focus mainly on cognitive factors (e.g., prior knowledge, source sensitivity, epistemic beliefs) and strategic processes (e.g., sourcing skills) that contribute to accomplished readers' successful comprehension (Rouet & Britt, 2011). The reader's *bias* is not much discussed or reflected in models of

multiple text comprehension. A model of understanding multiple texts is described as an unbiased reading in Figure 2.

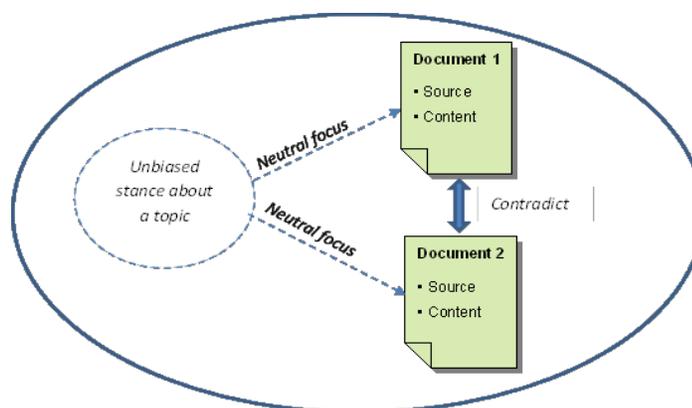


Figure 2. An unbiased reading model of multiple texts representation on a controversial issue

When reading two controversial texts, readers play a role as a judge or a referee to compare and contrast controversial information between documents. Rather than taking one side, these readers are theorized to observe two different perspectives and decide which document is more reliable and trustworthy based on source information. After evaluating documents based on source information, they integrate two controversial texts by focusing equally on the two texts (Document 1 and Document 2). Does this theoretical perspective on multiple text comprehension reflect general readers' actual reading and related strategy use about controversial issues? This conceptualization may fit to experts' reading (e.g., historians' analysis of multiple documents) rather than general readers' daily reading.

While educational psychologists reveal expert readers' skillful reading with multiple documents, social- and political psychologists investigate general readers' biased reading with controversial texts (Gilbert, 1991; Gliovich, 1983; Lord et al., 1979). When a reader encounters two types of information such as belief-consistent information

and belief-inconsistent information, the reader treats the information asymmetrically (Figure 3). For example, in Lord, Ross and Lepper (1979) proponents of the capital punishment interpret the pro-deterrence study more favorably than the anti-deterrence study when they judge validity and convincingness of the studies. In addition, after reading the study summaries and details, the proponents gain stronger beliefs toward the death penalty, whereas the opponents distrust the efficacy of the death penalty. Lord et al. (1979) name such individuals' biased processing of information according to the prior beliefs and attitudes as *biased assimilation*.

The finding of biased assimilation is recognized in diverse disciplines. In psychology, it is called *confirmation bias*, "the seeking or interpreting of evidence in ways that are partial to existing beliefs, expectations, or a hypothesis in hand (Nickerson, 1998, p. 175). In a similar vein, Edwards and Smith (1996) suggest a *disconfirmation bias* model in which people tend to scrutinize belief-inconsistent information more than belief-consistent by taking a more critical stance and longer time. In political psychology, Ross and Stitinger (1991) propose a concept of *reactive devaluation*. When a source is created from political opponents (author or institution), the content of the source is lowly valued and belittled by readers. Therefore, although scholars use different terms such as biased assimilation, confirmation bias, and reactive devaluation, all of the concepts commonly indicate that people are prone to be biased in their reading. Such bias becomes stronger as people have stronger beliefs toward a controversial topic.

From this perspective, the previous concept of multiple document comprehension needs to be reconsidered. In the framework of the biased assimilation, readers are not neutral when comprehending contradictory information (Figure 2). Instead, they are

biased readers who evaluate, comprehend, and synthesize information based on the prior attitudes and topic beliefs (Figure 3).

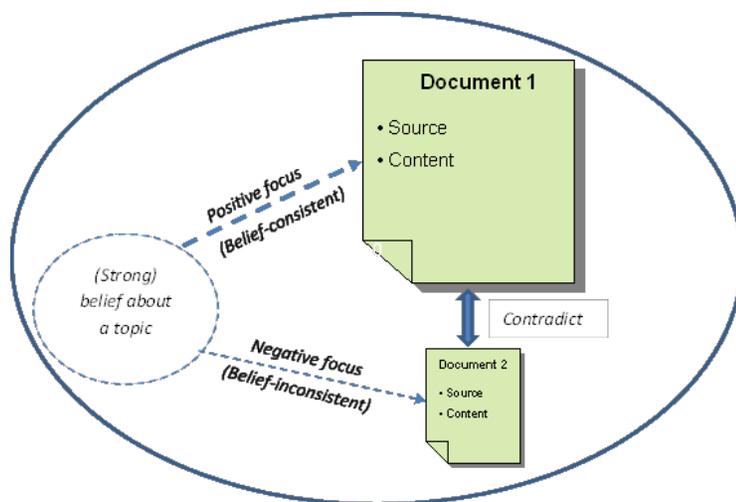


Figure 3. A biased reading model of multiple texts representation on a controversial issue

In Figure 3, readers' text representations can be described differently from the previous unbiased model in Figure 2. In the biased model, although readers recognize the controversial nature of texts, they consider the importance of the texts differently. The readers value highly a belief-consistent text while they devalue a belief-inconsistent text. I suggest that the readers may use different strategic processing between documents and make a conclusion that aligns with their belief, due to reader bias (e.g., personal preference, attitude, and belief). These two models are worthy of investigation, to see if they describe actual reading about controversial issues. However, we do not have empirical studies to examine how readers with different beliefs and bias employ reading strategies while they reading controversial multiple texts.

Definitions of Key Terms

Topic belief is a reader's belief about a topic that is accepted as true and valid. It is interchangeable with the terms preexisting belief (Kardash & Howell, 1996; Kardash & Sholes, 2000) and topic-specific belief (Mason & Boscolo, 2004).

Strategy is broadly defined, "a plan of action or policy designed to achieve a major or overall aim" (Google dictionary, n.d.). In education, strategy has two meanings, instructional strategy and learning strategy to achieve a pre-planned goal (Alexander, Graham, & Harris, 1998). Given the purpose of this study, I exclude instructional strategy from this study. In reading situation, strategy is usually described as readers' "deliberate, goal-direct attempts to control and modify the reader's efforts to decode texts, understand words, and construct meaning of text" (Afflerbach, Pearson & Paris, 2008, p. 368). While following Afflerbach's (Afflerbach et al., 2008) definition, I broadly define strategy for this study. Strategy is reader's effortful, purposeful, and flexible cognitive processing in order to construct meaning from text and achieve goals. This study focuses on reading situation in which readers with strong (or weak) beliefs understand controversial multiple texts in the online accessible environment. In this situation, reader's diverse cognitive attempts and decisions, including agreement or disagreement about controversial issues based on readers' prior knowledge and beliefs, are included in the strategy category. In addition, I include searching for information on the Internet in the strategy definition, following Pressley & Afflerbach (1995) and Afflerbach and Cho (2009).

Multiple text comprehension is defined as a reader's constructed meaning from more than one text (Rouet, 2006; Rouet & Britt, 2011). Under this definition, texts may be

presented in written, printed, typed, or electronic form. Therefore, other informational artifacts (e.g., pictures, video clips, and other media) are excluded from this definition.

Bias is often used as synonym of prejudice, “a tendency to believe that some people, ideas, etc., are better than others that usually results in treating some people unfairly” (Merriam-Webster, n.d.), or “prejudice in favor of or against one thing, person, or group compared with another, usually in a way considered to be unfair” (Google dictionary, n.d.). In psychology literature, bias is broadly referred to various cognitive illusions or errors in cognitive processing. For example, Baron (2008) describes over 50 lists of cognitive biases. For this study, I intend to use bias as biased assimilation in reading, which means that readers favor belief-consistent information over belief-inconsistent information (Lord, Ross, & Lepper, 1979; Greitmeyer, Fischer, Frey, & Schulz-Hart, 2009). Reader’s bias is revealed when the reader focuses selectively on belief-consistent information, interprets it in more positive ways, and/or searches for belief-consistent information to confirm or maintain the reader’s beliefs, while devaluing and ignoring belief-inconsistent information. Similar concepts are suggested as confirmation bias (Nickerson, 1998) in psychology, or reactive devaluation (Ross & Stitinger, 1991) in political science.

CHAPTER 2: REVIEW OF LITERATURE

This chapter reviews theories and empirical studies that relate to multiple text comprehension and biased assimilation. The literature review consists of four parts:

- Research perspectives to comprehension of multiple texts
- Roles of cognitive resources in comprehension
- Text processing patterns in comprehension
- Biased assimilation in comprehending controversial information

The first part reviews six comprehension models that shed light on multiple text comprehension. I classify these models into three research perspectives: mental representation of text, cognitive text processing, and strategy use. Then, I conceptualize multiple text comprehension in relationship to single text comprehension. The second part reviews the relationship between cognitive factors (prior knowledge, epistemic beliefs, and metacognition) and comprehension performance. The third part identifies readers' individual differences of text processing patterns during multiple text comprehension. Both the second and the third part reflect a current understanding of multiple text comprehension research from cognitive (educational) psychology. These studies explain multiple text comprehension as intertextual information processing: (a) how readers use *source* information in order to synthesize *contents* across texts, (b) what cognitive factors contribute to such intertextual processing, and (c) what text processing appears during the intertextual processing.

The last part of the chapter addresses multiple text comprehension from a different perspective. It reviews the social psychology literature in order to identify the biased processing effect during comprehension. While the previous parts of the chapter

shows a normative intertextual processing, the fourth part provides a possibility that the normative intertextual processing is biased when readers have strong beliefs, stance, and attitudes toward a topic. Combined, all four parts provide a research basis to conduct this study.

Research Perspectives on Comprehension of Multiple Texts

Reading comprehension is complex, multilayered, and dynamic (Alexander & Jetton, 2000). Since it is very difficult to account for the full nature of reading comprehension, researchers instead focus on important patterns and relationships in which they are interested. When researchers systematically construct an explanatory system of the identified important patterns and relationships in reading, it is called a reading model. There exist multiple reading models rather than one ideal model because researchers' interests are diverse in terms of assumptions, selected constructs of interest, and relationships between these constructs. Although every reading model strives to describe the nature of reading phenomena, each has limitations as well as strengths. For example, some reading models account for the reading processes of narrative text while they are limited in explaining comprehension processes of informational texts. In a similar vein, a model that explains the roles of phonemic awareness in comprehension may lack explanatory power related to metacognition.

In reading comprehension, there are many models accounting for the nature of comprehension. For example, McNamara and Magliano (2009) reviewed seven models of reading comprehension: Construction-Integration Model, Structural-Building Framework, Resonance Model, Event-Indexing model, Causal Network Model, Constructionist model, and Landscape model. McNamara and Magliano (2009) analyze and synthesize different types of reading models, providing a common ground for

discussion of the reading models. However, the review is not directly applicable to this proposal because it revolves around reading models of single texts.

Table 1

The Review of the Six Comprehension Models under the Three Research Perspective

	Mental representation of Text	Cognitive text processing	Strategy Use (Constructionist)
Comprehension of single texts	• C-I Model (van Dijk & Kintsch, 1983; Kintsch, 1998)	• Structural Building Framework (Gernsbacher, 1996)	• CRR Model* (Afflerbach & Cho, 2009; Pressley & Afferbach, 1995)
Comprehension of multiple texts	• Document Model (Perfetti et al., 1999)	• MD-TRACE Model (Rouet & Britt, 2011) • Epistemic Validation (Richter, 2011)	

*note: The CRR model is updated from a version of single-text to multiple-text. Therefore, it describes both comprehension of single- and multiple-text

To find more relevant comprehension models of multiple texts, I reviewed reading models using two criteria. First, I included reading models that focus on comprehension of multiple texts such as Document model (Perfetti et al., 1999), MD-TRACE Model (Rouet & Britt, 2011), and Epistemic Validation (Richter, 2011). Second, although some models did not explicitly mention “multiple texts”, I also included them in this review when they helped describe the nature of multiple-text comprehension. These models were the C-I model (van Dijk & Kintsch, 1983), the Structural Building Framework (Gernsbacher, 1990), and the CRR model (Pressley & Afflerbach, 1995). Therefore, six total reading comprehension models were reviewed in this section (see Table 1).

In this section, I describe reading models under the term “research perspective” that groups several reading models together, rather than describing each model. I intend to use the term of the research perspective as a shared perspective among reading models, including basic assumptions, analytic approach, and highlighted aspects of reading. The three research perspectives are *mental representation*, *cognitive text processing*, and *strategy use*. This categorization has two advantages with one caveat. First, it is more parsimonious and efficient to describe characteristics of comprehension. Second, within the same research perspective, I can compare how reading models of single texts develop to those of multiple texts. For example, it is possible to compare the C-I model (of single-text) with the Document model (of multiple-text) within the perspective of the mental representation of text. However, the three categories are mutually related and overlapped, rather than clearly distinguished. Each research perspective illuminates on different parts of multiple-text comprehension, which in turn increases the understanding of multiple-text comprehension.

Mental Representation

The *APA dictionary of psychology* defines a mental representation as “a hypothetical entity that is presumed to stand for perception, thought, memory, or the like in the mind during cognitive operations” (VandenBos, 2007, p. 569). When applied to comprehension, mental representation in reading is described as psychological entities in a reader’s mind, which result from the comprehension process. How readers represent meaning from text is an important question for reading researchers (Johnson-Laird, 1983; van Dijk & Kintsch, 1983). For example, van Dijk and Kintsch (1983) conceived an idea

that the basic component of reading comprehension can be described by mental representations.

Van Dijk and Kintsch maintain that *proposition* is the minimal meaningful unit of mental representation, suggesting that *proposition analysis* is the basic method for the comprehension research. By using the proposed propositional analysis, they argue that comprehending a passage requires two distinct, yet overlapping mental constructional processes called *microstructure* and *macrostructure*. On the one hand, the microstructure is constructed when a reader identifies key meanings from a word or inter-words relationships in a sentence. In this sense, microstructure has local meaning within a text. On the other hand, macrostructure is a constructed gist, or global meaning in a text. When combining micro- and macrostructure, the newly formed representation reflect basic meaning in the text, which is called *textbase* (Kintsch & Rawson, 2005).

Textbase refers to a semantic representation of a text's literal meaning that is based on both microstructure and macrostructure. In this regard, textbase is considered as a basic unit for comprehension of a text. However, even if a reader constructs a textbase, this construction is not enough of an index that the reader adequately comprehends the whole text. For example, if a reader fails to find the author's assumption behind a text, the constructed textbase is most probably literal, possibly shallow, and thereby the reader's goal may not be fulfilled. Further, a written text does not explain or describe all the events and details in a text. The omitted gaps between the lines in a text should be filled in by a reader's inference by using their prior knowledge (Graesser, Bertus, & Magliano, 1995). Put another way, a reader constructs meaning by using both the textbase and prior knowledge. As a result, the combined mental representation is called a

situation model, according to van Dijk and Kintsch (1983). The situation model is described as follows:

Cognitive events, actions, persons and in general situation... [I]t may incorporate previous experience, and hence also previous textbase, regarding the same or similar situation (van Dijk & Kintsch, 1983, pp. 11-12).

In sum, the authors suggest two reading mental representations, the textbase and the situation model. The former is composed of basic meaning representations embedded in a text and the latter is constructed by the interaction between a reader's prior knowledge and textbase.

Although Kintsch's mental representation model (van Dijk & Kintsch, 1983; Kintsch, 1986; Kintsch & Rawson, 2005) has high explanatory power, this model is limited in explaining how readers understand multiple texts. In other words, this model explains readers' building a coherent mental model *within* a text (i.e., intratextual coherence) but not for building a coherent mental model *across* multiple texts (i.e., intertextual coherence). Kintsch's two-level model (i.e., textbase and situation model) does not fully account for readers' comprehending multiple documents, which are sometimes inconsistent and contradictory. For example, suppose that a reader reads two texts about climate change. One text argues that climate change occurs because of human activity, whereas the other accepts it as a natural phenomenon. Since Kintsch's mental representation model assumes that understanding is achieved under the coherence of a text, such a contradictory cross-textual relationship is not yet accounted for in the two levels of the mental representations. In other words, Kintsch's model does not explain how a reader resolves contradictions between the two texts of different perspectives.

Those who follow Kintsch's traditional multiple-text comprehension (e.g., Perfetti, Rouet and Britt, 1999) point out that it is hard to explain reader's comprehension of multiple-texts merely by depending on the two levels of mental representations (i.e., textbase, situation model). Perfetti et al. (1999) propose a Document model that is an updated version of Kintsch's model. Unlike Kintsch's model, the Document model assumes coherence breaks between multiple documents and describes semantic relationships among multiple documents. To represent the cross-textual relationship, the model assumes that readers usually have two mental representations, *Intertext model* and *Situations model*. (Note that textbase is still assumed as a mental representation but it is not discussed in detail in the Document model.)

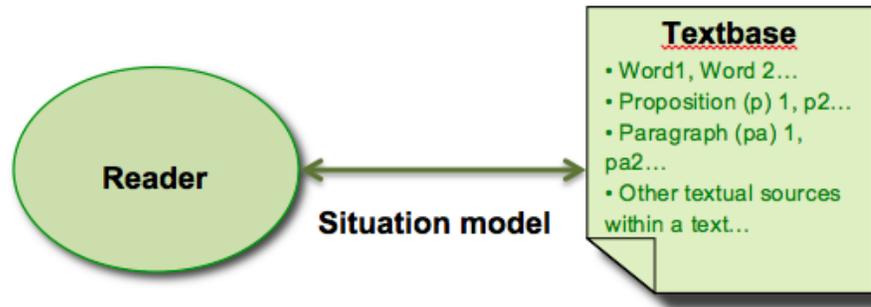
The Intertext model consists of *document nodes* and *intertext predicates*. The document nodes refer to content information of documents such as source information, rhetorical goals, and content of texts. The intertext predicates represent relations between these document nodes. When readers identify the document nodes and intertext predicates, the readers are able to build a document representation from the multiple texts as Intertext model. Many readers fail to build an Intertext model that includes intertextual relationship between texts, although they are proficient readers of single texts (Stahl et al., 1996; Wineburg, 1991). However, even successful construction of an Intertext model does not directly indicate that the reader fully establishes a coherent mental model. Unless the Intertext model is integrated with a reader's prior knowledge and experience about situations the texts are describing, the reader's understanding is sketchy and shallow at best. When text-driven meaning (Intertext model) combines with situation-

driven meaning (Situation model), it becomes the reader's coherent mental representation. Perfetti et al. (1999) named it Document model in their paper:

The general Document Model has two components or submodels: The Intertext Model represents the relationships among documents and among a document and elements of the situation; the Situations Model represents situations very broadly construed—both real situations and hypothetical ones; and, importantly, multiple interrelated situations. When the Situations Model and the Intertext Model are interconnected then we have a full Documents Model (pp. 102-103).

The concept of the mental representation between texts should be distinguished from the mental representation within a text. In a single-text level, readers consciously or automatically integrate subcomponents of a text (e.g., word, paragraph) in order to build a coherent representation of a situation that the text describes. In a multiple-text level, readers also process the integration work during comprehension. However, representation of multiple-text does not finish at this point. The readers also have to connect text components (e.g., texts' ideas and contents, source information, and rhetorical goals) in order to build a coherent representation across texts. When comparing Kintsch's model of single texts with Perfetti et al.'s model of multiple texts, we can identify how the two different concepts of coherence are represented (see Figure 4).

A. Building a coherent mental representation within a text (adapted from van Dijk & Kintsch, 1983)



B. Building a coherent mental representation across texts (adapted from Perfetti, Rouet, & Britt, 1999)

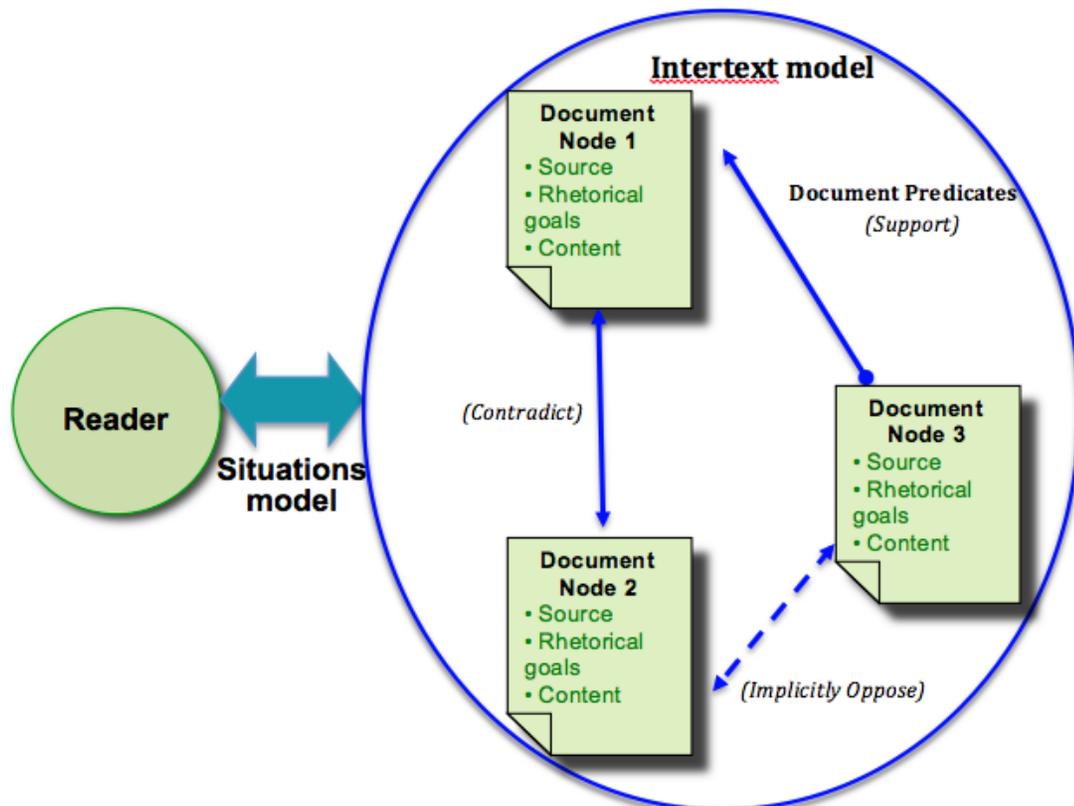


Figure 4. Mental representations in single- and multiple-text comprehension (adapted van Dijk & Kintsch, 1983; Perfetti, Rouet, & Britt, 1999)

The research perspective of mental representation has four assumptions. First, textbase is still the basic unit of meaning construction of text. If a reader fails to construct meaning from a single text, it is nearly impossible to build a worthwhile intertextual model and situation(s) model. Second, the Intertext model assumes that in comprehension of multiple documents, each text relates to other texts, either explicitly (e.g., citation) or implicitly (e.g., content relevance). Unless the documents are connected in such ways, the Intertext model is either difficult to construct or meaningless. Third, in a set of documents there are more important texts than others (e.g., in history a *primary text* may be considered more important than a secondary text). Finally, when each text is not related to each other in a coherent way due to different authors, purposes, writing styles, and topics, the reader builds global coherence among texts.

This research perspective clearly indicates that for successful comprehension readers have to transform multiple texts into a coherent mental representation by connecting each text. In order to connect various texts, readers have to possess adequate goal, motivation, skills and knowledge of integration of texts. In addition, texts are related to some extent either explicitly (direct quotes for other text) or implicitly (thematically related). The research perspective of mental representation contributes to the research field by opening a research agenda; under what conditions such integration is successful. Based on the research perspective of mental representation, investigation on multiple-text processing becomes feasible.

Cognitive Text Processing

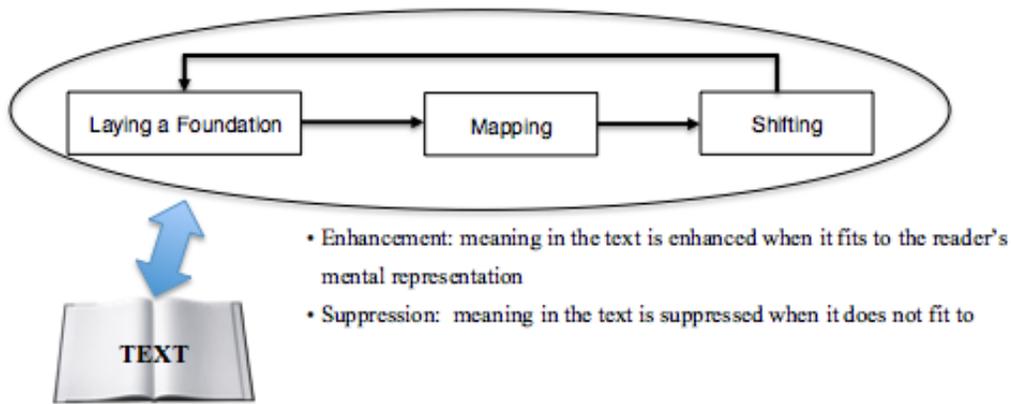
The research perspective of cognitive text processing is not significantly different from the mental representation research perspective. Rather, the cognitive text processing

perspective is possible based on works from the mental representation perspective. In other words, many perspectives of the cognitive text processing include readers' mental representation as its important component. However, the main focus is different. The fundamental questions in the cognitive text processing revolve around how a reader processes text, and what key process contributes to successful reading.

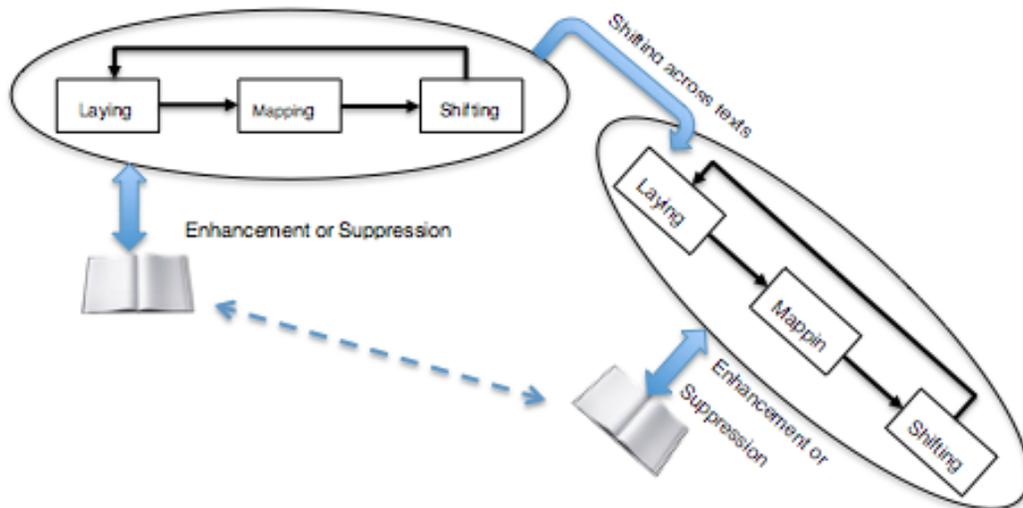
One representative example in this perspective is Gernsbacher's (1990) *Structural Building Framework*. In this model, she suggests three steps of reading process. The first one is "laying a foundation" in which a reader builds representation of the text based on the first incoming information. As a second phase, the reader "mapping" the subsequent textual information based on the foundation the reader laid, and this process gets rapid when it fits coherently to the foundation. Last, if the incoming information no longer fits with the previously set foundation, the reader determines "shifting" the previous mental representation, and thus constructing another foundation. In addition to the three phases, Gernsbacher suggests two additional mechanisms "enhancement" and "suppression." Enhancement occurs when meaning in a text fits to the reader's mental representation. If it is not the case, suppression dominates the process (see Figure 5a).

The Structural Building Framework has theoretical strengths. First, it is considered a robust theory that accounts for the comprehension process. For example, it provides psychological evidence that readers take more time when reading initial words and sentences than the subsequent equivalents (Gernsbacher, 1990). Next, the Structural Building Framework explains individual differences in reading. Poor readers may feel difficulties to lay a foundation in mental representation, or be slower in mapping or shifting processes. It is also possible that they are less sensitive to new information so

that the mechanisms of the enhancement and suppression do not work than proficient readers.



Model 5a. SBF: Processing of a single text



Model 5b. SBF: Processing of multiple texts

Figure 5. Structural Building Framework in single- and multiple-texts (adapted from Gernsbacher, 1996)

In addition, the Framework is a straightforward and parsimonious model that accounts for comprehension by proposing just three text processing procedures (i.e., laying foundation-mapping-shifting processes). Although the framework was suggested for the explanation of comprehension processes with single texts, it also nicely accounts for comprehension of multiple texts. For example, the framework's "laying a foundation" appears in Stahl et al.'s (1996) study. In their study, most high school students, unlike expert historians, read the first text in order to get "basic facts" and read subsequent texts "trying to sort out that information" (p. 448).

This framework is useful to estimate total reading time as an index of the degree of coherence between multiple texts. When reading texts that are inconsistent (such as contradictory texts), readers recognize that texts are not coherently related to each other. Thus, they attempt to lay more foundations, which increases total reading time for comprehending the whole document set (see Figure 5b). However, when there is a less coherent break between the texts, reading time will be decreased. This explanation seems convincing, but there is not yet sufficient research evidence to support it. Since the framework is suggested for comprehension of single texts, other models of the multiple text comprehension are needed.

Two other models account for multiple-text comprehension from the cognitive text processing perspective. The first one is an MD-TRACE model (Multiple-Documents Task-based Relevance Assessment and Content Extraction; Rouet & Britt, 2011). Rouet and Britt (2011) proposed for this model since multiple-text comprehension was more complex to describe by previous theoretical models of single-text comprehension. One important perspective in this model is that it recognizes comprehension as goal directed

processes within a task. In this standpoint, a comprehension model of multiple texts should explain not only comprehension itself but other accompanied cognitive processes such as awareness of information need and searching feature, described as follows:

Readers do not just have to set up appropriate goals: they also have to sustain their goals throughout the reading process... The question “do I need information and what kind?” may even get more complicated as students acquire new knowledge and fulfill some, but not all of the task requirements. More generally, one’s need for information has to be assessed based on the initial set of task specifications, but also taking into account the evolving knowledge base and task products (Rouet & Britt, 2011, pp. 33-34).

The MD-TRACE model has two components. The first component is *resources*, including external resource (e.g., document setting) and internal resource (e.g., reader’s prior knowledge). The second component consists of five core reading- and searching- processes: (a) *constructing/updating a task model*, (b) *assessing one’s information needs*, (c) *processing document information*, (d) *constructing a task product*, and (e) *assessing product quality*. A simplified version of the MD-TRACE model that describes only the five core process components is described in Figure 6.

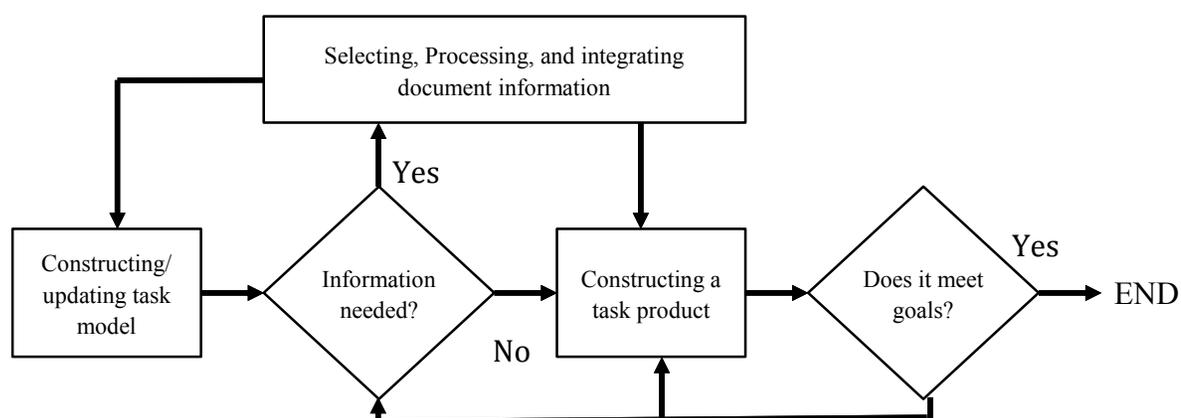


Figure 6. A simplified version of the MD-TRACE model (Adapted from Rouet & Britt, 2011)

As described in Figure 6, the first process is constructing/updating task model. For example, a reader sets a goal to understand causes of climate change (a. Constructing/updating a task model). During reading, she realizes that there are different perspectives on climate change. Some argue it is attributable to human-made air pollution while others counter the argument that it is natural phenomena. Therefore, she needs to search for more information based on the current information (b. Assessing one's information needs). When she selects, processes, and integrates documents from additional sources, it can be said that she conducts the third process (c. Processing document information). After searching and reading processes, she gets an updated idea of the climate change—it is the fourth process, constructing a task product (d. Constructing a task product). Moreover, she decides whether to search and read for additional information as a fifth process (e. Assessing product quality) based on the current task product. Undoubtedly, the series of behaviors such as searching, using, and comprehending meaning from multiple-text are goal-directed. This model acknowledges that processes of multiple-text reading can be changed and updated according to reader's task relevant goals.

The MD-TRACE model shares several similarities with previous searching models of single texts (e.g., Guthrie, 1987) because the MD-TRACE model also begins with goal formation and finishes its entire processes with goal verification. However, the MD-TRACE model is more advanced than its antecedents because it includes both comprehension processes and searching processes. In other words, it proposes that previously ignored processes, such as “awareness of information needs” and “searching

additional information”, should be highlighted in the model of multiple-text comprehension.

The last model in the cognitive text-processing perspective is the Epistemic Validation model (Richter, 2011). Richter (2011) defined multiple-text comprehension as learning several texts of divergent perspectives on the same issue. The situation of multiple-text comprehension fits with the concept of *cognitive flexibility* that learners reconstruct their knowledge and change relevant cognitive processes (Spiro, Feltovich, Jacobs, & Coulson, 1992). The key process in this model is *epistemic validation* because readers actively judge and validate incoming information from multiple texts that have different perspectives and points. The Epistemic Validation model consists of the two distinguished processes. The first one is memory-based process, *epistemic monitoring*. The epistemic monitoring, similar to metacognitive function, identifies inconsistencies between readers’ prior knowledge and text information, and between texts. It is an automatic, rapid process that readers check inconsistent information without conscious efforts. The second process of the epistemic validation is more slow, effortful and deliberate process. It is called an *epistemic elaboration* in which readers put their strategic efforts to resolve the identified inconsistencies in epistemic monitoring.

The Epistemic Validation model describes the epistemic elaboration processing into two modes. One is an *assimilative mode*, which accepts previously read texts and keeps already established situation model. When incoming information of text is inconsistent to the previous texts, readers discredit and disregard the new information. Even if this previous information is invalid, the previously accessed meaning is likely to be kept (“continued-influence-of misinformation effect; see Johnson & Seifert, 1994).

The other mode is an *elaborated epistemic processing* mode, which considers both sides of inconsistent information and corrects them, either previously read information or later incoming information. Richter mentions that although the assimilate mode of the epistemic elaboration is a default way that readers reveal when reading inconsistent multiple texts, the elaboration processing depends on readers' goal, motivation, prior knowledge, and other cognitive resources (e.g., working memory).

One distinct feature of the Epistemic Validation model from others is that it recognizes the conditions when and whether deliberate, strategic processes occur during reading multiple texts. The model indicates that epistemic beliefs play a metacognitive-like role that prompts readers' strategic processing (i.e., elaborated epistemic processing) in order to update the reader's mental model. When borrowing terms from the previous Structural Building Framework, the Epistemic Validation model describes conditions in which either "Mapping" or "Shifting" occur during processing inconsistent texts. In addition, the Epistemic Validation model indicates what mechanisms guide the updating mental representation: goal, motivation, and epistemic beliefs. The detailed description of the "updating" processes is prominent in the Epistemic Validation model.

In sum, the cognitive text processing research perspective investigates the process of multiple-text comprehension. The three models in this perspective are reviewed: (a) Structural Building Framework, (b) MD-TRACE model, and (c) Epistemic Validation. All models share the coherence assumption that the comprehension process proceeds toward constructing a coherent mental model. For example, the Structural Building Framework directly shows that the three distinctive processes of laying a foundation, mapping, and shifting are suggested to keep a coherent mental model of a reader. The

MD-TRACE model adopts a notion of “updating” model and “information needs” in order to suggest that the readers’ task model can be updated to keep reader’s coherence. The Epistemic Validation model proposes that readers’ goal and standards of epistemic validation play a role to keep the coherence between inconsistency information.

Nevertheless, each of the three models has a distinctive theoretical perspective. The Structural Building Framework highlights a series of processes that indicate how incoming information is mapped on the previously set foundation of situational model. The MD-TRACE model, however, focuses more on the task-based steps of how a reader achieves his or her goal through the processes of multiple-text comprehension. It also recognizes *information needs* and *searching behavior* in comprehension. By emphasizing readers’ validation process, the Epistemic Validation model is capable of accounting for individual difference that difference of comprehension processes is attributable to the difference of epistemic beliefs, goals, and other cognitive resources.

Strategy Use as Constructionist

Current views of reading describe reading as consisting of two sets of processes (van den Broek, Rapp, & Kendeou, 2005). One is a *memory-based process* that is a rapid, automatic, and passive process. When reading a series of textual inputs (e.g., words), it automatically activates and spreads out meaning in working memory, and relates it to prior knowledge of readers. On the other hand, the *constructionist process* is a slow, deliberate, and active process. It accompanies readers’ strategic process in order to achieve readers’ standards or goal in mind.

There is a long research tradition to understand reading from the constructionist perspective. In their review of constructionist theory, Graesser, Singer, and Trabasso

(1994) reveal that three common assumptions appear among constructionists. The first one is the *reader goal assumption*, suggesting that a reader constructs meaning to meet a goal. For example, a reader with a recreational goal to read a novel on the beach will process it in the shallow level. The same novel can be deeply comprehended by a literary critic who has a goal for writing a review. Second, the *coherence assumption* is that readers try to keep a coherent mental representation from text both at the local and global level. Otherwise, readers are likely to feel that their comprehension process does not make sense, pursuing a coherent meaning by using fix strategies (e.g., rereading). Last, the *explanation assumption* is that readers tend to explain content of text by using his or her explanation (e.g., paraphrase) for understanding. All of these constructionists' assumptions indicate that readers are active constructors of meaning. These assumptions are called as the principle of *Search (effort) after meaning*, which addresses reader's active role in comprehension (Long & Lea, 2005).

Readers' strategy use in comprehension is a representative example of constructionist processes. It is defined as "deliberate, goal-directed attempts to control and modify the reader's efforts to decode text, understand words, and construct meanings of text" (Afferbach, Pearson, & Paris, 2008, p. 368). Some researchers are interested in how readers deploy effortful, goal-directed reading strategies to achieve their goal. For example, Pressley and Afflerbach (1995) analyzed empirical studies using verbal protocols of reading, concluding that readers are active and constructively use their skills and strategies. Based on the empirical data of reader's verbal protocol, Pressley and Afflerbach (1995) build a Constructively Responsive Reading (CRR) framework,

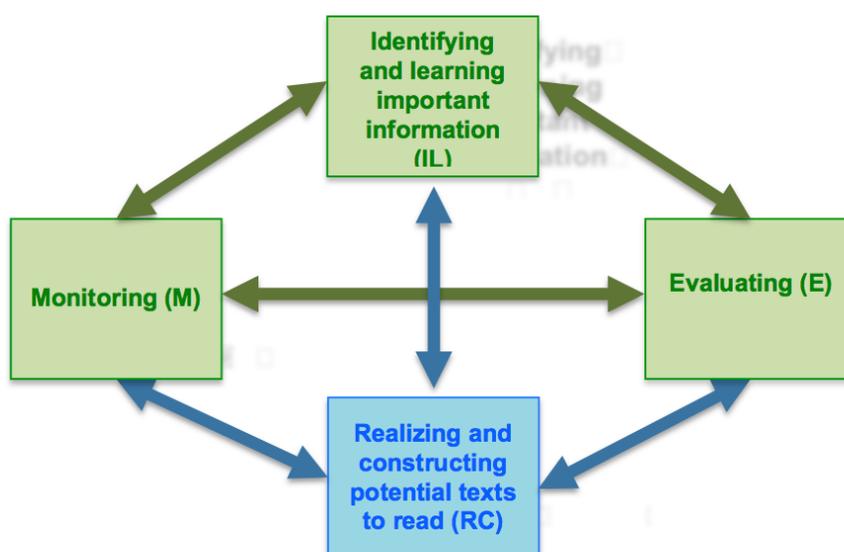
classifying readers' skills and strategies into three big categories: (a) identifying and learning important information, (b) monitoring, and (c) evaluating.

The first category, *identifying and learning important information*, is a set of skills and strategies by which readers construct meaning from text. For instance, this category includes constructing a goal for reading of a text, activating prior knowledge, and deciding important information in a text. The second category is *monitoring* in which readers simultaneously check their comprehension and reading goal, and ask a question when the comprehension process is blocked. Third, *evaluating* is used when readers judge their text during and after reading whether the encountered text is trustworthy, valid and reliable. Readers also approve and disagree with the author's point of view when it mismatches the readers' perspective, knowledge and belief. The three categories are frequently reported in the empirical studies using verbal protocols; the CRR model is comprehensive as it describes accomplished readers' dynamic repertoires of skills and strategies.

As reading environments have been technically changed including Internet-based technology (Leu, Kinzer, Coiro, & Cammack, 2004) as well as emphasizing reading multiple sources of text (Goldman, 2004), researchers felt the need to update the CRR model. Reflecting more recent verbal protocol studies, Afflerbach and Cho (2009) updated the previous CRR model in two points. First, the updated version of the CRR model recognizes new reading situations of multiple texts, which require more adaptive strategy use of text integration (e.g., comparing, contrasting, relating, linking texts). For example, Afflerbach and Cho paid attention to the importance of *linking strategies across texts* as follows:

Linking strategies are pivotal for understanding multiple texts, and constructively responsive reading strategies contribute to meaning construction, monitoring comprehension, and evaluating texts at the cross-textual level of reading (p. 80).

Second, Afflerbach and Cho added one new general reading strategy category, *Realizing and constructing potential texts to read*. The new category is suggested to explain readers' comprehension in multiple-text, hypertext and Internet environment that are not adequately considered in the previous CRR framework (see Figure 7).



- **Examples of RC (hypertext):** Choosing and sequencing the reading order by accessing links based on the criteria of coherence among links and relevance to situational interests
- **Examples of IL:** Activating knowledge acquired in previous readings to augment comprehension of the current text; Identifying a theme or topic across multiple texts
- **Example of M:** Detecting a comprehension problem with a particular text and trying to solve the detected problem by clarifying information in other available texts
- **Example of E:** Critically evaluating validity and reliability of texts by criteria of text contents, author's point of view, and context, using a cumulative representation of a whole document set

Figure 7. Constructively Responsive Reading model (adapted from Afflerbach & Cho, 2009; Pressley & Afflerbach, 1995).

For example, readers change their reading order when they access hyperlinks in order to find more information that is relevant. When readers recognize that the texts found on the Web do not meet their goals, they search for additional information by adjusting key words on the Internet search engine. The construction of this new category is mainly attributable to non-linear characteristics of Internet reading, which differs from a single-text reading. Afflerbach and Cho (2009) noticed the situational characteristic of Internet reading:

By this, we mean that the rules of reading change: no longer is there one text, a given, for the reader... There is the potential for much uncertainty, given the ephemeral nature of reader choice, the degree of preciseness of search engines and strategies, and the universe of possible links to what may be related (or unrelated) texts (Afflerbach & Cho, 2009, p. 82).

It is interesting to see the similarity between the newly added strategic category (Realizing potential texts to read) in the CRR model and “the information need and search” in the MD-TRACE model. The overlaps between the two different reading theories corroborate a constructionist idea that when reading multiple-text and Internet readers attempt to search for more information according to the constructionist principle (*Search after meaning*).

In sum, the constructionist principles (the reader goal assumption, the coherence assumption, and the self-explanation assumption) have shown that readers are active meaning constructors from text. The principles are also applicable to read multiple texts. In addition, constructionist lens in multiple-text comprehension provides two insights. First, readers use more various reading strategies when reading multiple-texts than single texts. One example is a linking strategy that connects more than one text. Second, readers

sometimes feel information need during reading and tend to search for additional information.

Roles of Cognitive Resources in Comprehension

Many studies report that there is considerable individual difference in comprehension of multiple texts (Hartman, 19995; Stahl et al., 1996). For example, some readers regard all texts equally important and try to integrate them; others focus on some important texts while disregarding other texts. There are readers who question the authority of the text, based on their strong beliefs and knowledge. Other readers do not question the veracity of text. What accounts for such individual differences? This question can be paraphrased as, what cognitive factors within individuals influence their comprehension patterns and outcomes differently? Research reveals that there are at least three crucial factors for individual differences in comprehension performance. These are prior knowledge, epistemic beliefs, and metacognition.

Prior Knowledge

Prior knowledge is simply defined as a reader's knowledge before reading text (McKeown, Beck, Sinatra & Loxterman, 1992). Research demonstrates the crucial role of knowledge in comprehension processes and resulting performance (Anderson & Pearson, 1984; Afflerbach, 1990). First, deep prior knowledge of a topic helps readers access and understand text content more quickly and easily. For example, one with high knowledge of jazz may easily understand texts about Art Tatum (a jazz musician), swing (a jazz technique), and the M-Base movement (a jazz trend in 1980s). However, a jazz novice encounters difficulties when reading these texts because of lack of knowledge, thus trying to figure out what a text says about the topics

In addition, prior knowledge significantly accounts for reading comprehension, even better than text coherence. McKeown, Beck, and their colleagues (1992) found that prior knowledge was a more influential factor than text coherence. In a similar vein, McNamara and her colleagues (McNamara, Kintsch, Songer, & Kintsch, 1996; McNamara, 2001) showed an interesting effect of prior knowledge. In their studies, readers of high prior knowledge showed better reading performance when reading an incoherent text than a coherent text. This *reversed effect* of prior knowledge is interpreted that high knowledge readers actively use their knowledge to fill gaps in an incoherent text and build a rich mental representation accordingly. In contrast, the high knowledge readers need not activate their knowledge in depth, resulting in a shallow processing and poorer comprehension performance.

Third, prior knowledge influences readers' strategy use during comprehension, which is another reason that the knowledge matters. The relationship between prior knowledge and strategic processing in reading was reported by Afflerbach (1990). In his verbal protocol study of readers of high prior knowledge and low knowledge, Afflerbach (1990) showed that readers of high knowledge approached "automatic construction" in identifying main ideas, whereas readers of low knowledge restated the main idea frequently and used more cognitively effortful "draft-and-revision" strategy.

As in the case of single-text comprehension above, prior knowledge significantly influences reading performance of multiple texts. Before reviewing the effect of prior knowledge, it is important to distinguish at least two different kinds of prior knowledge (Alexander, Schallert, & Hare, 1991). The first type is prior knowledge of specific content, or *topic knowledge*, which multiple documents describe. The second type relates

to *domain knowledge*, which includes readers' trained experience, hunches, and implicit knowledge in a discipline.

Topic knowledge plays an important role in comprehension of multiple texts (Bråten, Strømsø, & Britt, 2009). Rich topic knowledge enables readers to reduce time of reading and improve comprehension performance (Bigot & Rouet, 2007). In addition, research reveals that topic knowledge indirectly influences multiple-text comprehension in the following two ways. First, topic knowledge influences patterns of strategy use. High topic knowledge allows using efficient and automatic skills, while lack of topic knowledge leads readers to use more effortful skills and strategies to construct meaning from texts. For example, Wineburg (1998) compared two historians' strategic patterns in reading multiple documents about Lincoln and the Civil war. One historian was an expert in this area while the other historian was not. The expert on Lincoln combined his topic knowledge with the content of the texts seamlessly, elaborating the content in his knowledge base. However, the other historian of less knowledge often showed confusion, asked questions frequently, weaved texts back and forth (i.e., zigzag-reading), and made hypotheses and refined them. The differential reading patterns were mainly explained by difference of topic knowledge, although the readers were both historians.

Second, topic knowledge helps readers figure out important sources among other texts, which helps them avoid getting distracted from unimportant details. Bråten, Strømsø, and Salmerón (2011) provided undergraduate students with trustworthiness questionnaires of sources (e.g., author, publisher, text type, content, publication date). There were differential patterns of trust on documents between high knowledge and low knowledge students. Low topic knowledge readers trusted less reliable sources (e.g.,

commercial texts) than more authoritative sources. Given that identifying important source information is related to comprehension successes (Britt & Aglinskias, 2002), low topic knowledge can be regarded as one barrier for successful comprehension of multiple documents.

In addition to specific topic knowledge, general domain knowledge (disciplinary knowledge) plays a significant role for comprehension. Domain knowledge is regarded as experts' knowledge in a domain (e.g., history, science) including trained experience, hunches and implicit knowledge in a domain (Shanahan & Shanahan, 2008). Research on effects of domain knowledge is usually conducted as a comparative study between experts and novices, controlling for topic knowledge. For instance, Wineburg (1991) recruited historians (experts) and proficient high school students (novices) in reading multiple documents of history. Although both the research participants had little knowledge about a specific historical event (the Battle of Lexington) that the texts described, there was a notable difference between them in terms of sourcing skills and analytic skills (corroboration and contextualization). The experts' distinguished skills on multiple texts were explained due to their experience of historical training and disciplinary domain knowledge.

Even at the same educational level, differences between academic disciplines results in different comprehension performance. Rouet and his colleagues (Rouet, Favart, Britt, & Perfetti, 1997) compared two groups of graduate students (psychology major vs. history major) in tasks of reading documents, evaluating sources, and writing essay. Despite finding little difference in reading strategies between the groups, the graduate students differed in their evaluation of sources and writing styles. For example, the

graduate students in psychology (discipline novices) preferred a specific opinion among others, while the graduate students in history (discipline experts) posed neutral stances. Considering that both groups of students were proficient readers at the graduate level, the identified differences can be attributable to domain general knowledge. This effect of domain expertise is also supported in Wineburg (1998), showing that a historian who had lack of topic knowledge compensated it with his rich domain knowledge and experiences.

Epistemic Beliefs

Epistemic beliefs are an individual's beliefs about knowledge and knowing (Buehl & Alexander, 2001; Hofer & Pintrich, 1997). An individual's belief system (Schommer, 1990) involves what knowledge is, where it comes from, and how to justify knowledge. Conceptually, epistemic beliefs are distinguished from metacognition. Kitchener (1983) distinguished epistemic beliefs from metacognition in her three-level models of cognition processing. The three levels were (a) *cognition*, individual's first-order cognitive functions including memorization, comprehension, and computation, (b) *metacognition*, individual's monitoring and control of the first-order cognition processes, and (c) *epistemic cognition*, individual's reflection of certainty, limitation, and criterion of knowledge and knowing. While acknowledging the important roles of metacognition, Kitchener pointed out that metacognition was not enough to solve ill-structured problems that had no right answers.

Epistemic beliefs are multidimensional and developmental on continua from a naïve view of knowledge and knowing to a complex one (King & Kitchener, 1994). In the research synthesis of epistemic beliefs, Hofer and Pintrich (1997) revealed that epistemic beliefs consisted of four dimensions in two big categories, *nature of knowledge*

and *beliefs of knowing*. The nature of knowledge relates to how a reader understands knowledge. Readers vary in their beliefs about “certainty of knowledge” (i.e., knowledge is certain vs. tentative and evolving) and “simplicity of knowledge” (i.e., knowledge is a simple collection of facts vs. complex and interrelated). The nature of knowing is related to how a reader understands knowing. The readers are different in their beliefs about “source of knowledge” (i.e., knowing is handed from authority vs. constructed by a knower) and “justification for knowing” (i.e., knowledge justification is accepting facts and truth vs. reasoning process to evaluate knowledge with evidence and logic).

Readers’ epistemic beliefs influence comprehension processes and resulting products. The more sophisticated beliefs a reader has, the more elaborate comprehension processes the reader shows when reading a text (Ryan, 1984; Schommer, 1990). Readers with elaborate epistemic beliefs perform better than those of immature beliefs, when reading controversial texts (Kendeou, Muis, & Fulton, 2011). The influence of epistemic beliefs is also identified in multiple-text comprehension, as well as comprehension of single texts. For example, Rukavina and Daneman (1996) studied the effect of text manipulation and epistemic beliefs. The researchers provided two contrasting hypotheses about dinosaur extinction (i.e., catastrophic hypothesis vs. gradual hypothesis). As a research condition, the researchers provided two text manipulations to research participants. An integrated-text format that included both hypotheses in one text, while a separated-text format provided two separate texts. Therefore, the only difference in the two text manipulation conditions was a number of texts. The result showed that the text manipulation showed differential effects according to the students’ epistemic beliefs. Text condition had little impact on students of sophisticated epistemic beliefs, whereas

the integrated text condition benefited students of naive epistemic beliefs. This study shows that readers' comprehension of multiple texts is associated with their epistemic beliefs. In another study, qualitative evidence was also acquired. Maggioni, Fox, and Alexander (2010) conducted verbal protocols and interviews with one teacher and four high school students. The analysis of the study revealed that students' epistemic beliefs, positively or negatively, influenced reading comprehension with their comprehension strategies. Although these works showed effects of epistemic beliefs, the focus was not the construct.

Direct investigation of epistemic beliefs and their relation to comprehension of multiple texts has been conducted by Bråten and his colleagues (e.g., Bråten, Strømsø, & Sameulsteun, 2008; Strømsø & Bråten, 2009). They prepared a set of seven texts about causes of climate change. This text set had different views of the climate change. For instance, one text claimed that the climate change was attributable to man-made disaster, while other text disagreed by showing that it was a natural phenomenon. In terms of results of the climate change, debating texts were provided. One text asserted that the climate change was profitable to humans, while other text argued it as a disaster. As measurement tools, they included measures of multiple-text comprehension and epistemic beliefs questionnaire (adapted by Schommer's (1990) inventory). The results of this series of studies illustrated that when comparing with students of naïve and simple epistemology, students who had sophisticated epistemology were better in multiple-text understanding.

Based on these results, Bråten and his colleagues (Bråten, Britt, Strømsø & Rouet, 2011) summarized the identified relationships between epistemic beliefs and

comprehension of multiple texts. They adopted Hoper and Pintrich's (1997) four factor models of epistemic beliefs (i.e., simplicity, certainty, source, and justification beliefs), providing research evidence that each of the four factors was linked to comprehension of multiple texts. Despite the limitation that most reviewed studies were correlation studies, this review addresses that epistemic beliefs of all four dimensions are positively related to a reader's stance, sourcing skills, and mental representations in comprehension of multiple texts.

In the literature of the educational psychology, theoretical explanations have been suggested as to why epistemic beliefs matter in comprehension. First, epistemic beliefs influence reader's deep processing of comprehension. Epistemic beliefs relate to academic achievement by influencing learning approach that determines quality of learning (Cano, 2005). In reading comprehension areas, epistemic beliefs play a mediation role that provokes more cognitive efforts and constructive strategic use, which in turn influences reading performance (Schommer, 1992). For example, Shraw and Bruning (1999) showed that readers' beliefs about text were related to their motivation, finally helping to engage in deep processing and enabling more inferences. In other words, epistemic beliefs are associated with metacognition (Pieschl, Stahl, & Bromme, 2008), motivation (Schraw & Bruning, 1999), and learning approach (Cano, 2005), which are helpful contributors to deep processing of multiple texts.

Second, advanced epistemic beliefs allow readers to hold multiple representations of different perspectives possible in mind, which is advantageous for building a coherent mental model that reflects inconsistent perspectives of texts. For example, readers who hold a simple view of knowledge, assume only one sort of perspective as true, rejecting

other perspectives. This naïve mindset leads the readers to focus on specific sources in mind while ignoring other text sources, resulting in a biased mental construction from a whole document set (Jacobson & Spiro, 1995; Bråten & Strømsø, 2006). This is not the case for readers with advanced beliefs who adopt multiple truths rather than one big truth. The reader who has advanced simplicity belief tries to interpret, question, or challenge each text, finally weaving and synthesizing these texts in order to construct a coherent mental representation that reflects multiple representation. For instance, suppose that two students read a same text about names of Columbus Day; some districts celebrate Indigenous People's Day instead of Columbus's day. One student with high epistemic belief raises a question why the holiday is called a different name, seeking information about why people have different meanings of Columbus' discovery. However, the other student with low epistemic belief determines that the Indigenous People's Day is wrong, simply because the Federal government officially announces it as Columbus Day.

Currently, readers' epistemic beliefs are considered an important influence on reading (Hoper, 2004; Muis, 2007; Richter, 2011). Researchers have provided empirical evidence of the relationship between epistemic beliefs and comprehension performance. However, more studies are needed to reveal how different epistemic beliefs play a role in readers' strategic processing in comprehension of multiple texts.

Metacognition

Metacognition is described as “knowing about knowing” or “cognition about cognition.” In the *APA dictionary* (Vandenbos, 2009), it is defined as “awareness of one's own cognitive processes, often involving a conscious attempt to control them” (p.

295). As a foundational work, Flavell (1976) conceptualized metacognition as metacognitive knowledge and relevant cognitive processes around a specific goal:

Metacognition refers, among other things, to the active monitoring and consequent regulation and orchestration of these processes in relation to the cognitive objects on which they bear, usually in the service of some concrete goal or objective (p. 232)

Based on this, Flavell (1979) developed the concept of metacognition as the interplay among the following four categories: metacognitive knowledge, metacognitive experience, goals (tasks), and actions (strategies). After Flavell's initial work, different theories of metacognition, including its cognitive components, have attempted to capture the cognition about cognition. For instance, Baker and Brown (1984) conceptualized that metacognition consisted of metacognitive awareness, monitoring, and strategy use, whereas Jacobs and Paris (1989) illustrated metacognition as self-appraisal and self-management. Nowadays, metacognition is even used interchangeably with self-regulated learning despite their different historical roots and theoretical perspectives (Dinsmore, Alexander, & Loughlin, 2008).

Nevertheless, there is an accepted idea that metacognition has at least two components, metacognitive knowledge and metacognitive process (Dunlosky & Metcalfe, 2009; Schraw & Moshman, 1995). *Metacognitive knowledge* refers individual's knowledge of their cognition in terms of declarative (e.g., what is my cognitive process?), procedural (e.g., how do I run my cognitive process?), and conditional knowledge (e.g., when do I use my cognitive strategies?) (Schraw & Moshman, 1995). As *metacognitive processes*, metacognitive monitoring is defined, "assessing the current state of a cognitive activity," and metacognitive control as "regulating some aspect of a cognitive activity" (Dunlosky and Metcalfe, 2009, p. 3). In a comprehension context, metacognitive

monitoring begins to work when readers detect problems during the comprehension processes. As a result, the readers consider available skills and strategies in order to fix the problems, finally using suitable ones, which refer to metacognitive control.

Many scholars have reported empirical evidence in their reviews that metacognition is essential in successful reading comprehension (Baker & Brown, 1984; Garner, 1987; Schraw, 1998). In addition, three comprehensive reviews of reading comprehension, *Preventing Reading Difficulties in Young Children* (Snow, Burns, & Griffin, 1998), *National Reading Panel* (NICHD, 2002), and *RAND Reading Report* (Snow, 2002), showed that metacognitive aspect of comprehension is critical in reading. In reviews of verbal protocol studies, a major finding was that effective metacognitive strategies are a hallmark of proficient readers (Fox, 2009; Pressley & Afflerbach, 1995). In addition, instruction for metacognition helps foster students' reading success. For example, instructional packages that involve the metacognitive aspect of reading are found effective for reading comprehension (Palinscar & Brown, 1984; Trabasso & Bouchard, 2002). Nowadays, there is a high consensus among educators as well as scholars that metacognition is a critical part of reading education (Baker, 2008)

However, metacognition research on multiple-text comprehension is still sparse, contrasted to the research in single-text comprehension. Relevant literature on metacognition in the multiple documents appears in the hypermedia and Internet reading research context, rather than printed based comprehension. Dillon and Gabbard's review (1998) concluded that metacognition was imperative in comprehension of hypertexts and Internet context. Coiro and Dobler (2007) also supported that metacognition was a key factor to comprehend a Website that consisted of multiple documents. One representative

study that related metacognition and comprehension of multiple texts was conducted in Stadler and Bromme (2007). Recognizing the importance of metacognition, they hypothesized that readers in different conditions of metacognitive-instruction prompts would induce different amount of topic knowledge, sourcing, and comprehension performance. Participants were randomly assigned to one of the four conditions: (a) evaluating instruction only (b) monitoring instruction only, (c) both evaluating and monitoring instruction, and (d) a control condition. As a result, the evaluating and monitoring group performed better in nearly all tasks than the control group. In addition, the monitoring group performed better in getting factual information and comprehension tasks than the control group. These finding supports that metacognition helps readers understand multiple documents.

As shown above, metacognition is of central importance to reading. Since reading multiple-texts usually require more cognitive challenges and difficulties than reading single texts, it is expected that metacognition plays more important role in comprehension of multiple texts. Compared to the substantial research of metacognition on single-text comprehension, there is not sufficient research on the metacognition in comprehending of multiple texts. It remains open to investigate when and how metacognition influences comprehension processing of multiple texts. In addition, it is worth studying whether the metacognitive process in multiple-text comprehension is similar to a single-text or a hypertext comprehension.

Text Processing Patterns in Comprehension

Individual differences are also observed in reader's text processing. It is expected that these different text processes relate to different levels of reading comprehension. A variety of studies reveals that readers differ in their recognition of source information,

and reading order of texts. In addition, Internet research provides evidence that readers are diverse in navigating on the Internet as well as searching patterns. This section describes readers' different text processing patterns (i.e., recognition of source information, reading orders, searching patterns) and their relationship with comprehension.

Recognition of Source Information

Source information is one of the most intensively studied topics in the multiple-text comprehension research. A task condition that includes important sources (e.g., *primary sources* in history) helps readers understand a set of multiple texts. For instance, Rouet, Britt, Mason and Perfetti (1996) investigated the impact of presence of primary documents on reasoning. College students read seven multiple texts of history about the *Panama Canal* and wrote a one page essay. In this study, only one condition differed between the groups: whether the primary source was included among the seven texts. The results showed that the primary source condition performance better in both students' rating of the documents (i.e., reasoning *about* document) and their ability to use the document information (i.e., reasoning *with* document). Similarly, Bigot and Rouet (2007) found that source-based content presentation resulted in better comprehension performance.

However, not all readers have sensitivity related to source information during reading (Britt & Aglinskis, 2002; Manning, Goldman et al., 2008), which may partially account for different performance in reading comprehension. For example, Wineburg (1991) investigated the different reading patterns of historians and proficient high school students. His analyses of verbal protocols revealed that historians used three

distinguished heuristic strategies that did not appear amongst the high school students. The first strategy was *sourcing*, identifying source information before reading documents in order to check trustworthiness, importance, and the author's perspective and bias. Second, the historians used *corroboration*, comparing and contrasting documents with one another in order to understand historical events that documents described. A third strategy was *contextualization*, considering a situation in which a document was written, to understand how temporal and spatial context influence the artifact. It is notable that two of the strategies (*sourcing*, *contextualization*) relate to reader's recognition of source information. Stadtler and Bromme (2007) also provided evidence that ordinary readers, not experts, were satisfied with a partial understanding of concepts and sources in multiple texts, so they needed not all source information.

In a theoretical model for reader's mental representation of multiple documents, Britt, Perfetti, Sandak, and Rouet (1999) proposed four hypothetical mental representations of source tagging. The first model is a *separate representational* model when a reader has a different mental representation of each text without connecting those different sources. Second, a *mush model* includes only text contents without any source tagging. A reader in this model is not concerned with the sources of information, but attends to content integration. Third, a *tag-all model*, which is directly opposite to the *mush model*, identifies every bit of source information to all texts. Mental representation of the *tag-all model* usually appears in experts such as historians who examine all source information in order to reinterpret historical accounts. Last, a *document model* attaches only sources that seem important, which is different from *all-tag model*. According to Britt et al. (1999), the *document model* is an ideal model for ordinary readers in

comprehension of multiple texts. The all-tag model requires readers much memory for sources, so only experts with rich prior knowledge and experience are able to hold such representation. The separate representation model is far from ideal because it prevents content integration. Finally, the mush model is also less desirable because it has no chance to evaluate source accuracy and credibility.

Why does readers' recognition of source information influence multiple-text comprehension? The researchers considered at least two possible reasons that accounted for the role of source information. One is the *trust* (affective) factor and the other is the *memory-related* (cognitive) factor. Important sources bring more trust to readers and enhance readers' comprehension. Bråten, Strømsø and Britt (2009) studied the impact of source evaluation on single or cross-document comprehension. In their study, college students read seven separate texts about climate change and wrote a brief summary report for pretend students. A regression analysis of prior knowledge, trust on sources, and document types revealed that both trustworthiness and document types predicted multiple text comprehension, controlling for prior knowledge. This means that when a reader trusts some texts more than others (e.g., "Because they are primary sources"), the reader attends to the important (primary) sources more carefully, which in turn may help him or her figure out the overall intertextual relationship based on the important source.

Another explanation comes from evidence that important source information is more easily recognized and memorized than unimportant source, promoting performance in multiple-text comprehension. Strømsø, Bråten and Britt (2010) conducted a study about relationships between memory for sources and text comprehension by recruiting Norwegian high school students. The major finding in this study was that students'

source awareness (i.e., memory for sources) related to both intratext and intertext comprehension. It implies that if a reader easily recognizes source information among documents because of important sources, the reader better understands cross-textual relationships because it reduces memory demands for sourcing and related cognitive efforts.

Together, Bråten and his colleagues' two studies (Bråten et al., 2009; Strømsø et al., 2010) support that source information is associated with both cognitive (memory) and noncognitive (trust) factors for readers, which in turn contribute to enhancing multiple-text comprehension. The source information can be regarded as additional useful cues to identify the complex intertextual relationship among diverse texts. Otherwise, readers might focus on each text with nearly the same attention, which demands readers' limited working memory.

Reading Order

In traditional research on comprehension of single texts, researchers found that texts had cues (rhetorical structure) guiding readers' comprehension process. In addition, readers were assumed to have knowledge of the rhetoric knowledge in order for successful comprehension performance (Kintsch & Yarbrough, 1982). For example, Schnotz (1993) provided different versions of rhetorical structure with the same content to research participants. As a result, difference of reading performance was found, interpreting that the difference was attributable to the manipulated reading order by the researcher. In this sense, there is a certain way (reading order) that readers follow rhetorical cues.

Unlike comprehension of a single text that is linearly written, comprehension of multiple texts gives readers degrees of freedom in terms of reading order. Readers can take an overview of all documents before reading them, or examine each document linearly without an overview. Some readers often try to connect the meaning of each text to other texts during their reading, while others prefer to synthesize multiple documents after reading all the documents. Still other readers show idiosyncratic reading order patterns. As an interesting case, one historian in Wineburg's (1998) expert study showed a zigzag reading order pattern, reading several texts back and forth around one central text.

Research reveals that there are huge individual differences of reading order patterns. For example, Hartman (1995) showed that high school students had three different patterns when reading multiple texts. In his study, some students read texts linearly; they usually focused on a current text to read, identified main ideas from the current text, and later read subsequent text. This reading cycle continued until reading the final text. This pattern of reading was similar to traditional linear reading of single texts. Hartman called it *primary endogenous* reading. Other readers tried to read several texts simultaneously, comparing and contrasting them during the reading. The major source of meaning was constructed from the intertextual reading, which was called *secondary endogenous* pattern. Last, still other readers interpreted texts based on their prior knowledge and beliefs. Part of textual information was denied when it did not fit to the reader's knowledge and beliefs. This reading was called *exogenous reading* pattern since major meaning was not constructed in texts.

Following Harman's study, Strømsø, Bråten, and Sameulsteun (2003) recruited seven Norwegian law college students as proficient readers. They selected three representative cases of the students and observed them three times. In the first observation, all students focused carefully on self-selected text in order to learn content in law. However, at the third observation, which was right before students' law final examination, the students' reading patterns were quite different from each other. One student focused on basic texts with his self-generated notes, while another student compared different law texts for her review. Another student examined basic texts, legal cases, and his prior knowledge simultaneously. Research concluded that part of their final law scores were related to the reading and reviewing patterns between students at the final stages. This conclusion gives a clue that there is individual difference in reading order, which in turn influences comprehension performance.

However, while research describes various individual differences in terms of reading orders, two common patterns are also reported among many typical readers. These general patterns are as follows:

- Often readers focus more on the first encountered text than on subsequent texts
- Readers usually read each text in a one-by-one manner to identify gist information from documents

The first common pattern is that readers focus more on the first text they encounter than on subsequent texts (Goldman, 2004; Mannes, 1994; Stahl et al., 1996). This finding can be partially explained by the Structure Building Framework (Gernsbacher, 1990): the goal of reading is to build a coherent mental model. When readers encounter new information, the meaning they construct is often based on a

foundation that is established during the reading of the first text, with additional new information from subsequent texts constructed on the foundation. Based on this foundation, readers determine a match of the new information with the already existing foundation. If this new information fits, readers continue to add new information based on the foundation. However, if the new information does not match the previous foundation, the readers create a new foundation for this new information

Next, many readers read each text one by one, rather than skimming the set of multiple texts in order to identify gist information across texts (Maggioni et al., 2010). Average readers may struggle to establish an understanding of several texts at once (Stahl et al., 1996), so they try to understand “who said what” by examining each text linearly. Efficient readers may scan the set of texts before examining texts in order to set a hypothesis of the intertextual meaning, and then revise the hypothesis during reading (Wineburg, 1991, 1998). However, average readers are more likely to read each text one by one and then identify how the identified texts are intertextually related to each other. After readers identify the main ideas in each text (i.e., intratextual coherence), readers try to build a global topic across texts including integration of meaning of each text together (i.e., intertextual coherence) (Strømsø, Bråten, & Sameulsteun, 2003). However, as Goldman (2004) shows, the average reader’s integration of multiple documents is not always successful. In addition, readers seem to follow given text orders linearly, rather than reconstruct the reading orders (Stahl et al., 1996).

Therefore, the results of research on reading orders of multiple texts are mixed. There are individual differences of reading orders despite some established common patterns. One approach to investigate this issue is to understand reading order under the

context the reader's strategy use (Salmerón, Cañas, Kintsch, & Fajardo, 2005). Reading orders reflect readers' strategic decisions during reading. After research connecting reading strategy, reading order, and resulting comprehension performance in the context of the multiple-text comprehension, we will have more knowledge of nature of multiple-text comprehension.

Searching for Additional Information

Information searching in reading is usually regarded as either sub-process of comprehension or a means for successful comprehension. In a traditional print reading context, searching skill was differently conceptualized from comprehension (Guthrie & Kirsch, 1987). For that reason, several models of information searching process (ISP) in reading have been proposed. For example, Guthrie (1988) argued that locating information process consisted of five steps including feedback loops. The five steps were goal formation (What is my goal in this search?), category selection (In what category do I can search the target information?), information extraction (Do the identified category contain relevant information?), integration (Is it adequate to combine the extracted information with the goal?), and recycling (Is the goal of searching satisfied finally?). Similar descriptions of searching skills were provided by Mosenthal and his colleague (Mosenthal & Kirsch, 1991; Mosenthal, 1996). Despite different foci on searching between these scholars, common characteristics are found in these models as follows:

- Characterize searching as a linear process despite recognizing feedback loops
- Describe searching as goal-directed processes. Formation of a goal is usually the first step, and the final step is completed when the goal is achieved.

- Have several stages to achieve the end point. Usually the prior stages are requisite for processing the later steps. If a reader fails to complete the prior steps, the later stages will not be possible and the processing should be recycled.

Under the context of a searching process within a text, these information-processing models have good explanatory power of how a reader searches and locates specific information in a given text (e.g., textbook). However, it is questionable that the distinction between searching and comprehending is still justified in comprehension of multiple texts because both searching and comprehending simultaneously appear in multiple-text comprehension.

There are two theoretical reasons that explain that searching skills should be included in multiple text comprehension. First, it is unconditioned human behavior for a reader to feel information need during reading and to search for additional information. Information searching, or information seeking, has been regarded natural human behavior in the library and information science (Kuhlthau, 1991). For example, Information Foraging Theory (Pirolli & Card, 1999) understands that current human's information seeking is similar to primitive men's food foraging in the evolutionary ecological perspective, assuming that "people, when possible, will modify their strategies or the structure of the environment to maximize their rate of gaining valuable information" (p. 643). However, in the perspective of comprehension research this assumption of information seeking is limitedly accepted for the sake of internal validity. Therefore, it needs to assume that readers feel to need additional information during reading multiple texts, as some models assume (e.g., Rouet & Britt, 2011).

Second, Hypermedia and Internet-based technology has deeply influenced daily reading life and changed our concept of reading. For example, Kuiper, Volman, and Terwel (2005) cited a report from the National Center for Education Statistics (NCES), showing that “99% of public schools in 2001 had access to the Internet” (p. 285). Especially for the younger generation, reading during Internet searching is frequently observed behavior (Malloy & Gamberll, 2006). Reflecting the change of reading environment, the New Literacies Scholars (e.g., Coiro, 2003; Kress, 2003) suggest a new aspect of reading skills including navigating and Internet searching skills. Although the “new” aspects of literacy are still debated (e.g., whether conceptualization of new literacies is qualitatively different from print-based reading; Rich, 2008), the perspectives on Internet- and technology-based reading have broaden our concepts of reading that searching skills be included in the reading based performance. For example, Afflerbach and Cho (2009) argue that readers’ searching strategies based on information need and goal (realizing and constructing potential texts to read) should be considered as important reading strategies.

Searching for information is not a trivial process in the situation of multiple-text comprehension. Theoretically, searching strategies and resulting searching products matter in comprehension of multiple texts because the searched and located information can be used as another source to understand other texts. When a reader looks up word meaning in the Internet dictionary, it may not change a global meaning from multiple texts. However, if the reader seeks for additional text sources, it is likely to change a global meaning across the texts. For example, suppose that there are two contradictory texts about a biological evolution: one text is from Darwin’s supporter and the other is

from a dissenter. Depending on a third text to search and read, the overall intertextual document relationship will be differently constructed (see Figure 8). In this sense, the third text plays various roles: it might be a source of support with Text A or B, an overview of the topic, a resolution text between the two texts, a third perspective on the biological evolution, or have no relationship to the topic. Figure 8 shows that there might be at least six different intertext structures when a third text enters into the comprehension situation.

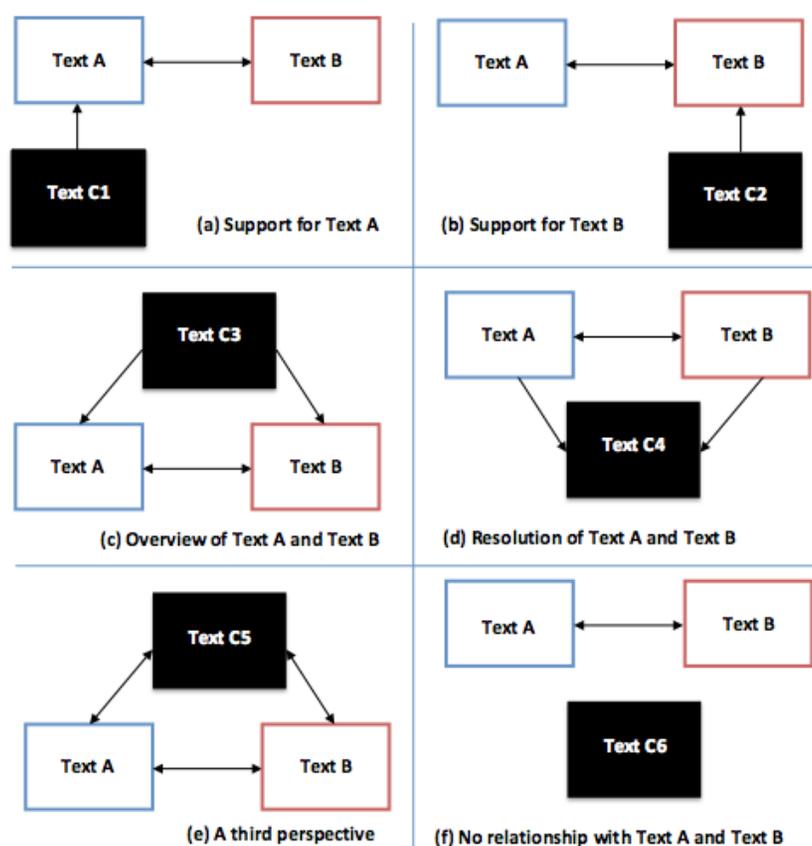


Figure 8. Conceptualization of change intertext structure when a third text being introduced

When a fourth text is introduced or selected, the number of the possible intertextual relationship between texts will increase in geometrical progression. In sum, an overall intertextual relationship depends on texts that are given to and/or searched by a

reader, which is frequent in multiple-text reading. If we exclude searching for additional information in multiple-text research, we lose an opportunity to investigate such dynamic reading interaction between reader and text.

Biased Assimilation in Comprehending Controversial Information

Social psychologists and political scientists have questioned why social and political conflicts are not easily resolved between different groups that have different beliefs and perspectives. One of their findings is that individuals who have strong attitudes and beliefs about a topic interpret information in a biased way. As a classic study, Lord, Ross, and Lepper (1979) revealed readers' biased assimilation by clear demonstration. The researchers classified two groups of undergraduate students (opponents and proponents of capital punishment) after administering an attitude survey. Total four texts related to capital punishment were provided. A first text was a summary of a pro-deterrence study (a fictitious study that showed the capital punishment was effective to reduce crime rate) and a second was a detail of the pro-deterrence study (e.g., studying process, study data, its critiques and rebuttals). A third text was a summary of an anti-deterrence study summary (a fictitious study showing an opposing result against the pro-deterrence study) and a fourth text was its detail.

By measuring the readers' attitude change and thought commentary, Lord et al. (1979) found that the participants showed biased interpretation of information. On the one hand, the proponents of the capital punishment interpreted the study of the pro-deterrence more favorably than the anti-deterrence study when they judged the validity and convincingness of the studies. On the other hand, the opponents showed the opposite interpretation patterns against the proponents. Combined, the participants interpreted same information differently according to their stances and beliefs. Lord et al. named

such biased interpretation of information as *biased assimilation*. Additionally, the proponents gained stronger beliefs about the efficacy of the death penalty after reading the materials, whereas the opponents more distrusted the efficacy of the punishment. The attitudes of the death penalty between the two groups became polarized after reading the controversial texts. The researchers called this phenomenon *attitude polarization*. The attitude polarization occurred because the participants protected their beliefs against belief-inconsistent information while they reinforced their beliefs by valuing read belief-consistent information.

After Lord and his colleagues' (1979) work, subsequent studies also affirmed the effect of the biased assimilation was found from participants with strong beliefs (Edwards & Smith, 1996; Munro & Ditto, 1997; Plous, 1991; Taber & Lodge, 2005; Kobayashi, 2010). The biased assimilation effect was reported in various topics from socio-political agendas (e.g., gun control, gay-lesbian adoptions, affirmative action) to scientific debates (e.g., perception of nanotechnology risk, safety of nuclear plant, relationship between HIV virus and AIDS). In addition, researchers found that the biased assimilation occurred not only during comprehension of textual information but in more naturalistic environment settings (e.g., watching television on political election debate; Munro et al., 2002). Furthermore, studies revealed that readers tend to search for information that supports their initial belief and stance (Fischer, Jonas, Frey, & Schultz-Hardt, 2005). Through this body of studies, the biased assimilation is not a tentative and idiosyncratic human error but a broad tendency when people deal with information (see Table 2).

Despite the considerable diversity, the researchers' findings are summarized into one conclusion, "all else being equal, information one wants to believe is perceived as more valid or accurate than information one prefers not to believe" (Ditto et al., 1998).

Table 2
Profiles of the Biased Assimilation Studies

Study	Topic	Materials	Findings
Lord, Ross, & Lepper (1979)	Efficacy of death penalty	Four texts: 2 (results/details) × 2 (pro/anti-deterrence)	<ul style="list-style-type: none"> • Participants interpret information and evidence in a biased way to protect their initial topic belief. • Attitude polarization: gaps of the initial topic beliefs between different participants are increased after reading the controversial texts
Plous (1991)	Perception of nuclear reactor accident at Three Mile Island	A three-page binder of excerpts concerning (a news article, a summary report; and the congressional testimony)	<ul style="list-style-type: none"> • The same event of the nuclear reactor breakdown is differently to participants. Pronuclear readers interpret it as "successful tests of system safeguards" while antinuclear readers criticize it as "evidence of system vulnerability" (p. 1064). • Attitude polarization occurs but its result is statistically weak.
Edwards & Smith (1996)	Various topics	Two short arguments (pros/cons)	<ul style="list-style-type: none"> • When participants read belief-inconsistent information, they scrutinize it with longer time, provide more refuting comments, and evaluate the information as flimsy. • Patterns of the biased assimilation are similar across various topics (death penalty, strike a child, hire minorities, parental consent, gay- adoptions, death sentence for minors, and blood alcohol level test).
Munro & Ditto (1997)	Homosexuality and cross gender behavior	Two controversial scientific summaries and 2-page detail (detail, criticism, and its rebuttal)	<ul style="list-style-type: none"> • Evaluation of quality of stereotypical information and affective responses are differed between high-prejudiced participants and low-prejudiced participants.
Kardash & Howell (2000)	Relationship between HIV and AIDS	One dual-positional text comprised 60 sentences (1,354 words)	<ul style="list-style-type: none"> • Participants' patterns of strategy use during comprehension differ according to their topic belief. For example, the participants think aloud more judgment related strategies in belief-inconsistent information.

Study	Topic	Materials	Findings
Maoz, Ward, Katz, & Ross (2002)	A peace proposal between Israelis and Palestinians	One text (one bilateral peace talk)	<ul style="list-style-type: none"> • Participants' evaluation of a proposal is influenced differently according to the putative authorship.
Munro, et al. (2002)	Evaluating the 1996 U.S. presidential debate	The live broadcast of the debate (It was not a text.)	<ul style="list-style-type: none"> • Participants' prior attitudes for a candidate influence evaluation of the actual debating process. • Participants' affective reaction links between their prior attitudes and post-debate evaluation.
Fischer, Jonas, Frey, & Schultz-Hardt (2005)	A decision about a manager's contract extension	A story that describes a manager's work and 10 one-page statements from the colleagues	<ul style="list-style-type: none"> • Participants more often search for information that fits their opinions and beliefs in a biased way (i.e., selective exposure to information). • When opportunity to search is restricted, the biased information seeking becomes strengthened.
Taber & Lodge (2006)	Gun control and affirmative action	A matrix of 16 hidden policy arguments	<ul style="list-style-type: none"> • Participants evaluate the attitude congruent arguments more strongly and seek confirmatory evidence when they are allowed to select sources of arguments. • Readers with high knowledge shows take long time to comprehend attitude-incongruent arguments than readers with low knowledge.
Kahan et al. (2007)	Nanotechnology risk perception	One text with 2 paragraphs	<ul style="list-style-type: none"> • Participants' attitudes toward a topic become polarized as they get information on the topic.
Greitemeyer et al. (2009)	German election campaign parties (education, health, job market)	Two texts that include 3 topics	<ul style="list-style-type: none"> • Participants' biased processing become weaker when they do not know source information or know it incorrectly; thus the biased assimilation is also influenced by source information.

Under this overarching finding, there are three implications applicable to comprehension of multiple texts. First, biased assimilation relates to evaluation of textual *contents* (Edwards & Smith, 1996; Munro & Ditto, 1997; Munro, et al., 2002; Polous, 1991; Taber & Lodge, 2005). Readers with strong topic belief evaluate, comprehend, and use content in a biased way. For example, Edwards and Smith (1996) found that readers'

evaluating process of contradictory arguments was biased according to their beliefs. The researchers provided two contradictory short arguments for seven issues (Death penalty, strike child, parental use of corporal punishment, hiring fixed percentage minorities, parental consent to abortion, gay-lesbian adoptions, Death penalty for juveniles, and blood alcohol level checks). An analysis of the result showed that research participants were more sensitive to belief-inconsistent information than belief-consistent information, as participants spent more time to examine the belief inconsistent information than the other. In addition, they provided more criticizing and non-supportive comments to the belief-inconsistent information. When comprehending belief-consistent information, the result was opposite. By using the evidence, Edwards and Smith proposed an idea of a *disconfirmation bias* that readers spend more time and cognitive resources by trying to attenuate validity for belief-inconsistent information. Therefore, biased assimilation in content evaluation occurs two ways. One is to value belief-consistent information over belief-inconsistent information (confirmation bias), and the other is to use more resources and time to criticize belief-inconsistent information (disconfirmation bias) (Taber & Lodge, 2006).

Second, because readers with strong topic belief are sensitive to *source* information, the biased assimilation effect can occur in a source identification phase, which in turn influences interpretation of new information in a biased way (Greitemeyer et al., 2009; Maoz, Ward, Katz, & Ross, 2002; Roskos-Ewoldsen, Bichsel, & Hoffman, 2002). Based on the literature of the biased assimilation, Gretemeyer and others (2009) hypothesized that biased assimilation occurred not only at the level of content processing but also at the level of source processing (when a reader has some knowledge of the

source and its basic argument, the reader's comprehension processing will be influenced by the evaluation of sources in a biased way). To test such hypothesis, the researchers provided German undergraduate students with two contradictory political parties' texts for German political election (Social Democratic Party, SDP, and Christian Democratic Party, CDP). The two texts were contradicted in the three core arguments such as education, health, and job. The participants in the study were assigned to one of the three conditions: (a) consistency condition, when reading correct source information and arguments, (b) inconsistency condition, when reading incorrect source information and arguments (e.g., SDP's text was assigned as CDP's text), and (c) unknown condition, when reading only arguments without source information. In the analysis of readers' biased assimilation, evidence was found that biased assimilation was highest in the consistency condition. This study has an implication that readers use source information to support and discredit the text content. Similar findings are supported in political psychology literature. For example, Maoz, Word, Katz and Ross (2002) found that participants' evaluation of a peace proposal between Israelis and Palestinians was different according to a putative authorship. For example, when pro-Israeli students were told that the peace proposal was written by the Israeli government, they considered the content of the proposal as fair and impartial. However, when the peace proposal was attributed to a Palestinian group, they considered it biased in favor of the Palestinians. In the political psychology, such biased source effect is called *reactive devaluation*. When a source is created from political opponents (author or institution), the content of the source is lowly valued and belittled by readers.

Third, the biased assimilation effect also occurs when seeking information (Fischer, Jonas, Frey, and Schultz-Hardt, 2005). Such biased information seeking is called *selective exposure* that people search for information that supports their opinion and beliefs. Fischer et al. (2005) provided a story of a manager's (Mr. Miller) work that had positive and negative results. The task was to decide extension of his manager position for next year. After initial decision, participants were provided 10 one-page statements of Mr. Miller's colleagues, which had also positive and negative opinions. As a result, the participants showed a tendency to select supportive statements to their initial opinions than unsupportive statements. Across different conditions of the opportunity to search (e.g., free search, restricted search), a common finding appeared that those participants selected the text materials in a biased fashion. When applied in a context of multiple text comprehension, readers may focus more on texts that are consistent with their beliefs, attitudes, and standpoints over inconsistent texts. In addition, it is not unreasonable to assume that readers are likely to search for information that supports their beliefs and thoughts, when they have an opportunity to search during comprehension.

In sum, biased assimilation is influential to comprehension of multiple texts in a diverse way. First, readers may be biased when they identify source information. If the readers have a strong preference toward topic beliefs, they are likely to favor belief-consistent source than belief-inconsistent source. As a result, the readers rely more on the preferred source and neglect disagreeable sources. A source written by disliked authors or political opponents is significantly denigrated (reactive devaluation). Next, readers may be biased when they interpret content information at least two ways. For one thing, they

are willing to accept belief-consistent information, seek, and evaluate it positively (confirmation bias). For another, they scrutinize belief-inconsistent information with longer time and a refutative way, evaluating the information negatively (disconfirmation bias). Finally, readers may be biased in searching information that supports their initial decision and thought (selective exposure). Therefore, the readers' initial beliefs and perspective would be strengthened after the biased information seeking. As a result, initial gaps between groups of different attitude and belief are increased (attitude polarization). However, there is only a little empirical evidence to show readers' biased processing in relation with strategy use in the comprehension processing (Kardash & Howell, 2000; Kobayashi, 2010).

CHAPTER 3: METHODS

This chapter describes the participants, materials, the iMTC (internet-embedded Multiple-Text Comprehension measurement tool, which represents reading material for the participants) environment and the main task and instruction. Next, the measures of the study are described: prior knowledge, topic-related reader belief, strategy use, and self-reflection. In addition, the procedures employed by this study are described in three stages: pre-reading interview, main reading task, and post-reading interview. Finally, analyses of data that involved techniques and procedures of data are reported.

Participants

Participant Selection

Undergraduate students at a large, mid-Atlantic university were invited to participate through a recruitment email or direct contact with the researcher. The main research method was a verbal protocol analysis, which enabled in-depth investigations of research participants' reading process and strategy use (Afflerbach & Johnston, 1984). Since the purpose of this study focused on readers' strategic patterns of reading multiple texts and Internet searches on a complex topic, and verbal reports yielded copious data under favorable conditions, recruitment of 15 undergraduate students was assumed to be a sufficient number.

For the participant selection procedure, *maximum variation sampling* (Maykut & Morehouse, 2000) was used to recruit participants with a wide variation in topic-related reader beliefs (topic belief). As my goal was to recruit participants of different topic beliefs, I considered eligible participants as members of the following three groups: (a) pro-Israel participant group, (b) pro-Palestine participant group, and (c) neutral participant group. However, group assignment of individual participants was determined

after a pre-reading interview (post-hoc group assignment). In the pre-reading interview, I used questions that helped me determine individual participant's group membership.

During the participant selection process, I intended to recruit three groups of participants with the same numbers. Therefore, I conducted the recruitment processes in the following two stages (Figure 9). In the first stage, I recruited participants mainly from targeted groups. For example, I contacted both Jewish students (presumably possessing pro-Israel beliefs) and Muslim students (presumably possessing pro-Palestine beliefs) as the target groups. However, actual group assignment was determined based on participants' answers in the pre-reading interview session (i.e., post-hoc), rather than on their ethnic or religious identity. To illustrate, a Jewish student was assigned to a pro-Palestine group because he showed pro-Palestinian beliefs in the pre-reading interview. Alternatively, an undergraduate student, who was neither Jewish nor Muslim, was assigned to either pro-Palestine or Pro-Israel group, based on his or her belief. As a result, the participant group was uneven in terms of the numbers per group in this first stage. In the second stage, I recruited additional students in order to match the number of participants. Because this second stage was a later phase in the recruitment process, I contacted the previously recruited participants (i.e., participants of this study in the earlier stage) to recommend their friends or acquaintances with topic beliefs on this issue.

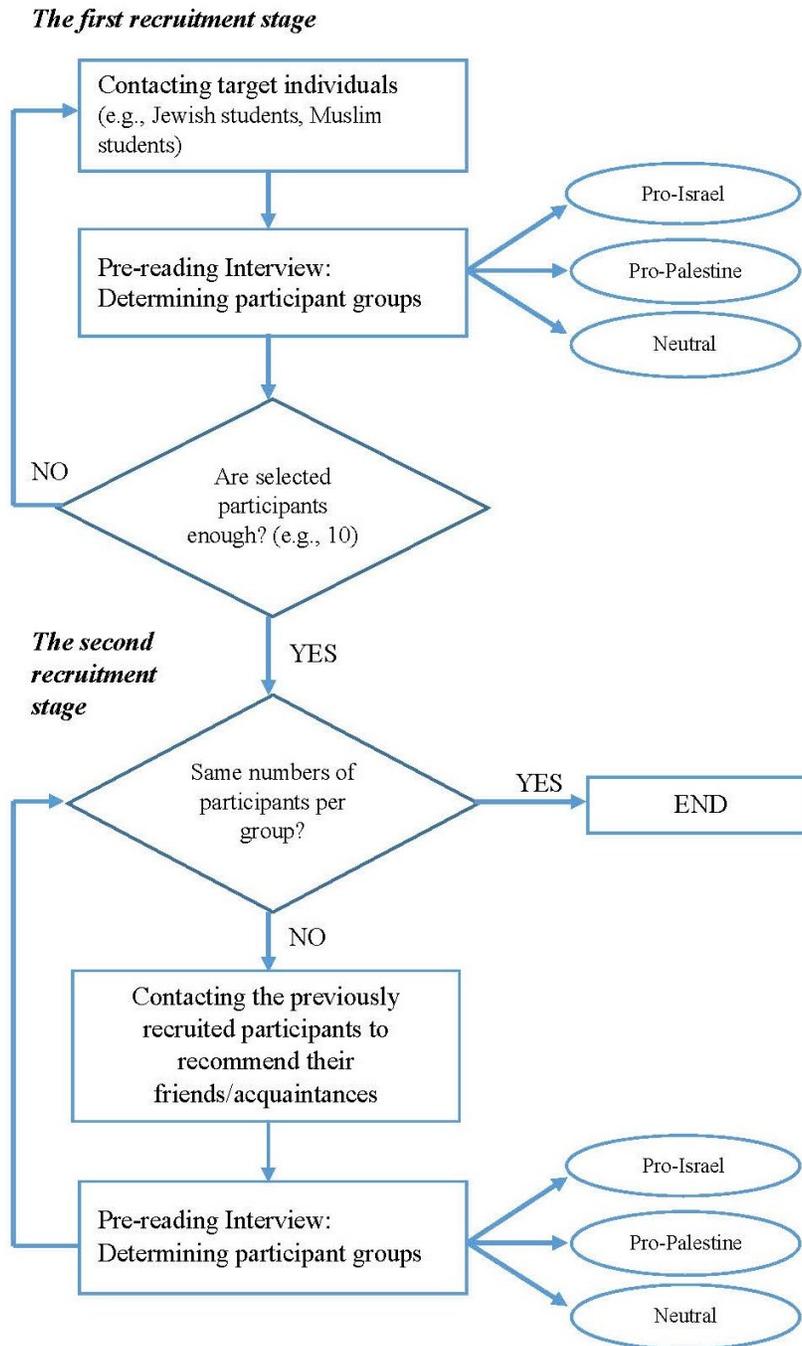


Figure 9. Participant selection processes for this study

I also considered additional criteria for the participants in this study. First, the eligible participants were required to be able to understand college-level texts, including research articles, as this study included five texts about the Palestine-Israel conflicts. Second, they had to be capable of providing verbal reports during reading. Since participants' verbalized thoughts were recorded in this study, participants who were fluent English speakers were preferred. Four participants were excluded during the recruitment process: one participant was excluded due to difficulty with delivering verbal reports and the three other participants were excluded because they skipped at least one text without providing think-aloud protocols. Finally, additional preferred skills consisted of proficiency searching the Internet using a laptop computer. All the participants were sufficiently familiar with Web searching and felt no difficulty with Internet searching during reading. As a result, I recruited five pro-Israel participants, five pro-Palestine participants, and five neutral participants. All the participants consented to participate in this study and were compensated \$25 for their participation.

Group Assignment

Participants were asked to reveal their belief and stance about the Palestine-Israel conflict in the pre-reading interview. During the interview question, I provided five options to answer: pro-Israel, pro-Palestine, both, neither, I don't know. The actual questions in the pre-reading interview are presented as follows:

When you think about previous and current conflicts between Israelis and Palestinians, are your sympathies and stances more with the Israelis or more with the Palestinians? What influences your stance and belief?

When Participants answered that they had pro-Israel beliefs, I assigned them to a pro-Israel group. Other participants revealed pro-Palestine beliefs were assigned them to

a pro-Palestine group. Finally, when they answered that they supported “both,” “neither,” or “I don’t know,” I assigned them the neutral group. Table 3 showed participants’ answers from the interview and the decision result of the group assignment. All the participants’ names were pseudonyms.

First, first five participants belonged to a pro-Israel group due to religious identity, family background, and/or education. Jacob, Sophia, and William showed their pro-Israel beliefs in common because of “Jewish upbringing” and “(my) religion.” Isabella answered that for her, the available information to the conflicts had been for pro-Israelis until to date. Mason supported for pro-Israel not only for his religious identity, but he regarded that Palestinians did not act properly to the conflicts (e.g., terrorist attack).

Next, other five participants were assigned to a pro-Palestine group because they believed that Israeli policy oppressed Palestinians who deserved the land. Most participants showed the historical validity of Palestinians’ right as the rationale supporting for pro-Palestine beliefs. For example, Olivia showed her belief, “Palestinians had deserved that land from the very beginning.” Jackson also provided a similar opinion, “[Palestinians] have been historically pushed out of their homes... driven into a small piece of land on the West Bank.” In addition, some participants pointed out Israeli unfair policies to Palestinians. Jayden expressed it as “State’s oppressing” and Michael compared the unfair death ratio between Israelis and Palestinians due to the conflicts.

Table 3
Group Assignment Results Based on Participants' Interview

	Excerpts from the Participant Interview	Result
Jacob	I would probably have to say Israelis and I think it just has to do just with my Jewish upbringing but I would say that that definitely makes me pro-Israeli.	
Sophia	And my sympathies are more with the Israelis and again, because of my religion and the way that I was- what I have been told, I guess not told, but how I feel and also how I was raised and the schooling.	
Mason	Looking at history, I'd go with Israelis, a little with Palestinians but mostly Israelis... For example, when you look at the Oslo Accords there are a lot of things on both sides that has to stop. The Palestinians always continue to terrorist attacks.	Pro-Israel group
William	I'm influenced by my upbringing, kind of, but also while I was there I did live in an area very close to Gaza. So they sent rockets frequently... they'll talk about a big cease-fire, but then that doesn't necessarily mean the rockets stopped.	
Isabella	I'm worsen pathetic with Israelis and along the same line what I've been saying that influenced is where I'm getting the information and people around me for the most part are sympathetic with the Israelis.	
Jayden	Definitely more with the Palestinians. It's just the reality of it; people think it's a two-sided conflict, but it's not a two sided conflict. It is a conflict between; it is a State's oppressing. Is the state occupying or oppressing people in their land?	
Abigail	When I think about previous and current conflicts between Israelis and Palestinians, I would say the Palestinians.	
Olivia	Well, for Palestinians I mean, I'm not saying that religion should influence us... I know that Palestinians had deserved that land from the very beginning. If you look into like research or whatever it is, a lot of people they say that Palestinians own it.	Pro-Pales. group
Jackson	Really, my sympathies are more with the Palestinians. I mean, they have been historically pushed out of their homes, they have been driven into a small piece of land on the West Bank, [and] they have been treated unfairly.	
Michael	My side is with the Palestinians because if you look at the ratio of the deaths and the death of Israelis and the death of Palestinians, I don't know what the exact statistic is, but they said like 100 to 1 Palestinians to Israelis that died.	
Ava	I sympathize with both of them because no one wants to be in a political conflict with another country. It's never good for either countries or either parties.	
Emily	Um, probably both. I think both just because I'm both; both sides like have their argument and their reason for wanting.	
Ethan	I know that the Jewish people have been through a lot [of conflicts] but I kind of feel a little bad for the Palestinians. I know that wrongs have been done on both sides...	Neutral group
Daniel	Don't know what influences my stances.	
Liz	Again, I have to say, um, probably don't know.	

Finally, the remaining five participants were identified as a neutral group. The participants did not show specific beliefs toward the conflicts. Ava, Emily, and Ethan answered that they supported both Palestine and Israel. Emily's answer showed this perspective, "Both sides have their argument and their reason for wanting... I think that both sides are going to be a little bit of hurt." On the other hand, Daniel and Elizabeth were identified as a neutral group due to their lack of prior knowledge and belief. They answered that they did not know enough about the conflicts.

Participant Characteristics

The participants consisted of 15 undergraduate students. Information on participants' demographics (i.e., gender, age, years in school, ethnicity, and religious identification) was collected (Table 4). The pro-Israel group averaged 21 years of age, and consisted of three male and two female students. All group members identified religiously as Jewish and all were Caucasian. One student was a freshman and the others were seniors. Next, the average age of the pro-Palestine group was 20.6. This group consisted of three male students and two female students. All the students were Muslim except for one who identified as an atheist. Races were comparatively diverse in the pro-Palestine group: the group consisted of one Caucasian, one African-American, and three Asians. In terms of academic level, there were three seniors and two juniors. Finally, the average of the neutral group was 20.6 years and consisted of three female students and two male students. Their ethnic composition was also diverse, including two Caucasians, two African-Americans, and one Asian. Except for one student who did not reveal her religion, all the participants were Christians. Their academic levels were also diverse: the group included three seniors, one junior, and one sophomore.

Table 4
Participant Demographics

	Pro-Israel Group	Pro-Palestine Group	Neutral Group
Number of Participants	5	5	5
Age	21	20.6	20.2
Gender			
Male	3	3	2
Female	2	2	3
Years in School ^a	15.4	15.6	15.6
Freshman	1	0	0
Sophomore	0	0	1
Junior	0	2	2
Senior	4	3	2
Ethnicity			
African American	0	1	2
Caucasian	5	1	2
Asian American	0	3	1
Religious Identification			
Jewish	5	0	0
Muslim	0	4	0
Christian	0	0	4
Other (No response)	0	1	1

Note. ^aYears in School: It designates the average years in school (i.e., freshman: 13, sophomore: 14, junior: 15, senior: 16)

The three groups were similar in age, gender, and years in school, but different in ethnicity and religious identification. A dominance of religion (Judaism and Islam, respectively) for both the pro-Israel and pro-Palestine group was attributable to the purposeful sampling method, although the recruitment was not focused solely on religion.

Materials

The texts in this study focus on Israeli settlement in the West Bank, one of the ongoing Palestinian-Israeli conflicts with a long history of debate (Kelman, 1999). Originally, the West Bank area was located on the eastern side of the State of Israel, populated and governed by Palestinians. After 1967 Six-Day War, the State of Israel

occupied the land and Israeli settlers populated some of the areas. The land of the Israeli settlements in the West Bank was disputed between international community and Palestinians (arguing for the illegality of Israeli occupation), and the State of Israel (arguing for the validity of the occupation). As a contemporary and unresolved topic, the conflict between the two groups is a representative case of complex problems in which various perspectives exist, including the nature and origins of the conflict, and possible solutions for it. Table 5 describes the two maps and five texts that were used for reading materials (see Appendix B).

The first map (Map 1), *Origin and Evolution of the Arab-Zionist Conflict*, had four sub-maps that described four periods of territories of Israel and Palestine (Origins and Evolution of the Arab-Zionist Conflict, 2011). The first sub-map reflected the United Nations partition plan between the Jewish state and the Arab section in 1947. The second sub-map showed the State of Israel at the time of its declaration of independence in 1948. The third sub-map showed the geographical results of the Six-Day War in 1967 between Israel and bordering Arab states, revealing how land was conquered and kept. The final sub-map denoted current disputed lands, including Israeli and Palestinian residential areas, Gaza and the West Bank. Map 1 was provided to address basic information of historical events between the two different ethnic groups for understanding research participants.

Table 5
Text Materials in this Study

	Author	Source	Title	Content	Length	Readability ^{a,b}
<i>Maps</i>						
M1	Origins and Evolution of the Arab-Zionist Conflict	Veterans Today (2011)	<i>Origin and Evolution of the Arab-Zionist Conflict</i>	[Graphic illustration of four maps about Israeli and Palestinian borders in history]		
M2	Foundation for Middle East Peace (FMEP)	FMEP website (fmep.org/) (2012)	<i>Settlement Outposts and Land Closure</i>	[Graphic illustration of Israeli settlements and Outposts in the West Bank, 2008]		
<i>Text materials</i>						
T1	The editors of the Encyclopædia Britannica	Britannica Online Encyclopedia (2010)	<i>West Bank</i>	Overview	720 words	• R-E: 21.1 • F-K: 16.6
T2	Council for European Palestinian Relations (CEPR)	CEPR Website (thecepr.org/)	<i>Illegal Israeli settlement</i>	Argument against the Israeli settlement	718 words	• R-E: 19.8 • F-K: 16.5
T3	Dayan (The chairman of the Yesah Jewish communities in the West Bank)	Opinion page, The New York Times (2012)	<i>Israel's settler are here to stay</i>	Argument for the Israeli settlement	719 words	• R-E: 31.4 • F-K: 13.1
T4	Morgenstern (an assistant editor at The Blaze)	The Blaze (2013)	<i>United Nations report says Israel's settlements violates Palestinians' human rights</i>	Addressing the UN report (illegality of the Israeli settlement)	719 words	• R-E: 18.3 • F-K: 17.8
T5	Bell (Professor of Law at the University of San Diego/ Bar-Ilan Univ.)	The BESA Center Website at Bar-Ilan univ. (2012) (www.biu.ac.il/Besa)	<i>The Levy report: Reinvigorating the discussion of Israel's rights in the West Bank</i>	Addressing the Levi report (legality of the Israeli settlement)	718 words	• R-E: 24.6 • F-K: 17.9

Note:

- a. "R-E" designates Flesch Reading Easy score: This test rates text on a 100-point scale. The higher the score, the easier it is to understand the document. For example, 90.0–100.0 is easily understandable by an average 11-year-old student; 60.0–70.0 is easily understandable by 13- to 15-year-old students; and 0.0–30.0 is best understood by university graduates. The readability formulas are calculated by MS[©] office 2013.
- b. "F-K" means Flesch-Kincaid Grade Level: This test rates text on a U.S. school grade level. For example, a score of 9.0 means that a ninth grader can understand the document. If the score is between 13 and 16, it means that undergraduate students are able to understand the document. The readability formulas are calculated by MS[©] office 2013

The second map (Map 2), *Settlement Outposts and Land Closure*, represented a geographical distribution of Israeli settlements in the West Bank in 2008 (Foundation for Middle East Peace, 2012). Map 2 also described historical distributions of the settlements such as “Settlements Established in 1960s” and “Settlements in 1970s.” As in the case of Map 1, this map provided background knowledge about the settlement in the West Bank.

In addition to the two maps, five texts were addressed as reading materials. The first text (Text 1) was a 720-word encyclopedia article quote from *West Bank*, published on the Britannica online website (Britannica Online, 2010). This text, written by the editors of the Encyclopedia Britannica, took a neutral stance on the overview of the West Bank, including general geographical information (e.g., territory size, population) and history in the mid-to-late 20th century. The second (Text 2) was a 718-word quote from the *Illegal Israeli Settlement* that appeared in the website for the Council for European Palestinian Relations (CEPR). As the title implies, CEPR advocated the belief that Israeli settlement was illegal according to both international law and a humanitarian perspective. The third text (Text 3) was an excerpt from the opinion page of the New York Times titled *Israel's Settler Here to Stay* (Dayan, 2012). It consisted of 719 words and was written by a chairman of the Yesah Jewish community in the West Bank. The author of this text represented the voices of Israeli settlers, arguing that the settlement was historically valid and that maintaining the status quo was the best solution because of growing numbers of Israelis in the West Bank.

While Text 2 and Text 3 revealed the main arguments from each side, the remaining two texts supported these arguments. The fourth (Text 4) and the fifth texts (Text 5) cited different public reports with contradictory perspectives. Text 4

(Morgenstern, 2013) was a 719-word excerpt from a news article, “United Nations report says Israel’s settlements violates Palestinians’ human rights,” published in the online newspaper *the Blaze* in 2010. This article addressed news about “UN report.” According to this article, this was the first United Nations report on Israel’s settlement, which concluded that the Israel’s policy was illegal and violated the human rights of Palestinians. On the other hand, Text 5 (Bell, 2012) was a 718-word excerpt from a political research report from *The Levy report: Reinvigorating the discussion of Israel’s rights in the West Bank*. The author was a law professor at the University of San Diego. He addressed the main points of the Levy report, showing that Israeli settlement was not illegal because international law (The fourth Geneva Convention) did not apply to the Israel’s settlement case.

The two maps and five texts highlighted important historical events and current issues. In order to understand the conflicts of the settlement between Palestine and Israel, participants had to understand historical backgrounds and current conflicting points. As an overview, three texts (Text 1, Map 1, and Map 2) described the historical backgrounds of the conflicts: *UN Partition Plan* in 1947, *Israel Establishment* in 1948, *Arab-Israel War* (Six-Day War) in 1967, and *Israeli occupation of the West Bank*. The remaining four texts (Text 2, Text 3, Text 4, and Text 5) showed current issues and problems relevant to the conflicts. For example, Text 2 addressed the poor living conditions of Palestinians, discriminated against by the Israeli settlers. However, Text 3 showed that it was hard to uproot 160,000 Jews from the West Bank areas. These two issues were conflicted with each other. In addition, Text 4 and Text 5 both cited the Fourth Geneva Convention (*Convention IV relative to the Protection of Civilian Persons in Time of War*).

Geneva, 12 August 1949) as evidence to support each side. Text 4 argued that Israeli settlement was illegal due to the Geneva Convention, whereas Text 5 argued that the Convention could not apply to the Israel's case. The complex intertextual relationship between the selections is described in Figure 10.

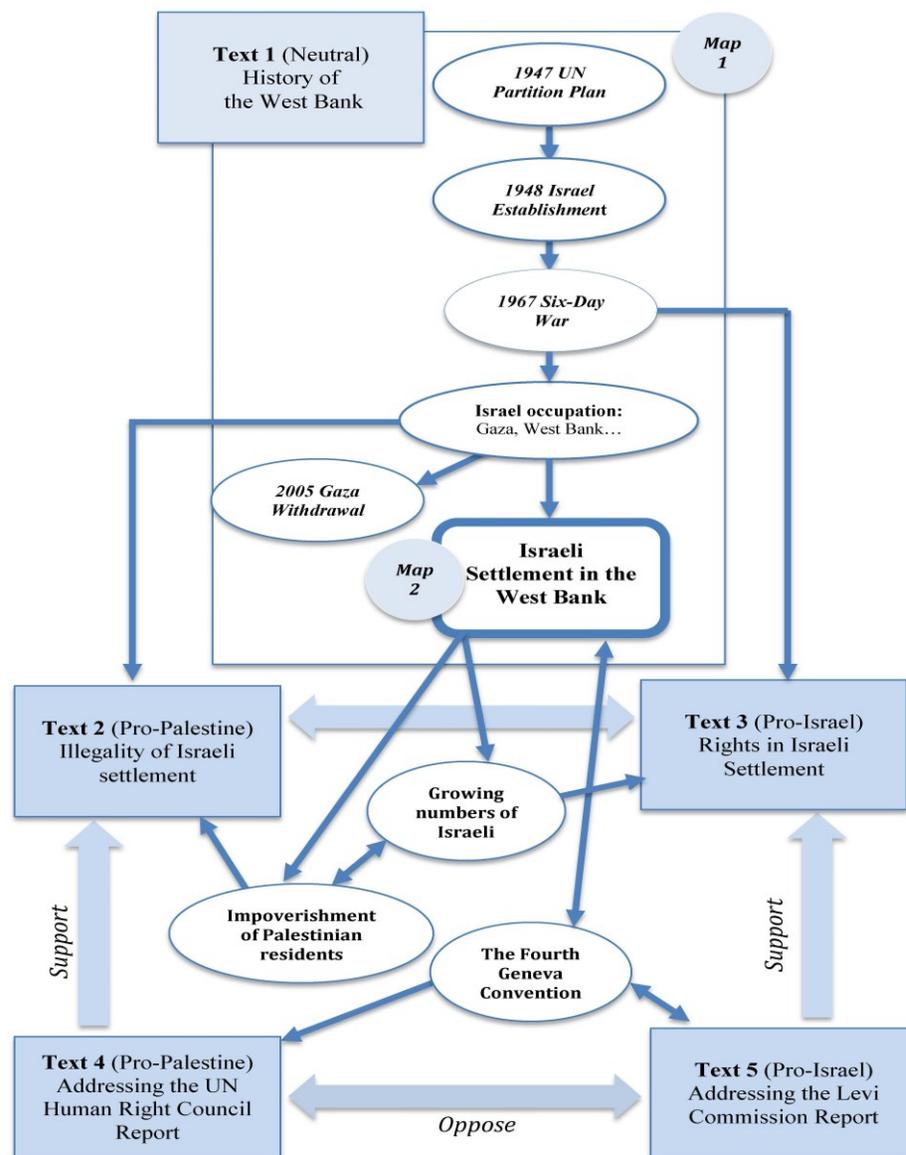


Figure 10. Text-Event relationship

Note. (a) Box designate “texts.” (b) Circle designates “maps.” (c) Ellipsis designates “historical event” or “current issue.” (d) One-way small arrow between events (issues) represents a “causal relationship.” (e) Two-way small arrow between events (issues) represent a “contradictory relationship.” (f) Big arrows represent intertextual relationship (e.g., support, oppose).

In addition, the array of five texts was chosen in consideration of the author, source of publication, content, length, and readability (Table 5). Text 1 was selected because it provided an unbiased stance of the conflicts. The second and third texts were similar in that the authors represented the main arguments of the issues, while the contents were contradictory. Text 4 and Text 5 cited reliable public reports (i.e., the UN report, the Levy report) to support each side. In order to ensure that all texts had similar lengths, I quoted only parts of the original sources. In terms of reading difficulty, the texts may be somewhat challenging for participants, with the exception of Text 3.

There was a trade-off between ecological and internal validity when including the Internet searching option. Ecological validity increased because the searching options availability during reading provided opportunities to read additional texts, which may more closely resemble participants' typical reading behavior. However, this option resulted in a huge variation across individuals in terms of time and frequency of Internet searching, which was likely to influence the reading comprehension process and product. Hence, it may be a threat to internal validity. For example, some participants looked up word meanings that they were unfamiliar with, including the "de jure" (according to rightful entitlement or claim) and "creep" (occur or develop gradually and almost imperceptibly). Other participants searched for more detailed accounts of the international conference on the Fourth Geneva Convention and the Annapolis Peace Conference. Some others searched for source information (e.g., the Blaze, Foundation for Middle East Peace). In other words, the quality and amount of information the research participants searched and used was related to the comprehension processes, as presented

by verbalized reports which in turn had an impact on comprehension performance scores (Figure 11).

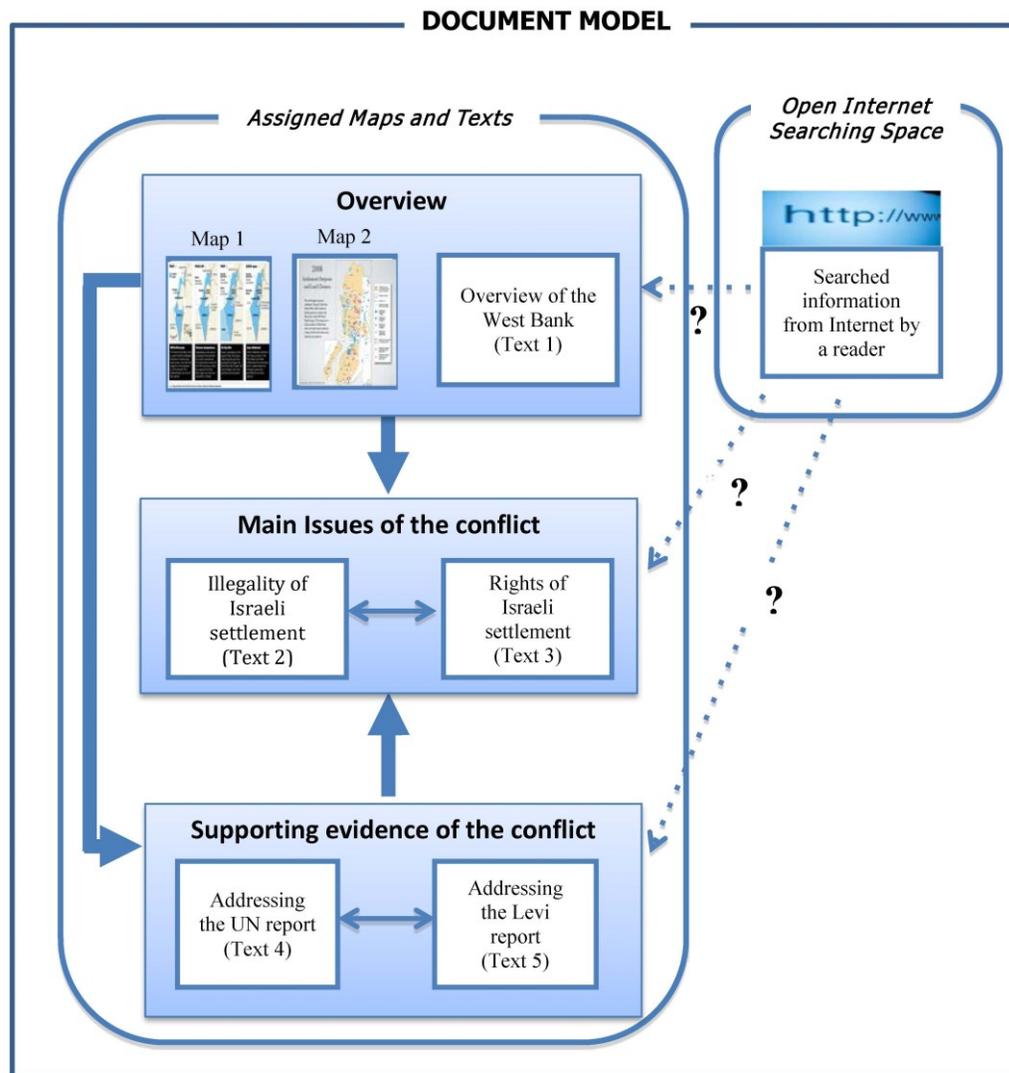


Figure 11. Document Model with open Internet searching space in this study

The iMTC Environment

The iMTC (internet-embedded Multiple-Text Comprehension measurement tool) was developed by the researcher and his colleague (Kim & Cho, 2011) in order to collect

participants' verbal report data, reading time and order, and Internet search history while reading multiple documents. Based on the iMTC software, research participants read the assigned text materials as well as searched the Internet (see Appendix C).

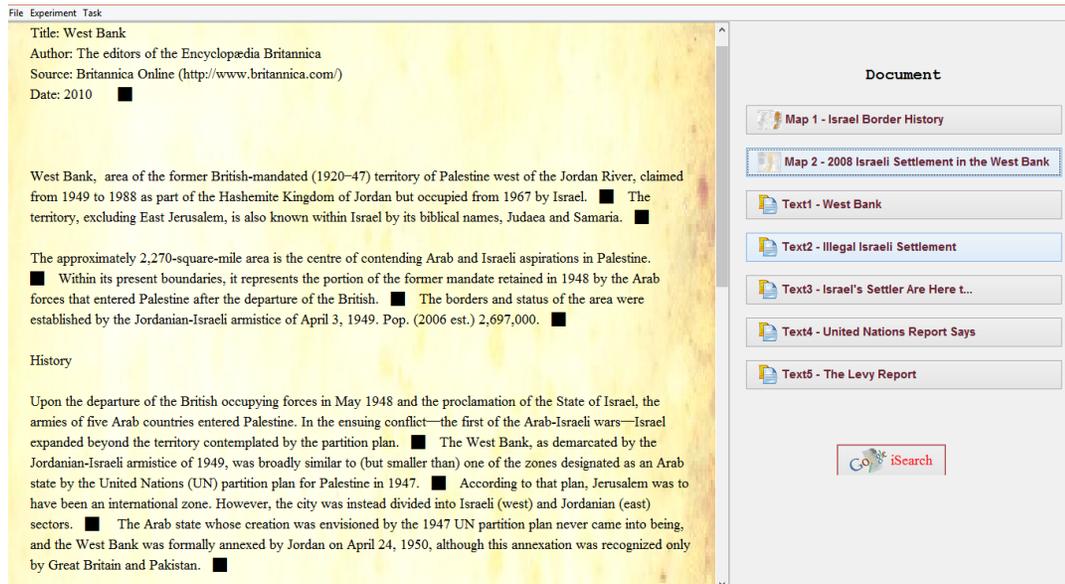


Figure 12a. A basic layout of the iMTC

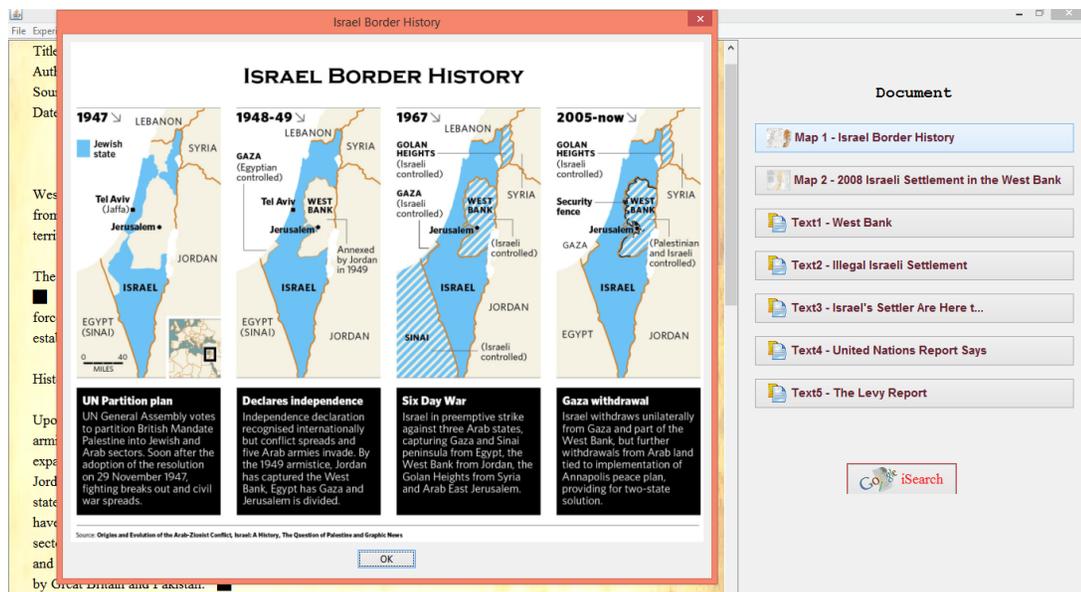


Figure 12b. Map pop-up function of the iMTC

Figure 12. Basic display functions of the iMTC

Figure 12a describes a display layout that the research participants see during a main reading task. On the left side, a text window showed a current text the participants were reading. On the right side, three sections were allowed to be controlled by the research participants. The first buttons were map buttons: a map popped up in the figure in front of the text window whenever the participants pushed the on button (Figure 12b). The second section was a document section consisting of the five texts. The participants freely selected and read any text without a fixed order. For example, the participants could go back to read previous texts if they wanted to read again at any time.

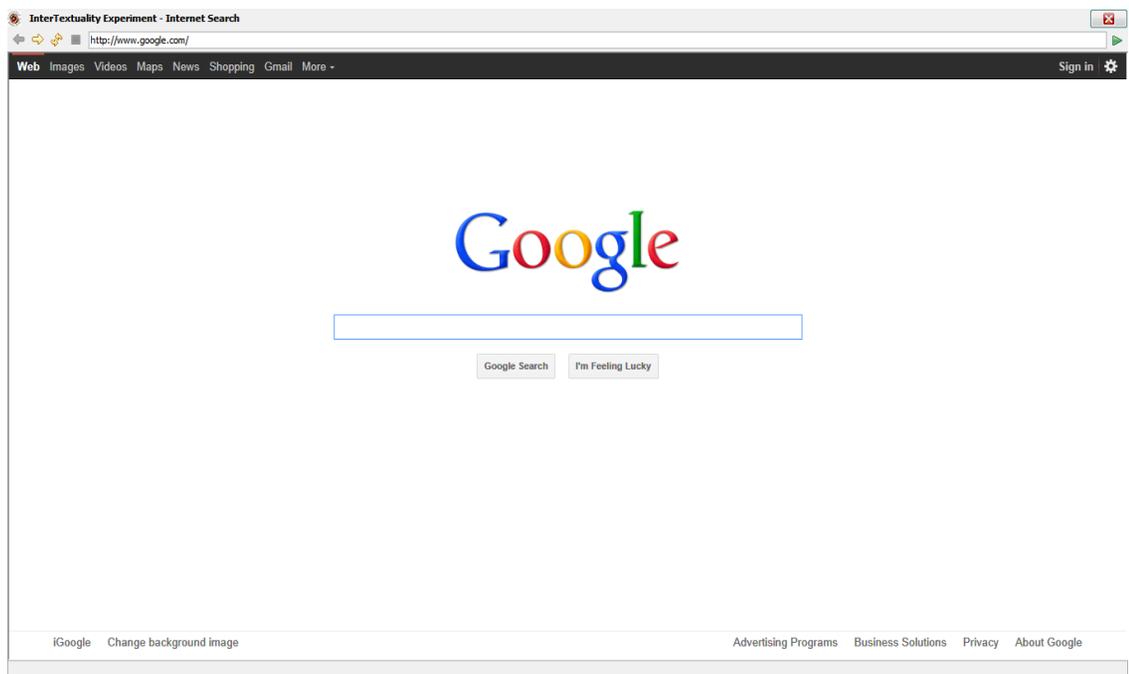


Figure 13. An Internet display of the iMTC

Finally, a Google search button allowed the participants to seek information on the Internet. When a participant clicked the Internet search button, the text window disappeared and a normal Google homepage appeared (Figure 13). After clicking on the

“X” mark at the top right of the display, the participant could go back to the reading text window in Figure 12. The researcher did not allow the participants to see both the reading text window (Figure 12a) and the Internet display (Figure 13) simultaneously in order to collect the reading time of each text and Internet search separately. All information regarding reading time and reading order was automatically and unobtrusively recorded by the iMTC software.

Main Participant Task and Instruction

Main Participant Task

Research showed that writing tasks influenced comprehension of multiple texts (Bigot & Rouet, 2007; Wiley & Voss, 1999). For example, the argument-writing task resulted in students writing essays that included more transformation, integration, and causality than a narrative-writing task. Cerdán and Vidal-Abarca (2008) also supported the finding that an essay-writing task guided deep integrating processes from multiple documents. In order to help participants engage in deeper intertextual processing as the research provided, I created an imaginary writing task prompt (writing an opinion essay) as a main task. The task prompt in this study was adapted from Ferguson et al. (2012) and revised according to the current study situation as follows:

Imagine that a professor asked you to write a brief essay about the Israeli settlement in the West Bank. Your professor asked you to answer the two following questions in your essay: (1) Is the Israeli settlement in the West Bank justified? (2) What is your solution to the settlement issue? (e.g., complete or partial withdrawal, freezing the settlement, keeping status quo, allowing expanding the settlement, or other suggestions). As an initial step, you have searched and found five texts and two maps that you would like to take a closer look at. In addition, you are allowed to search for additional information through the Internet whenever you need. You are now going to study these texts and two maps, plus to search for additional information on the Internet, in order to prepare your essay.

This prompt was an imaginary task so that the participants did not actually write after the main reading task. However, the researcher said that he wanted the participants to suppose the prompted situation as an actual reading situation as much as they could.

Instruction

This study required providing two types of instructions to the research participants. The first instruction was intended to familiarize the participants with the iMTC environment. The current version of the iMTC has a practice session that involves two options such as choosing articles and searching information via Internet. After participants felt comfortable in the iMTC environment, the second instruction was provided to practice verbal protocol.

Next, instruction for the participants focused on verbal report protocol practice (Appendix D). My pilot study showed that research participants sometimes found it difficult to provide consistent think-aloud protocols. Therefore, as practice material for think-aloud, the researcher avoided texts with a familiar topic because it was likely to be read automatically. Rather, the researcher provided an unfamiliar text because it gave research participants more opportunity to verbalize their thoughts with cognitive effort. Instructional prompts are provided as follows:

In this experiment, you will be asked to THINK ALOUD when you read the given texts, and when you search information on the Internet. I encourage you to spontaneously verbalize what you are thinking as you are aware of it. Although there are no limitations in verbalizing your thoughts, I am interested in the strategies you use when reading texts from different perspective, and when you search for more information on the Internet. Again, please do not hesitate to say any thoughts in your mind! You will practice thinking aloud before the actual experiment. If you have any question during this practice, please feel free to ask me.

A text excerpt from Turnbaugh (1975; used in Afflerbach, 1990) was chosen as practice material for the verbal protocol practice session. The excerpt was a 113-word text that described Native American arrowheads as an archeological horizon marker. The rationale to choose this excerpt for the practice material was that it was largely unfamiliar to most readers, except for readers who have rich prior knowledge in archeology and anthropology (Afflerbach, 1990). Therefore, this passage helped with reporting readers' conscious strategy use, playing a dual role in inhibiting automatic text processing and providing an opportunity for easier thinking aloud. I identified that the instruction session worked for participants in that they reported regularly on their thinking and felt comfortable with the practice.

Measures

The measures in this study collected six types of data: participants' prior knowledge, topic-related reader belief (topic belief), reading time and order, Internet search, self-reflection, and strategy use. Two of the six measures were a self-report of open format (prior knowledge and self-reflection), one was a self-report based on the Likert-scale (topic belief), another was automatically collected by the iMTC (reading time and order), and the remaining two were performance measures during the main reading task (strategy use and Internet search).

Prior Knowledge

The measure of prior knowledge was an open question. It asked about general knowledge of the Palestine-Israel conflict, a background for the issue of the Israeli settlement in the West Bank. The purpose of the general knowledge question was to understand each participant's prior knowledge of the topic, the Palestine and Israel conflict. In line with Wolf and Goldman's (2005) prior knowledge elicitation, the

researcher mentioned that he was interested in the participant's prior knowledge about "Palestine-Israel conflicts" and asked each participant to recall events, facts, or opinions related to the conflicts.

Topic-related Reader Belief

Participants were asked four topic belief questions about Palestine, Israel, and their causes or conflicts (see Appendix E). Adapted from Israel-Palestine conflict studies (Anti-Defamation League, 2004; Maoz, Ward et al., 2004), the questions asked the topic belief about Israelis, Palestinians, and the conflicts between them. For example, a sample question of topic-related reader beliefs toward Israelis is presented as follows:

Thinking generally about **Israel**, would you say that your views are very favorable, fairly favorable, neither favorable nor unfavorable, fairly unfavorable, or very unfavorable?

	Very favorable	Fairly favorable	Neither favorable nor unfavorable	Fairly unfavorable	Very unfavorable
For Israelis					
For State of Israel					

- Why do you think/believe so?

As seen above, the question consisted of two parts. The first part asked about the research participants' topic beliefs about people (Palestinians, Israelis) and governments (Palestine government, State of Israel) in a 5-point Likert scale. Second, there was an open-ended question. The answers to the question "Why do you think/believe so" were audio taped for qualitative analysis. The Topic-related Reader Belief questions were administered two times (i.e., pre-reading phase and post-reading phase) in order to identify the change of the topic belief.

It was notable that I used a term, *topic-related reader belief* (topic belief) rather than *attitude* in this measure for the following two reasons. First, the two terms could be

used interchangeably so that it seemed confusing when using both terms together. For example, the *APA Dictionary of Psychology* (VandenBos 2007) defined attitude and belief:

attitude. in social psychology, a relatively enduring and general evaluation of an object, person, group, issue, or concept on a scale ranging from negative to positive (p. 83).

belief. in the psychology of attitudes, an association of some characteristic or attributes, usually evaluative in nature, with an attitude object (e.g., this car is reliable) (p. 112).

In fact, several scholars distinguished the two concepts. For example, Fishbein and Ajzen (1975) distinguished between belief and attitude. According to their belief-based model, *attitude* was a sum of a series of *beliefs* that had specific evaluative nature toward an issue, object, or person (O’Keefe, 2002). However, in the context of this study it was sufficient to define topic beliefs as individual participant’s set of ideas about Palestine, Palestinians, Israel, Israelis, and Israeli settlement in the West Bank.

Second, in the literacy education research field, attitude is often regarded as affective factors such as preference, desire, and feeling. For example, reading attitude was defined, “a system of feeling related to reading which causes the learner to approach or avoid a reading situation” (Alexander & Filler, 1976, p. 1). However, the measure in this study was intended to ask readers’ thoughts and beliefs toward issues as well as affective factors.

Belief Change

Two belief change questions were asked to the participants in the post-reading phase (Appendix F). Both questions were open-ended. The first question asked

participants' self-assessment of belief change. The second question required reasons for the self-assessment result of the belief change. The two questions were:

1. Did your stance on the issue of Israeli settlements in the West Bank change after reading the multiple documents and Internet searching?
2. Could you please explain how this happened, based on your reading experience?

The belief change question was administered after the topic belief questions (Likert-type measure) for in-depth analysis of belief change.

Self-Reflection

Participants were asked to reflect on their reading comprehension of this study in relation with preexisting attitudes and beliefs. In other words, I asked the participants' perceived role of prior attitude and beliefs during comprehension of the controversial texts in this study. The self-reflect questions are described:

Do you think that your prior attitudes and beliefs about a topic influenced your comprehension of the controversial topic in the Palestine-Israel conflict?

- When you read the texts:
- When you search for information on the Internet:
- When you evaluate texts:
- Others:

If participants answered positively, I asked how their prior belief and attitude influenced their reading strategies, including searching for information and text evaluation. This interview was semi-structured so that additional questions were used according to the participants' responses (see Appendix F). For example, if a participant showed idiosyncratic Internet searching patterns more than others, I asked why the participant shows such behaviors.

Reading Time and Reading Order

Participants' reading times were automatically recorded by the iMTC (Kim & Cho, 2011). Reading times were useful in revealing the participants' individual times to read given that the text materials in this study had similar lengths. It was assumed that if a reader spent more time to read a specific text than others, the reader considered the text more important than other texts, revealing bias toward the specific text. Reading time were also used to show processing patterns of multiple texts comprehension.

The reading sequence based on the time data was the reading order. Since there was no fixed order among the seven text materials (two maps and five texts), it was identifiable that which texts were most revisited to read in terms of reading time and frequency.

Internet Search

Participants' Internet searches were also recorded in the iMTC log. The iMTC recorded search records according to reading time. Although the iMTC did not record Internet search keywords directly, it recorded tracks of Google searches. For example, a participant in my study searched on the Internet, and the iMTC log recorded the participant's Internet search:

[Record of the Internet search in the iMTC log]

http://www.google.com/#sclient=psy-ab&q=israeli+settlements+water+hill+top&oq=israeli+settlements+water+hill+top&gs_l=hp.3...2738.10456.0.10552.59.37.10.7.8.4.399.5554.11j19j6j1.37.0....0...1c.1.23.psy-ab..13.46.4299.lfG5Qq7hJuk&pbx=1&bav=on.2.or.&bvm=bv.50165853,d.dmg&fp=aa7ff70cd83206db&biw=1362&bih=695

When clicking this internet link, it was shown that the participant used a Google Internet search with the search term "Israeli settlement water hill top." I collected participants' Internet search data including search frequency, searched keywords, and

search time. Combined with screen-captured measure (i.e., Camtasia© software), the Internet search measure provided in-depth data of Internet search.

Strategy Use

Verbal protocol analysis was used to investigate the participants' use of reading skills and strategies during reading. The quality of the verbal protocol study depended on the close correspondence between reported data and actual thinking process (Afferbach, 2000; Chi, 1997; Ericsson & Simon, 1993). In other words, in the data collection phase it was crucial that a collected verbalized report closely reflected the actual thinking processes of research participants. Ericsson (2006) noted:

The central assumption of protocol analysis is that it is possible to instruct subjects to verbalize their thoughts in a manner that does not alter the sequence and content of thoughts mediating the completion of a task and therefore should reflect immediately available information during thinking (p. 227).

Chi (1997) suggested five important, technical aspects of collecting and analyzing think-aloud data: unobtrusive (or uniformly intrusive) approach of the experimenter, sufficient practice trials, the manner of transcription, minimal influence of the verbal reporting on the participant's cognitive processes, and controlling individual difference in verbosity. Both Ericsson (2006) and Chi (1997) recognized the need for quality of verbal protocol instruction and minimal interruption of the experimenter not to change research participants' cognitive processes. Furthermore, Afferbach (2000) showed that in order to gain the most from think-aloud protocols, there should be careful considerations of the methodology as follows: deliberate concerns of protocol environment (e.g., subjects, texts, and tasks), clear directions to subjects' verbalizing (e.g., sufficient instruction, appropriate prompt), faithful transcription processes, selection of representative and typical protocol excerpts, theory-related category use, and reliable coding.

Following Ericsson (2006; Ericsson & Simon, 1993), Chi (1997) and Afflerbach's (2000) suggestions, this study also considered data collection in the two phases: *pre-reading* and *post-reading* phases.

Before verbal data collection. This study provided instruction and practice before the actual verbal protocol phase. More specific description of the verbal protocol instruction were already shown in the *Instruction* section.

During verbal data collection. There was a theoretical and practical tension among unobtrusive interruption of researcher, changes of cognitive process, and controlling individual difference in verbosity (Ericsson & Simon, 1993). For example, if a researcher interrupted frequently (e.g., "What's on your mind?") during reading in order to standardize readers' verbosity, it was likely to bias reader's actual reading process. In this sense, it was important to adjust researchers' verbal interruption in a uniformly minimal and standardized way. One approach to this methodological dilemma was to insert think-aloud prompts in the text. It minimized researchers' interruption during reading when research participants are trained to recognize the inserted prompts. Two types of text embedded prompts were conducted for this purpose. First, Caldwell and Leslie (2010) inserted *stop* marks in each text at the end of every paragraph. In addition, they located two stop marks in a single paragraph if the paragraph's structure fit to specific criteria. Second, Afflerbach (1990) inserted a think-aloud prompt (as a red dot) at the end of every sentence. Between the two approaches, I followed Afflerbach's (1990) approach because it enabled readers' think aloud prompts in a more standardized way. However, I selected a black-square prompt (■) rather than a red dot (•) in

Afflerbach's study due to better display on the computer screen environment. The below excerpt is an example of the prompt embedded Text 1:

From 1950 until it was occupied by Israel in the Six-Day War of 1967, the West Bank was governed as part of Jordan, though it was divided from the Jordanian population of the East Bank by the Jordan River. ■ The relationship between the East and West banks was uneasy, both because of Palestinian suspicions of the Hashemite dynasty and because of the aspirations of Palestinians in the West Bank for a separate state. ■ The web of relationships connecting the two halves of Jordan grew during this period, however, and by 1967 the West Bank represented about 47 percent of Jordan's population and about 30 percent of its gross domestic product. ■

The total inserted prompts were controlled in order to have similar number of prompts. As a result, each text had 23 or 24 think-aloud prompts with similar number of words and reliability (Table 6). In addition, if a participant did not verbalize for more than 15 seconds, the researcher asked, "What are you thinking about?" Despite the effort, three participants did not respond think-aloud protocol as expected. Although these participants finished all the tasks and were compensated, they were excluded in data analyses.

Table 6

The Number of Think-aloud Prompts Embedded in Each Text

	Text 1	Text 2	Text 3	Text 4	Text 5
The number of prompts	24	24	24	23	23
The number of words	720	718	719	719	718
Readability (grade level)	16.6	16.5	13.1	17.8	17.9

An audiotape recorder and a laptop computer recorded the participants' verbalized data. In the laptop computer, the screen capturing software, *Camtasia Studio*® (Ver. 7.0) was installed to record both research participants' verbalized voice and behaviors on the

screen (e.g., mouse move). Finally, the verbal protocol data were segmented and coded for the analysis (Chi, 1997; Green, 1998). Total nine steps of the coding and analyzing data were conducted as follows: transcribing, segmenting, referring to existing coding schemes, developing a coding scheme, coding, calculating encoder reliability, mapping, identifying patterns, and interpreting patterns. More details about the analysis step were described in the later section, “Data analysis.”

Procedures

The overall procedure of this study consisted of three phases: pre-reading interview phase, main reading task phase, and post-reading interview phase (Figure 14). In the pre-reading interview phase, research participants participated in a short interview about the Palestine-Israel conflicts and Israeli settlement in the West Bank. First, prior knowledge question was asked to estimate the participants’ level of prior knowledge of the topic. Next, I asked topic-related reader belief questions in order to ascertain their initial belief toward the conflicts. After participants answered the Likert-scale items, they were interviewed about why they had such beliefs and stances. After the topic interview, two instructions were provided before the main reading task, as described in the previous section. The instruction consisted of the two practices in order to help the research participants feel comfortable in the iMTC environment and think-aloud protocol.

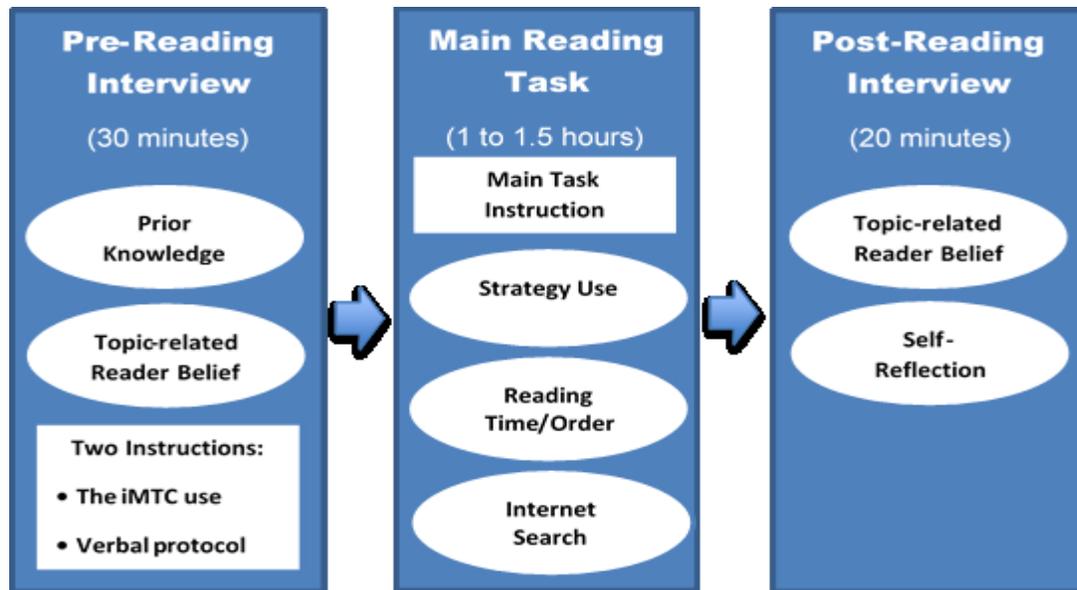


Figure 14. Overall procedure of this study

Note. (a) The rectangles represent instruction sessions during the phase. (b) The circles represent measures that were collected during the phases

In the main reading task phase, a prompt of the main task instruction appeared on the iMTC screen. In the main task instruction, participants were informed that this task assumed a situation in which they took a class on the Middle East Conflict. The imagery task was to write an opinion essay about the justification of or opposition toward issues of Israeli settlement in the West Bank. After the main task instructions, the research participants were asked to read the five texts with two maps, assigned by the researcher. The participants were also reminded that they were free to search the Internet at any time during the task. In addition, they were prompted at the end of every sentence with “a black-square prompt (■).” This mark was supposed to prompt readers’ think-aloud in a vivid yet unobtrusive way. However, if a participant did not verbalize after 15 seconds, the researcher interrupted to ask, “What are you thinking about?” Although there was no time limit in this phase, a total of the “main reading task phase” took one to one and one

half hours. There was a huge variation of time in the main task phase ranging from 30 minutes to 90 minutes.

When the participants finished their reading and search task, they participated in the post-reading interview phase. In this phase, the participants were supposed to answer the same topic belief questions as they had in the pre-reading interview phase. In addition, participants were asked to answer the main task questions (e.g., “Is the Israeli settlement in the West Bank justified?”). The main task questions were asked in order to check whether the participants comprehended the main task. Finally, the participants were asked to reflect on their reading in order to ascertain whether their initial topic beliefs influenced strategy use, Internet search, and evaluation of texts. The post-reading interview usually took less than 20 minutes.

Data Analyses

Overview of Data Analysis

Six types of data were used in this study: prior knowledge, topic-related reader belief, reading time and order, Internet search, self-reflection, and strategy use. In this section, I described how the measures were used to answer the research questions. Next, I described the analysis process of the six measures separately.

Question 1 (*Do readers’ beliefs change after reading multiple controversial texts and Internet searching?*) focused on participants’ belief change, whether the topic belief changed after comprehension of multiple texts according to groups of different beliefs. Prior studies indicated that belief polarization (i.e., a phenomenon of polarizing belief gaps between different groups after encountering controversial information) was counted as evidence of bias (Lord et al., 1979; Taber & Lodge, 2006). When participants in previous studies read controversial texts, their beliefs moved towards more extreme

viewpoints as they interpreted and searched for information to fit their prior beliefs, resulting in reinforcement of their prior beliefs. The change in the topic belief was examined by comparing readers' pre-topic belief and post-topic belief measures with the analysis of qualitative interview results. In order to identify the overall change patterns of topic belief of each group, I transformed several topic belief scores into single belief composite scores. The identified belief composite scores were also compared with prior knowledge in order to probe possible relations between topic belief, belief change, and prior knowledge. To quantify the prior knowledge, I developed a prior knowledge classification table.

Question 2 (*Do readers with strong beliefs exhibit different reading patterns such as reading time and order from those with weak or neutral beliefs?*) investigated how three different groups' topic beliefs were related to reading patterns (e.g., reading time, reading order, and Internet search). The three reading patterns were considered indicators of bias during reading. First, reading time difference across groups could reveal readers' bias in reading. According to the biased assimilation literature (Edwards & Smith, 1996), readers with strong topic beliefs spent more time to read belief-inconsistent texts than belief-consistent texts. Therefore, I examined whether time differences existed across groups. Second, differences in participants' reading order could be regarded readers' bias. When participants visited, or revisited specific texts (e.g., belief-consistent texts) than other texts, it could be evidence that participants focused on the specific texts in a biased manner. Third, participants' Internet search patterns were examined in order to understand readers' biased search processing. Research on selective exposure (information seeking-bias) indicated that participants tended to search for information

that fit with their preexisting opinions and belief, therefore maintained their belief (Fischer et al., 2005). For that reason, I explored the possible relationship between participants' topic belief and Internet search patterns.

Question 3 (*How do individual differences in topic-related reader belief influence reading strategy use?*) was a main focus of this study, seeking to describe the relationship between topic beliefs and strategy use patterns during comprehension. The strategic patterns were analyzed in terms of strategy use including types and frequency of strategy use in relation to texts to read. In order to identify strategy use, I transcribed verbal reports of the participants and developed coding schemes based on both the transcribed reports and existing literature of coding strategies. Quantitative and qualitative analyses of the encoded verbal data allowed me to compare the verbal data and topic beliefs. This was a different approach to identify reader bias, beyond the traditional time measure and Internet search (Question 2). After analyzing of the all data, I sought the overall relationship in all of the variables collected (prior knowledge, topic belief, belief change, reading time, encoded verbal data as strategy use).

Fifteen participants took part in this study. For parsimonious description of data, I assigned individual codes to each participant with group initial letters and numbers. In terms of the group initial letters I assigned 'I' as the pro-Israel group, 'P' as the pro-Palestine group, and 'N' as the neutral group. In addition, I assigned a number between 1 and 5 to each participant for identification. Based on the rule, I assigned total 15 participants as I1, I2, ..., I5 (pro-Israel group), P1, P2, ..., P5 (pro-Palestine group), and N1, N2, ..., N5 (neutral group) (Table 7).

Table 7

Individual Codes and Pseudonyms

Group	Pro-Israel Group	Pro-Palestine Group	Neutral Group
Individual code (pseudonym)	I1 (Jacob)	P1 (Jayden)	N1 (Ava)
	I2 (Sophia)	P2 (Abigail)	N2 (Emily)
	I3 (Mason)	P3 (Olivia)	N3 (Ethan)
	I4 (William)	P4 (Jackson)	N4 (Daniel)
	I5 (Isabella)	P5 (Michael)	N5 (Elizabeth)

Developing Prior Knowledge Classification and Assessment

In order to determine prior knowledge level of the participants, I developed a classification of prior knowledge that determined each participant's prior knowledge level. During the development process of the classification, I referred to both literature of prior knowledge and actual data. For example, Alexander (2003) in the Model of Domain Learning (MDL) discussed that one distinguishable point between an initial stage of domain learning (*Acclimation*) and a next stage (*Competence*) was learner's knowledge structure. Learners with a low level showed fragmented and limited knowledge, while more advanced learners possessed coherent, principled knowledge. Taboada and Guthrie (2006) viewed that readers with high prior knowledge presented several major concepts with subordinate facts, while readers with low prior knowledge states only fragmented facts. Both Alexander (2003) and Taboada and Guthrie (2006) showed that knowledge level could be determined by knowledge structure that was organized. When I examined each participant's self-report on their knowledge of the Palestine-Israel conflict, I also found that participants' expression of knowledge about the conflicts were diverse, and was fitted to the previous literature of prior knowledge. Based on both theoretical

discussions (Alexander, 2003; Taboada & Guthrie, 2006) and participants' recall of the conflicts, I developed a classification table of participants' prior knowledge (Table 8).

Table 8

Classification of Participants' Prior Knowledge

Knowledge Level	Description and Example
Level 1. Limited and fragmented knowledge	<ul style="list-style-type: none"> • Participants do not know or have very limited knowledge related to Israel and Palestine conflicts. • Example: <i>Oh do I just say...um yeah I know very little except that there was a conflict over like a land and stuff. Like it's, it's very basic, I just know that there is an issue.</i>
Level 2. General concepts with a few details	<ul style="list-style-type: none"> • Participants understand general concepts about the Israel Palestine conflicts (e.g., territorial conflict between Palestinians and Israelis) with some knowledge of dates, events, and parties (e.g., two state solutions, Six Day War, land issues in West Bank and Gaza). • Example: <i>Oh okay well, I mean, I know generally what's going on I don't know about the specifics... From my knowledge, the Palestinians were on the land first and the Israelis came and kind of seized the land and, um, ever since then they put them into, they put the Palestinians, onto this sort of smaller piece of land like the Gaza Strip and I think there's another part; um that's about it.</i>
Level 3. Elaborated concepts with ample details	<ul style="list-style-type: none"> • Participants understand historical precedents, causes, processes and solutions of the conflicts with detailed knowledge of dates, events, and parties (e.g., Two state solutions, Intifada, Hamas, Six Day War, Yom Kippur War, land issues in West Bank and Gaza). • Example: <i>Okay, so essentially I guess I'll pick as the beginning: the geographic part of Palestine was first referred to as "Palestine" during the Greek-Roman Empire. It was a province and that name continued in the geographic area throughout the Turkish and Ottoman Empire for over six hundred years. It was around the 1800s when the relevant form of Zionism among the Jewish communities of Europe have started to develop an ideology that was based on some kind of liberation ideology mixed with forms of Zionism to find an independent homeland of Jews. Wasn't necessarily state nationalism as I understood today. So, it began a form of settler colonialism that had chosen Palestine as a colony and other places would have been as well, like the Zion said, considered going to Uganda and I think other locations as well. The reason why I said the relevant sign of colonialism is because that a form of the Jews who wanted to go back to the homeland in the 1860s and a little before then...</i>

Participants with a low knowledge level showed limited and fragmented knowledge. Some participants in this level showed that they only knew about the

characteristic of the Palestine-Israel conflicts (e.g., “It was the Muslims and Jewish people fighting over the, I guess, the Holy Ground, the area, this one area that they thought was—well they both thought that it was.”). Another participant even stated incorrect information about the conflict (e.g., “I believe there is ongoing war for quite some time about, I guess, land. I think maybe between the Sunnis and Shiites and that’s all I know.” *Underline was added*: Both Sunnis and Shiites are Islamic sects.). Although some participants recalled accurate information, they listed only a few fragmented facts and events. Most neutral participants belonged to this level, whereas there was no participants on this level in the pro-Israel and pro-Palestine groups.

The second prior knowledge level included general concepts with a few details. In this level, participants knew general characteristics about the Palestinian-Israeli conflict and recalled several relevant facts and events. In other words, participants in this level generally described the conflict as prolonged religious and territorial clashes in the Middle East. For example, a participant in the pro-Israel group showed this general concept about the conflicts (“I know a bit about the history about the significance of the land to the Jewish people but also the significance of the land to the Christians and Muslims as well and a little bit of knowledge about how the Palestinians were treated, and that they were like taken away their land and they’re kind of fighting over who deserves the land.”). Participants in this level sometimes provided subordinate facts and events about the conflicts. However, their supported information was relative small, when compared to high-knowledge readers. In addition, the provided subordinate facts and events were not clearly organized. For example, a pro-Israel participant simply attached several facts and events in order to describe the conflicts (“It started in 1948 with the

independence war; there's been what, four or five wars since then. I think they're part of the Israeli-Palestinian conflict.”).

Finally, participants with the highest level of prior knowledge revealed elaborated concepts with ample details. At this knowledge level, participants not only provided historical precursors, but stated complex causes and processes of conflicts, and current issues in relation to religious, territorial, and historical perspectives. The knowledge was provided in an organized and coherent manner. For example, a pro-Palestine participant described the conflict in the context of international conflicts and treaties in the Middle East. The participant described the conflict in relation with the United Nations partition plan, Great Britain, Arab countries (e.g., Syria, Lebanon, Jordan, Egypt) and international wars (e.g., 1967 war, Yom Kippur War in 1973), and treaties (e.g., Jordan and Israel treaties). In addition, he described the current unresolved issues (“So the current only countries that have controversy is Syria and Lebanon, and of course the Palestinian territories in West Bank and Gaza.”). In this way, participants in this level provided detailed knowledge of dates, events, and parties that related the characteristics of the Palestine and Israel conflicts. Some of participants in the pro-Israel and pro-Palestine group conveyed this level of knowledge. No participants in the neutral group reached the highest level.

Based on the prior knowledge classification, I assigned 3 points as high knowledge, 2 points as middle knowledge, and 1 point as low knowledge. As a result, the participants' prior knowledge distribution in the three groups is presented in Table 9.

Table 9
Participants' Prior Knowledge Distribution in the Three Groups

	Pro-Israel Group	Pro-Palestine Group	Neutral Group
Knowledge Assessment ^a			
High knowledge	I3, I4	P1, P5	
Medium knowledge	I1, I2, I5	P2, P3, P4	N3
Low knowledge			N1, N2, N4, N5
Group Mean (SD) ^b	2.4 (0.55)	2.4 (0.55)	1.25 (0.45)

Note. a. I1, I2, ..., I5, indicated members of the pro-Israel group, P1, P2, ..., P5 indicated members of the pro-Palestine group, and N1, N2, ..., N5 indicated members of the neutral group. b. High knowledge was assigned 3 points, middle knowledge 2 points, and low knowledge 1 point

In sum, participants in the pro-Israel and pro-Palestine groups had higher prior knowledge levels than the neutral group students. Both groups consisted of two high knowledge participants, three medium, and no low level participants. However, the neutral group included all low knowledge level participants, except for one middle knowledge participant.

Inter-rater reliability of prior knowledge was established by recruiting a literacy professor who did not know about this study. He was instructed about the prior knowledge classification that described three levels of prior knowledge. After discussing three samples from the actual student interview data (i.e., P1: high prior knowledge, P3: medium prior knowledge, N1: low prior knowledge), he assessed the remaining 12 participants' prior knowledge interview data. There was agreement on 8 out of a 12 participant prior knowledge level, yielding 0.742 Cohen's weighted kappa reliability coefficient ($\kappa = 0.742$). Inconsistencies between the researcher and the professor were resolved through discussion.

Transforming the Topic-related Reader Belief Responses into Composite Scores

The topic-related reader belief questions focused on participants' beliefs about Palestine and Israel in relation to the conflicts. For example:

Thinking generally about **Palestine**, would you say that your views are very favorable, fairly favorable, neither favorable nor unfavorable, fairly unfavorable, or very unfavorable?

	Very favorable	Fairly favorable	Neither favorable nor unfavorable	Fairly unfavorable	Very unfavorable
Palestinian					
Palestine Government					

- Why do you think/believe so?

The response items were composed of the 5-Point Likert scale and participants' responses were one of the five selection points: very favorable, fairly favorable, neither favorable nor unfavorable, fairly unfavorable, and very unfavorable. In order to compare participants' topic belief ratings, I assigned numerical values from 5 (very favorable) to 1 (very unfavorable). Second, the sample questions asked about topic belief about Palestinian people and Palestine government. Identically formatted questions were also asked about the Israeli people and governments. Therefore, the belief questions focused on four types of topic beliefs: Israeli people, Israel government, Palestinian people, and Palestine government. In order to identify belief change, the same topic beliefs were measured twice, once in the pre-reading and once in the post-reading phases. .

As the diverse question items focused on varied aspects of topic belief, many belief responses were produced from participants. For example, one participant answered total of 8 responses to the belief questions (i.e., beliefs of Israelis, Israel government, Palestinians, Palestine government at both pre-reading and post-reading phases).

Therefore, it was difficult to interpret the overall patterns of belief stance and belief change together. For that reason, I developed belief composite scores that represented overall topic belief. I constructed the belief composite score based on the following assumption: *Participants' responses in the Likert-scale were assumed to be on an interval scale*, and the intervals between responses were presumed as the same amount. For example, an interval between “very favorable” and “fairly favorable” was regarded the same interval between “very unfavorable” and “fairly unfavorable.” Since the assumption of a Likert-scale (rank scale) as an interval scale is controversial (Jamieson, 2004; Norman, 2010), the analysis of composite scores demanded caution.

Under the assumption of the interval scale, the basic arithmetic operation was possible. To encapsulate the data, I contrived a rule that transformed the data set as single points. As belief difference estimate, I defined “*d*” as difference between belief toward Israel and belief toward Palestine in the following two ways:

$$d(\text{gov}) = \text{Belief toward Israel Government} - \text{Belief toward Palestine Government}$$

$$d(\text{peo}) = \text{Belief toward Israeli} - \text{Belief toward Palestinians}$$

For example, suppose that “Participant A” answered the topic belief questions below:

	Pre-reading Belief				Post-reading Belief			
	#1 (ISA people)	#2 (ISA Gov.)	#3 (PSE people)	#4 (PSE Gov.)	#5 (ISA people)	#6 (ISA Gov.)	#7 (PSE people)	#8 (PSE Gov.)
Participant A's Response	Very favorable	Very favorable	Fairly favorable	Very un- favorable	Fairly favorable	Fairly favorable	Fairly favorable	Neither favorable nor un- favorable
Score	5	5	4	1	4	4	4	3

Note. “ISA” designates Israel and “PSE” designate Palestine. “Gov.” designate government.

In this case, in the pre-reading phase, “Participant A” favored Israeli (very favorable) over Palestine (fairly favorable) slightly, whereas the participant favored the Israeli government (very favorable) much more over the government of Palestine (very unfavorable). This interpretation was also represented in the belief difference (d-score), as $d(\text{peo}) = 5 - 4 = 1$; $d(\text{gov}) = 5 - 1 = 4$, where the large, positive d-score indicated the strong, positive belief of Israel and weak, positive belief d-score as little difference. When d-scores showed negativity, it meant that a participant favored Palestine over Israel. The same approach was applicable to the post-reading phase, as $d(\text{peo}) = 4 - 4 = 0$; $d(\text{gov}) = 4 - 3 = 1$.

Numerical conversion of the raw scores into the belief difference scores (d-scores) was advantageous because it was used to show patterns of change of topic belief. One way to identify such patterns is to visually represent the d-scores. I put $d(\text{peo})$ on the x-axis and $d(\text{gov})$ on the y-axis of the Cartesian coordinate (Figure 15).

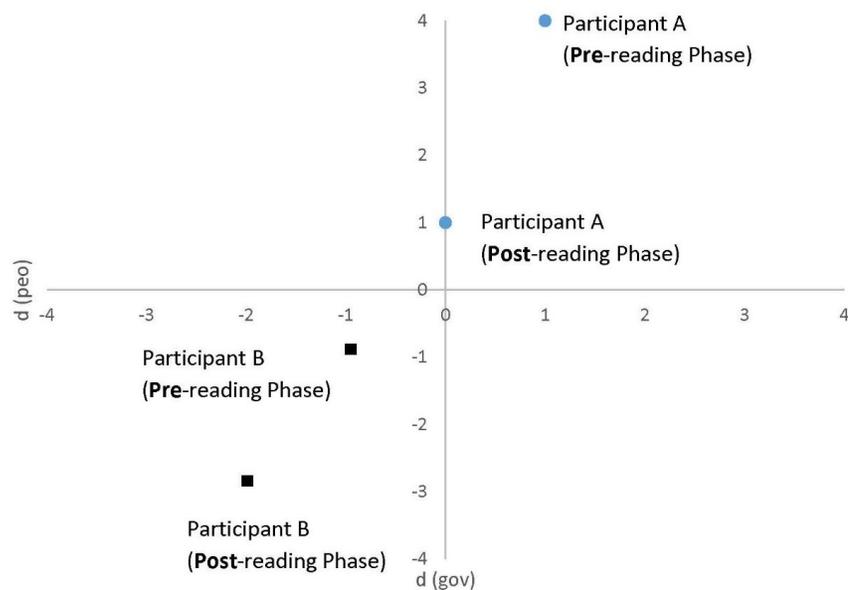


Figure 15. Belief difference scores represented on a Cartesian coordinate

The Cartesian coordinate of this result required three basic understandings. First, the *belief origin* (0, 0) meant that a participant at this point had neutral beliefs toward both Palestine and Israel (i.e., $d(\text{peo}) = 0$; $d(\text{gov})=0$). Participants at this point showed (dis)favor towards both groups at the same degrees of belief. Conversely, participants might feel neutral belief toward both parties. In fact, four of five participants in the neutral participants belonged to this origin in the pre-reading phase. Secondly, as participants' positions moved far away from the belief origin (e.g., participant B's movement from pre-reading to post-reading phase), participants' beliefs increased. On the other hand, participants' positions moved close to the belief origin (e.g., participant A's movement from pre-reading to post-reading phases), participants' belief decreased. Thirdly, positive belief difference (d-scores) indicated that participants had positive beliefs toward Israel, while negative d-scores showed positive beliefs toward Palestine (and negative belief toward Israel). Generally, Quadrant I (top right) usually represented the pro-Israel group's beliefs and Quadrant III represented pro-Palestine beliefs.

In Figure 15, two imaginary participants' belief distance (d-scores) were presented. Based on the Figure 15, it was estimated that Participant A had pro-Israel beliefs and Participant B had pro-Palestine beliefs. After reading, Participant A's belief position moved toward the belief origin, which implied that Participant A's belief decreased. On the other hand, Participant B's belief position moved far away from the belief origin after reading. Therefore, Participants' pro-Palestine belief was strengthened by reading. The next question was how we calculate the magnitude of the belief change.

The visualization of the belief difference scores (Figure 15) did not represent the exact amount of the change in belief, although it was useful to present data. Therefore, I

contrived belief distance (bD) score based on the d-scores. The belief distance (bD) score was defined as distance between the origin (0, 0) and a participant's position in the coordinate $\{d(\text{peo}), d(\text{gov})\}$. In other words, the equation was calculated using a simple mathematical distance formula:

Belief distance (bD)

$$\begin{aligned} \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} &= \sqrt{(d(\text{peo}) - 0)^2 + (d(\text{gov}) - 0)^2} = \\ &= \sqrt{d(\text{peo})^2 + d(\text{gov})^2} \end{aligned}$$

where (x_1, y_1) and (x_2, y_2) are any two points in a Cartesian coordinate

The belief distance (bD) score was less intuitive for determining belief magnitude. However, when comparing bD-scores between pre-reading and post-reading, the change in belief distance could be intuitively estimated. I defined *change of belief distance* (ΔbD), as “bD(post) – bD(pre)”. In the above example (Figure 15), the Participant A's ΔbD was -3.12 and Participant B's ΔbD was 2.19. This result indicated two findings: (a) Participant A's belief decreased and Participant B's belief increased after reading, and (b) the magnitude of change in Participant A's belief was greater than the change in Participant's B (i.e., $|-3.12| > |2.19|$). In this sense, the change of belief distance (ΔbD) scores is an indicator of belief change.

In sum, under the assumption of the Likert scale as the interval scale, I developed three composite scores: *belief difference* (d-score), *belief distance* (bD-score), and *change of belief distance* (ΔbD -score). As single scores, the change of belief distance scores was a proxy composite score that contained participants' belief changes from pre-reading to post-reading.

Analyses of the Reading Time, Reading Order, and Internet Search

An overview of the iMTC log. I developed the iMTC tool for my dissertation to automatically record time data in a time log. Figure 16 presents a basic layout of the iMTC log.

Action	Time	Duration	Description
START	10:44:46 AM		Open the main application
Start Internet Search	10:48:41 AM		Open the Internet Browser
Browse the webpage	10:48:43 AM		http://www.google.com/
End Internet Search	10:49:02 AM		Close the Internet Browser
Return to Document #2	10:49:02 AM		After Internet Search, Return to reading Document #2
Reading Map 1	10:51:15 AM	00:00	Start to read the map1 - Israel Border History
Finish Reading Map 1	10:55:26 AM	04:10	Finish reading the map1 - Israel Border History
Return to Document #2	10:55:26 AM	04:10	After Reading Map 1, Return to reading Document #2
Reading Map 2	10:55:36 AM	04:21	Start to read the map2 - 2008 Settlement Outputs and Land Closures
Finish Reading Map 2	10:57:16 AM	06:00	Finish reading the map2 - 2008 Settlement Outputs and Land Closures
Return to Document #2	10:57:16 AM	06:00	After Reading Map 2, Return to reading Document #2
Reading Document #1	10:57:17 AM	06:02	Start to read the document "Text1 - West Bank"
Reading Document #2	11:07:56 AM	16:40	Start to read the document "Text2 - Illegal Israeli Settlement"
Reading Document #3	11:20:13 AM	28:58	Start to read the document "Text3 - Israel's Settler Are Here t..."
Reading Document #4	11:29:27 AM	38:12	Start to read the document "Text4 - United Nations Report Says"
Start Internet Search	11:29:57 AM	38:41	Open the Internet Browser
Browse the webpage	11:30:07 AM	38:2331	http://www.google.com/#gs_rm=22&gs_ri=psy-ab&gs_mss=un%20resol&cp=16&gs_id=1q&xhr=t&q=un+resolutions+against+israel&es_nrs=true&pf=p&sc=psy-ab&site=&source=hp&oq=un+resolutions+a&gs_l=&pbx=1&bav=on.2.or.&bvm=bv.49784469,d.eWU&fp=e5978471cdee550b&biw=1362&bih=695
Browse the webpage	11:30:26 AM	39:2351	http://en.wikipedia.org/wiki/List_of_the_UN_resolutions_concerning_Israel_and_Palestine
⋮			
End Internet Search	11:43:30 AM	52:14	Close the Internet Browser
Return to Document #5	11:43:30 AM	52:14	After Internet Search, Return to reading Document #5
Start Internet Search	11:46:13 AM	54:57	Open the Internet Browser
Browse the webpage	11:46:14 AM	54:3298	http://www.google.com/
Browse the webpage	11:46:18 AM	55:3303	http://www.google.com/#gs_rm=22&gs_ri=psy-ab&cp=11&gs_id=2&xhr=t&q=sui+generis&es_nrs=true&pf=p&sc=psy-ab&site=&source=hp&oq=sui+generis&gs_l=&pbx=1&bav=on.2.or.&bvm=bv.49784469,d.eWU&fp=e5978471cdee550b&biw=1362&bih=695
End Internet Search	11:46:23 AM	55:08	Close the Internet Browser
Return to Document #5	11:46:23 AM	55:08	After Internet Search, Return to reading Document #5
END	11:48:32 AM	57:16	Close the main application

Start Time (or End Time) was recorded.

Reading Time of Text 1 at this point was calculated:
 (1) Minutes and seconds were translated into minute unit
 (2) Difference between two time points was calculated: 10.63 minutes

"Return action" after Internet search (or reading map) was recorded

Internet search tracks were recorded.

Figure 16. An overview of the iMTC time log with subcomponents: action, time, duration, and description

The iMTC log provided Action, Time, Duration, and Description. The *action* column in iMTC recorded participants' start and end task, reading maps (beginning and end), reading documents (beginning and end), and Internet search log. The *time* column recorded actual time following the participants' actions. The *duration* was built in order to calculate the time duration of the action (minutes and seconds). The iMTC was programmed to calculate the *duration* data based on the *time* column data. Lastly, the *description* column provided detailed explanations about the actions. For example, when the action was *Browse the Webpage*, the description column showed the exact Website (e.g., Wikipedia) address. Based on the iMTC data, I analyzed the time (duration), reading order, and Internet search.

Analysis of reading time. Reading time per each text, map and Internet time were drawn from the *duration* column. Since the duration column recorded by minutes and seconds, I converted it into minute units for convenience. For example, in Figure 16 reading time of Text 1 was calculated: (a) I converted time unit of minute and second into minute unit (i.e., 6:02 [6 minutes and 2 seconds] and 16:40 [16 minutes and 40 seconds] were converted 6.03 and 16.67 minutes, respectively), and (b) I calculate the minute difference ($16.67 - 6.03 = 10.63$ minutes). The unit conversion was used in order to calculate time easily. All time calculation was conducted using Microsoft Excel[®] 2013.

Analysis of reading order. Based on the calculated time data, reading order was represented in a reading order graph to understand participants' reading sequences. The basic idea behind the reading order graph was suggested in Britt, Rouet, and Perfetti (1996) in order to see how readers selected and read multiple texts in hypertext or document format. As conducted in reading multiple texts with open Internet space, I

believe that it was important to survey differences of participants' reading order patterns across belief groups.

The reading order graph consisted of two components. The vertical line represented current text to be read at a given time, and the horizontal line represented actual time (i.e., a cell meant one minute). From the previously calculated reading time data, I marked a dot for every one minute in order to vividly convey reading time patterns of the participants. Time data between minutes were rounded to one decimal place (e.g., 5.3 minutes to 5 minutes by rounding) in order to clearly represent data. Figure 17 presents a sample of the reading order graph.

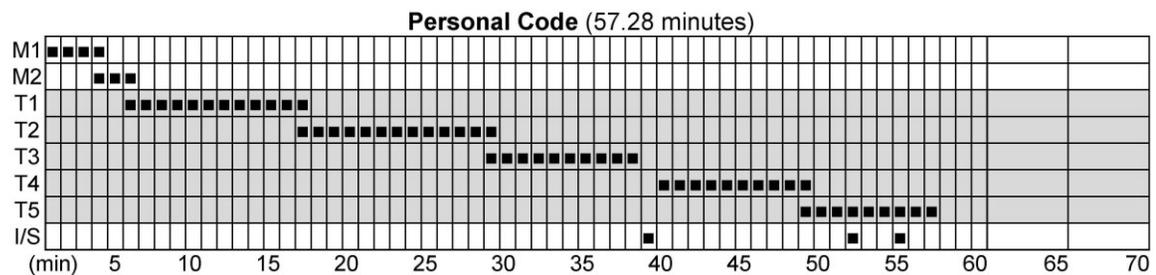


Figure 17. A sample of the reading order graph

In this example, a participant read each text one by one in a linear manner. The participant spent more time to read Text 1 and Text 2 than other texts. An internet search was conducted between Text 3 and Text 4, and while reading Text 5. In this way, I examined participants' reading order across individuals and groups in order to find group variation and individual difference of reading order patterns.

Analysis of Internet search. Internet search was analyzed in terms of Internet search time, search frequency, and searched keywords, and search purpose. Internet search time was calculated from the iMTC time log, as in the same way of the previous

reading time section. In order to know the patterns of how individual participants spent Internet searching, proportion of Internet searches was calculated by measuring a ratio of the Internet search time to total reading time:

$$\text{Proportion of Internet search} = \frac{t_{Internet}}{t_{Total}} = \frac{t_{Internet}}{t_{Texts} + t_{Internet}}$$

where $t_{Internet}$ is total amount of time of Internet searching and reading,
 t_{Texts} is total amount of time of the given five texts.

In addition to Internet search time, both frequency of Internet search and contents of searched keywords were analyzed. The iMTC time log provided Internet search tracking so that the frequency of Internet searches was easily available.

In the analyses of participants' Internet searches, participants' verbal protocol and screen-captured data from the Camtasia© data were also used. The verbal data were useful not only to determine searched words, but also to understand why these words were searched.

First, I classified three types of search terms: *word meaning*, *concept*, and *source*. When participants used the Internet to search for ordinary dictionary definitions of words, I categorized the search type as *word meaning*. For example, “annexed”, “moratorium”, and “de jure” belonged to this category. However, when search terms were related to higher levels of historical and political concepts beyond dictionary definitions, they were classified as *concepts*. There were several concepts in search terms such as “the road map peace plan,” “Rome Statue,” and “belligerent occupation.” Finally, participants sometimes searched for source information of texts, or sources described in texts. In this case, I categorized the search type as *source*. The search term “The Blaze newspaper” (a source of Text 4) was representative of this category.

Second, I categorized the participants' *search purpose* in two types: *Information need* and *Justification of belief*. The first category, information need, was usually participants' main purpose for Internet search. Participants used the Google search engine in the iMTC environment in order to know word meanings (e.g., *de jure*), location of countries (e.g., Jordan), and international treaties (e.g., Rome statue) that related to the conflict issues. In addition, participants searched on the Internet in order to source information. For example, a participant wanted to know about the Blaze (online newspaper) website:

I want to see what "The Blaze" is. [Typed 'the blaze.com' on the google search engine]. So theblaze.com is supported by Glenn Beck. He's a FOX news anchor: particularly conservative American television radio host... Let's see what else is in the Blaze... Basically you can say, it's an opinion website, it's very into Glenn Beck who is very conservative and is featured on FOX news... Let's go back to the article.

In this case, I categorized the search purpose as information need. The second category, justification of beliefs, was coded when participants used Internet to support preexisting topic beliefs. There were two types of justification of beliefs. Participants used the Internet in order to search for confirming evidence for their topic beliefs. In other cases, participants searched for refuting information of counterevidence against their topic beliefs.

In sum, Internet search data were analyzed: Internet search time, frequency, searched words and types, and search purpose. Combined with reading time and order data, the Internet data provided an overview of multiple-text processing patterns across different groups of beliefs.

Coding and Analyzing Verbal Data

There are several guides to help researchers transcribe and analyze verbal report data (Afflerbach, 2000; Afflerbach & Johnston, 1984; Ericsson & Simon, 1993; Chi, 1997; Green, 1998). For example, Green (1998) proposed six procedures for coding and analysis: transcribing verbal data, developing an encoding scheme, segmenting protocols, encoding protocols, calculating reliability, and analyzing data. In a similar vein, Chi (1997) proposed eight functional steps:

1. Reducing or sampling the protocols.
2. Segmenting the reduced or sampled protocols (sometimes optional).
3. Developing or choosing a coding scheme or formalism.
4. Operationalizing evidence in the coded protocols that constitutes a mapping to some chosen formalism.
5. Depicting the mapped formalism (optional).
6. Seeking pattern(s) in the mapped formalism.
7. Interpreting the pattern(s).
8. Repeating the whole process, perhaps coding at a different grain size (optional) (p. 283).

The two procedures overlapped in several ways. For example, both Green (1998) and Chi (1997) mentioned segmenting, coding, and analyzing (seeking patterns and interpreting them). Based on both works, I also added one procedure, referring to existing schemes from other studies as the Cho's study (2011). I include this deductive step because it helped construct a coding scheme from theoretical grounds. Combined with inductive steps of code development, the inductive-deductive approach was likely to develop a more solid and comprehensive coding scheme. As a result, I reorganized nine steps for coding and analyzing data as follows: transcribing, segmenting, referring to existing coding schemes, developing a coding scheme, coding, calculating encoder reliability, mapping, identifying patterns, and interpreting patterns (Figure 18).

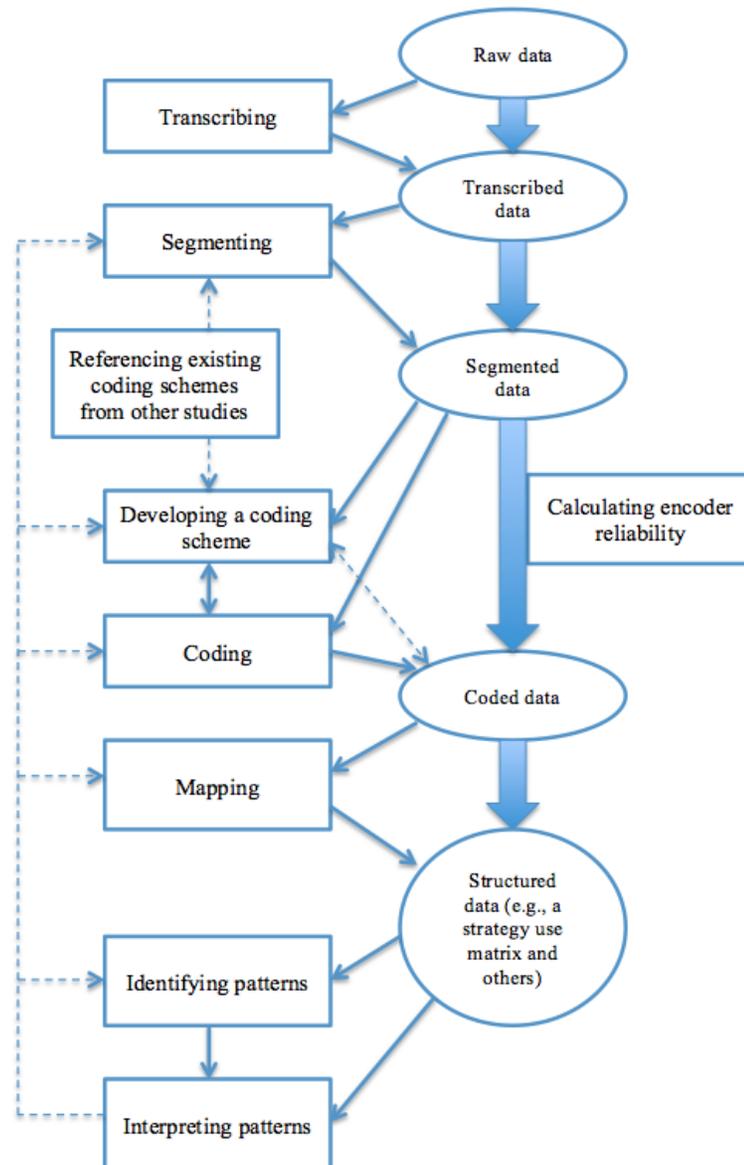


Figure 18. A procedure of coding and analyzing verbal data

Note: (a) The rectangle designates each of the nine steps the researcher conducts. (b) The circle designates a form of data that is transcribed, coded, and structured. (c) Lined arrows are the main steps during the study. (d) Dotted arrows are secondary steps or feedback.

Transcribing. All of the verbalized data (digitally recorded by the Camtasia©) were recorded and transcribed. There were fifteen participants in this study and the result of verbal transcription was a total of 45,957 words, with an average of 3,064 words per

participant): the pro-Israel, pro-Palestine, and neutral groups verbalizations were, on average, 3685, 3001, and 2505 words, respectively (Table 10).

Table 10

The Number of Spoken Words Produced and Transcribed

	Total Spoken Words	Average Spoken Words
Pro-Israel Group	18,428	3,685
Pro-Palestine Group	15,006	3,001
Neutral Group	12,523	2,504
Total	45, 957	3,604

Segmenting. After transcribing the verbal protocols, the next step was to determine to the unit of analysis of verbal report data. Such unit of analysis was called a segment. Segments were varied from morphemes or a paragraph according to the purpose of the research. According to Chi (1997), there was “a trade-off sometimes between amount of information and the grain size of segment” (p. 286). If a segment was too small, the information an analysis drives is redundant. If too coarse, the later analysis is less informative.

In this study, I chose the unit of the analysis as the *verbal comments that corresponded to the target sentence(s)* of each think-aloud prompt mark. I chose this approach for two reasons. First, many participants produced verbal comments according to the think-aloud prompt marks, which in turn produced a natural divide that segmented the verbal protocol reports (Figure 19).

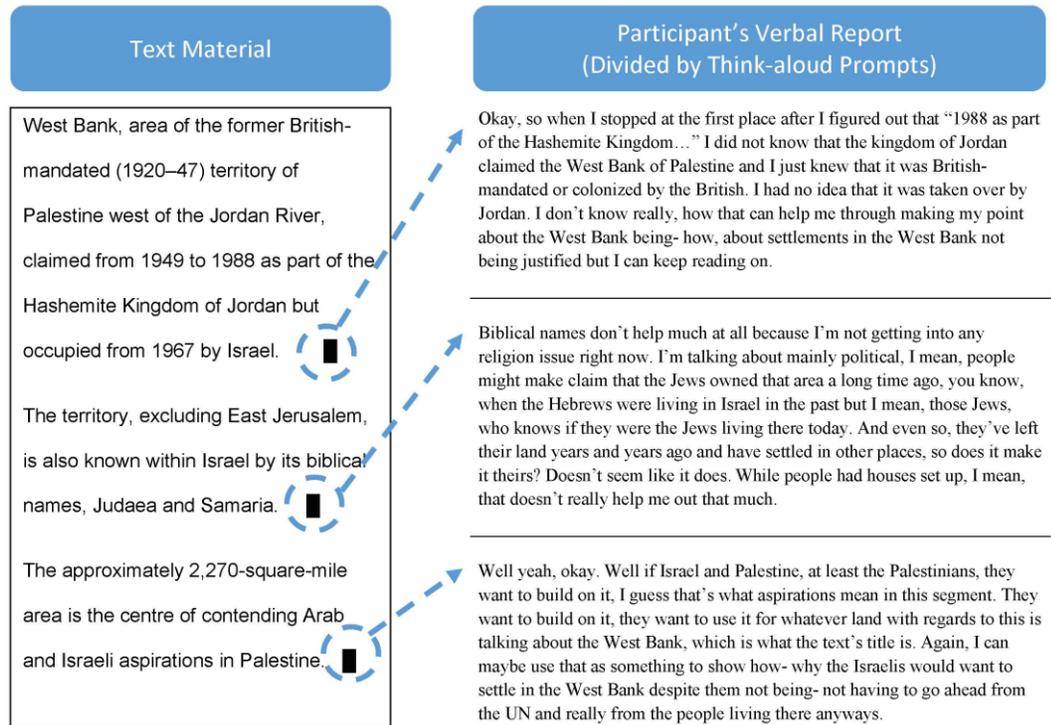


Figure 19. Correspondences of the verbal comments to the target sentences

Note. The black square mark was a think-aloud prompt to participants.

Second, it was useful to compare participants' verbal comments, when I segmented the verbal description according to the think-aloud prompts, which were inserted prior to data collection. The think-aloud prompts were inserted at the end of one or two sentences so that each text had 23 or 24 think-aloud prompts. Comparing the verbal reports across the participants (or groups) enabled me to identify biased processing in comprehension. For example, by comparing a participant's think-aloud comment (the first prompt of Text 1) in the Figure 19 with another participant's comment, I was able to identify participants' similar or different strategy uses.

Referencing to Existing Coding Schemes. I selected and reviewed four existing coding schemes (Goldman et al., 2012; Kendeou, Muis, & Fulton, 2011; Pressley &

Afflerbach, 1995; van den Broek et al., 2011). Among the four coding schemes, the three coding schemes (Goldman et al., 2012; Kendeou et al. 2011; van den Broek et al., 2011) had similar categories (e.g., repetition, self-explanation, prediction), while Pressley and Afflerbach’s (1995) coding system was more distinctive. Therefore I compared one of Goldman et al.’s (2012) three coding schemes with Pressley and Afflerbach’s (1995) scheme as a basis for coding development for this study (Table 11).

Table 11
Existing Coding Schemes of Verbal Protocol Studies in Reading

Goldman et al. (2012)	Pressley & Afflerbach, 1995 (also Afflerbach & Cho, 2009)	
<p>Irrelevant association (association of segment that bear little relevance)</p> <p>Surface connection (vague reference to previous read info)</p> <p>Repetition/paraphrase (repetition/paraphrase without adding additional information)</p>	<p>Non-Strategic Verbal Comments</p>	
<p>Self-explanation (elaboration, interpretation, or reasoning with focal segment; brings new information, including relating it to prior knowledge or information in other segments)</p> <p>Prediction (statement about what to expect to find out next)</p>		<p>Identifying and learning important information (meaning identification, meaning construction, and coding of text meaning)</p> <ul style="list-style-type: none"> • Identifying important information in text • Conscious inference-making • Integrating different parts of text • Interpreting
<p>Information/source evaluation (judgment about sources: relevance of content, consistency with other information, author, credibility etc.)</p> <p>Monitoring (confirming comprehension or lack of comprehension, or awareness of prior knowledge)</p>		<p>Evaluation (Consistent evaluative mindsets; evaluations of style and content of text)</p> <p>Monitoring (Perceptions of text characteristics, text processing, recognizing problems; monitoring and stimulation of cognitive processing due to text demands including difficulties at the word, phrase levels and beyond)</p>
<p>Navigation (movement within/across pages, including intentions about where to go next, or looking for, and reasons for leaving during reading)</p>	<p>Realizing and constructing potential text to read (or information need and search for additional information, Rouet & Britt, 2011)</p>	

Table 11 shows that how the two coding schemes were comparable. The two coding schemes agreed that they had similar codes of *evaluation* (information/source evaluation; evaluation), *monitoring*, and *information search* (navigation; realizing and constructing potential texts to read). However, they were different in conceptualization of strategy boundary. For example, Goldman et al. (2012) included irrelevant association as verbal code, whereas Pressley and Afflerbach (1995) excluded it in their strategy category. In this study, I agreed with more Pressley and Afflerbach because the study focused on participants' strategy use during reading. At this stage, I considered four tentative categories as a basis: *considering text content* (e.g., paraphrase, elaboration, inference), *monitoring*, *evaluation*, and *information search and need*.

Coding and developing a coding scheme. In a qualitative study, codes were defined as “tags or labels for assigning units of meaning to the descriptive or inferential information compiled during a study” (Miles & Huberman, 1994, p. 56). Coding in verbal protocol was an analytic process of assigning meaning to each segment (Chi, 1997). In order to encode the segmented data, I randomly selected two participant samples and encoded the samples by using the constant-comparison method (Glaser & Strauss, 1967). As described in Figure 18, developing a coding scheme and coding were simultaneously occurring process. While I referred the previous existing coding schemes (Goldman et al., 2012; Pressley & Afflerbach, 1995), I continually examined both codes and coding schemes until no undefined codes appeared in the samples. In other words, I checked and rechecked whether the coding scheme explained all of the segment data of the samples. Finally, I developed a verbal coding scheme for this study (Table 12).

Table 12
Verbal Coding Scheme for This Study

<i>Code</i>	<i>Name</i>	<i>Detail</i>
C	Considering text content	This category describes reader's considering text content based on reader's prior knowledge or previously read information. It includes paraphrase, elaboration/inference, and summarization. <ul style="list-style-type: none"> • Paraphrase (or recognition of new information) • Elaboration/inference • Restating/summarizing about whole text
AR	Acceptance and resistance	This category describes reader's acceptance of or resistance to text content based on reader's belief and/or prior knowledge. It includes acceptance and resistance. <ul style="list-style-type: none"> • Acceptance • Resistance
M	Monitoring	This category describes reader's metacognitive strategy use including monitoring the self, goal, and task, detection of comprehension difficulties, fixing difficulties or confirmation of comprehension <ul style="list-style-type: none"> • Monitoring the self, goal, and task • Detection of comprehension difficulty • Fix of comprehension difficulty [self-correct]
E	Evaluation	This category describes reader's evaluation of text, focused on source information, bias prediction/detection, evaluation of author, evaluation of text, and comparing sources for evaluation <ul style="list-style-type: none"> • Sourcing • Bias prediction/detection • Evaluation of author and text quality • Comparing sources for evaluation
IS	Information need and search	This category describes reader's statement of information need and Internet search <ul style="list-style-type: none"> • Information need • Internet search
NI	Not inferable	Due to lack of available information and other reason, these codes are considered as "not inferable" in order to determine strategy category.
NA	No answer	readers skipped to think aloud in a given segment

With an exception of a few cases (e.g., NI: not inferable), all of the verbal reports were coded into the five types of strategic processing codes (i.e., C, AR, M, E, IS).

Calculating inter-rater reliability. In order to ensure consistency of the encoding process, I followed Cho's (2012) three-step of establishment of inter-rater reliability. As a first step, I collaborated with an expert literacy professor for the development and revision of the coding schemes. In a series of discussion meetings, some of the vague categorization and definitions were clarified. Second, samples of participants' verbal reports of strategy use were examined and discussed in relation to the validity of the coded examples.

Finally, the inter-rater reliability of the resulting five coding schemes (i.e., C: considering text content, AR: acceptance and resistance, M: monitoring, E: evaluation, IS: information need and search) were established by sub-samples of two participant's strategy use. One pro-Israel participant's (I3) and one pro-Palestine participant's (P4) samples were selected to check inter-rater reliability. Total 39 strategy samples were tested: Nineteen samples were selected from I3 and twenty samples were from P4. As a result, there was agreement on 33 out of a 39 participant strategy use (percent agreement = 84.6%), yielding 0.593 Cohen's unweight kappa reliability coefficient ($\kappa = 0.593$). According to Landis and Koch's (1977) guideline for interpretation of kappa coefficient, kappa of 0.593 was "moderate" agreement between two raters (Gwet, 2010). Inconsistencies between the researcher and the professor were resolved through discussion. Except for the discussed samples, I coded all other remaining verbal reports.

Mapping, identifying patterns, and interpreting patterns. Each segment of verbal data was mapped into a matrix that included codes and transcribed verbal protocols. For example, Cho (2012) constructed an Internet Reading Strategy Matrix containing time, verbal protocols, and assigned codes with interpretation. In a similar

way, I constructed *strategy use matrix* consisted of text, time, target sentence(s) corresponded to think-aloud prompt marks, transcribed verbal data, verbal codes, and notes (Figure 20).

Participant: P-2

#	Time	Text: Target Sentences	Verbal Protocol	V/C	Notes
T3	33:01	Title: Israel's Settler Are Here To Stay Author: Dani Dayan (The chairman of the Yesah Jewish communities in the West Bank) Source: Opinion page, The New York Times Date: July 25, 2010	"Israel's Settler Are Here To Stay" So this is written by a Jewish man.	E	Sourcing
		Whatever word you use to describe Israel's 1967 acquisition of Judea and Samaria (commonly referred to as the West Bank) will not change the historical facts. Arabs called for Israel's annihilation in 1967, and Israel legitimately seized the disputed territories of Judea and Samaria in self-defense.		NA	
	34:03	Israel's moral claim to these territories, and the right of Israelis to call them home today, is therefore unassailable. Giving up this land would mean rewarding those who've historically sought to destroy Israel, a manifestly immoral outcome.	So, he is for Israel's settlements I assume.	E	Bias prediction / detection
	34:36	Of course, just because a policy is morally justified doesn't mean it's wise. However, our four-decade-long settlement endeavor is both. The insertion of an independent Palestinian state between Israel and Jordan would be a recipe for disaster.	Well, if this is recent why is Jordan still involved? It should just be an independent state of Palestinian to itself.	IS	Information need: Conceptual understanding
	35:14	The influx of hundreds of thousands of Palestinian refugees from Syria, Lebanon, Jordan and elsewhere would convert the new state into a hotbed of extremism. And any peace agreement would collapse the moment Hamas inevitably took power by ballot or by gun.	Okay so, this is the first time we are introduced to Hamas. I know that it is an organization, I'm not sure exactly what kind of an organization.	IS	Information need: Identifying facts
IS	35:39	Hamas 	I know it relates to Palestinian. I'm gonna go Wikipedia. [Read sentence] "Palestinian Sunni Islamic or Islamist organization, with an associated military wing" ... "Hamas has governed the Gaza Strip, after it won a majority of seats in the Palestinian Parliament" And "in a series of violent clashes with Israel" okay.	IS	Internet Search
T3	36:23	Moreover, the Palestinians have repeatedly refused to implement a negotiated two-state solution. The American government and its European allies should abandon this failed formula once and for all and accept that the Jewish residents of Judea and Samaria are not going anywhere.	There's been no proof of that so far that they have repeatedly refuse. But there has been proof that the Israelis have been repeatedly refused to get out of the Palestinian land. Now he just sounds like an asshole.	R	Elaborated resistance

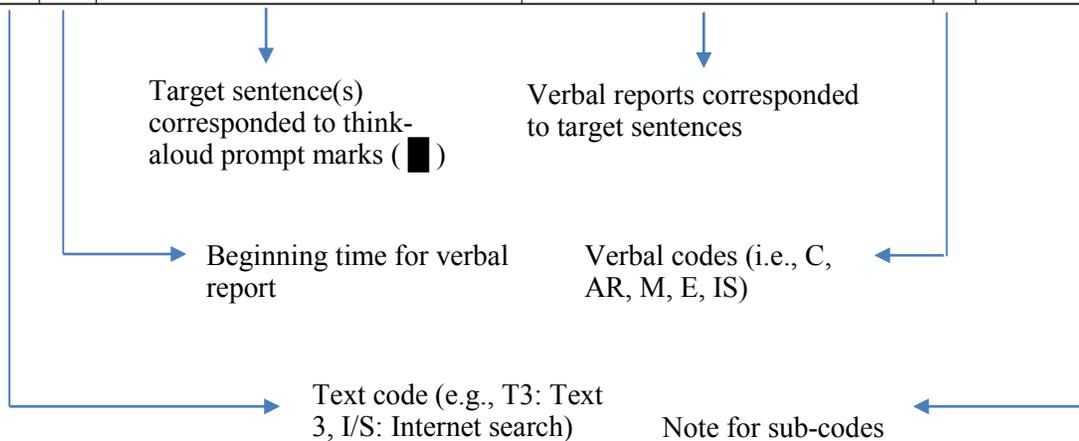


Figure 20. An example of strategy use matrix

During the mapping phase, I also sought patterns and their meanings from the mapped matrix by using the constant-comparison method (Glaser & Strauss, 1967). As one approach to seek patterns and interpretations of data, I compared and contrasted participants' strategy use to the same target sentences. This analytic approach was possible because the participants' verbal reports were segmented by target sentence(s) of think-aloud prompts (Figure 21).

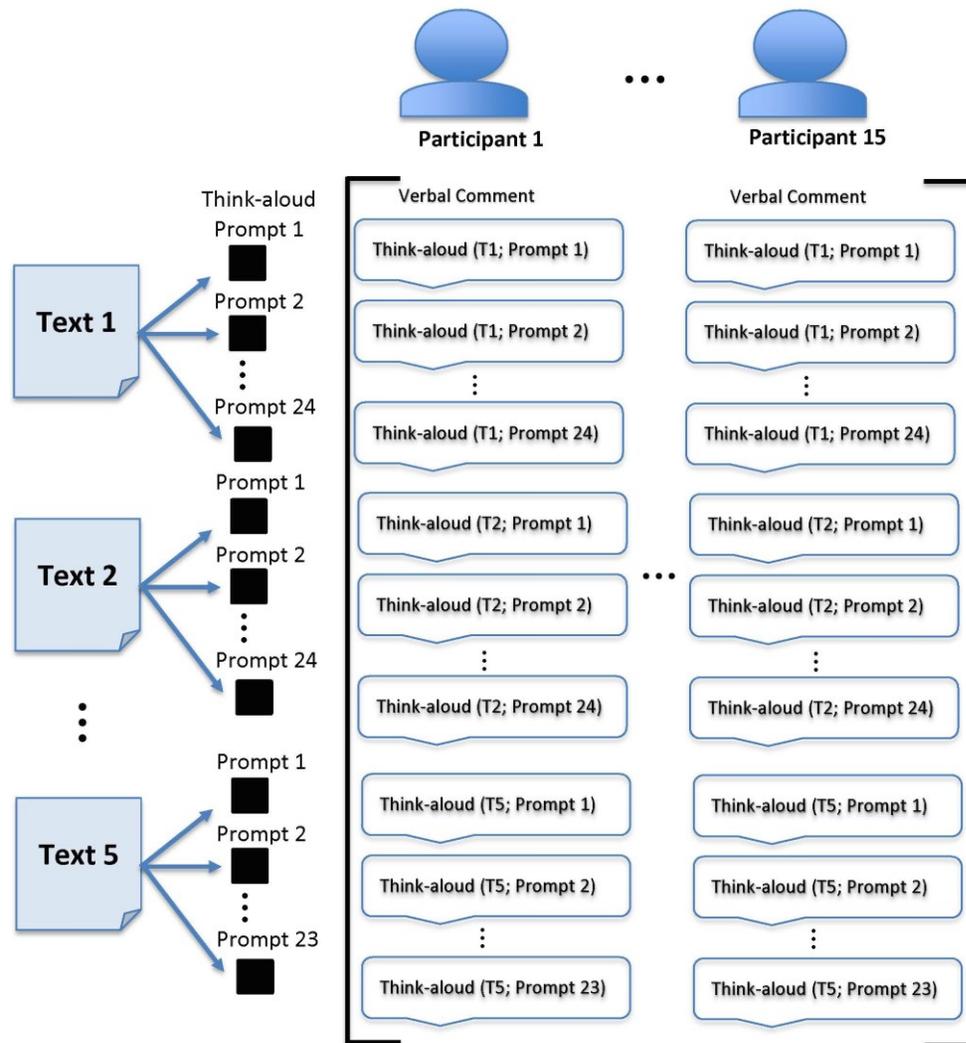


Figure 21. An analytic framework of strategy use and bias

Note. It shows correspondence between think-aloud prompt marks and verbal comment in a matrix form.

Figure 21 is an analytic framework of strategy use and bias, represented as a form of matrix. First, I investigated reader bias by identifying consistency of verbal reports within a group (i.e., comparing verbal codes in a column). For example, I could compare strategy use in Text 2 (pro-Palestine stance) and Text 3 (pro-Israel stance) in terms of strategy use. If the pro-Israel group showed acceptance strategy in positively evaluating Text 3 (pro-Israel stance) and conversely used resistance strategy in negatively evaluating Text 2 (pro-Palestine stance), this may be sufficient evidence of reader bias within the group. Second, I also explored reader bias across groups. I investigated whether the groups showed different patterns of verbal reports (i.e., comparing verbal codes in a row). For example, for Text 2, I could compare strategy uses of the pro-Israel, pro-Palestine, and neutral groups in order to check the patterns of strategy use. If verbal reports showed different strategic patterns across groups, it could mean that readers' comprehension patterns were associated with reader's topic beliefs. In this way, I identified patterns of strategy use in relation to reader bias and contrived meaning from the patterns.

CHAPTER 4: RESULTS

The purpose of this study was to identify relationships between topic-related reader beliefs and readers' comprehension patterns when reading multiple texts. The study also examined when and where reader bias occurred during comprehension. This chapter has three focuses. First, I examined reader bias in relation to increased belief gaps between different groups, focusing on participants' belief changes after reading controversial texts. Second, I examined whether topic belief influenced patterns of reading time, reading order, and internet searches. In addition, I assumed that reader bias was represented in these patterns (reading time, reading order, and Internet search) if the pro-Israel and pro-Palestine groups' patterns differed from those of the neutral group. Third, I examined participants' patterns of strategy use in comprehension of multiple controversial texts. Based on the grounded theory method (Glaser & Strauss, 1967), I identified five distinctive strategies that participants used in this study: (a) considering tentative meaning, (b) acceptance and resistance, (c) monitoring, (d) evaluation, and (e) information need and Internet searches. Group differences in patterns of strategy use were investigated in order to identify the relationship between topic belief, strategy use, and bias.

An Overview of Data

This section describes the overall data from the participant groups: readers' prior knowledge, pre-topic belief, belief change, total time, Internet searches, and strategy use (Table 13).

Prior knowledge was determined in accordance with the prior knowledge classification scheme. Participants scored 3 points when they possessed high knowledge, 2 points for medium knowledge, and 1 point for low knowledge.

Participants' *topic belief* (bD) was a composite score of belief-distance between a participant's belief position ($d(\text{peo})$, $d(\text{gov})$) and the belief origin (0, 0). As mentioned in the previous method section, belief position was determined by a participant's beliefs related to Israeli and Palestinian people ($d(\text{peo})$) and beliefs related to Israel and Palestine government ($d(\text{gov})$). *Belief change* (ΔbD) was calculated as subtraction of topic belief in the pre-reading phase (bdD(pre)) from topic belief in the post-reading phase (bdD(post)). The positive value of the belief change indicated an increase of beliefs, whereas the negative value showed a decrease of the beliefs.

Total time was calculated by the iMTC time log. In addition, *Internet search time and frequency* were also calculated by the iMTC. *Searched words* on the Internet were classified into word meaning, concept, or source categories.

Finally, participants' *strategy use* was encoded by the established coding schemes. There were five types of coding schemes: C (considering text content), AR (acceptance and resistance), M (monitoring), E (evaluation), and IS (information need and search).

Table 13 shows that the measured parameters (i.e., prior knowledge, topic beliefs, frequency of Internet search, and frequency of encoded strategy use) were similar or different across the three belief groups. In the next section, I describe how groups' parameters are used, analyzed, and interpreted according to the research questions.

Table 13

Descriptive Statistics of the Three Belief Groups^a

	Prior knowledge ^b	Pre-topic belief ^c	Belief Change ^d	Total time ^e	Internet Search ^f				Strategy use ^g					
					Total freq.	W/M	Con.	Sour.	Total freq.	C	AR	M	E	IS
Pro-Israel group	2.40	Pro-Israel 2.81	-0.08	51.51	5.60	2.60	2.20	0.80	97.4	42.6	27.8	2.8	9.4	14.8
	(0.55)	(1.83)	(0.68)	(9.29)	(2.97)	(1.52)	(1.79)	(1.30)	(24.27)	(33.34)	(17.25)	(3.11)	(3.51)	(6.91)
						46%	39%	14%		41%	30%	3%	10%	16%
Pro-Palestine group	2.40	Pro-Palestine 2.28	+0.51	48.60	4.60	2.00	2.00	0.60	79.8	21.2	38.4	3.2	9.6	7.4
	(0.55)	(0.87)	(0.75)	(19.31)	(4.45)	(2.74)	(2.35)	(1.34)	(18.94)	(14.08)	(6.58)	(4.66)	(10.26)	(6.11)
						43%	43%	13%		25%	51%	3%	12%	8%
Neutral group	1.20	Pro-Israel 0.20	-0.73	55.18	3.60	2.60	0.60	0.40	77	43.2	8.6	7	10.6	7.6
	(0.45)	(0.45)	(1.02)	(13.93)	(3.78)	(1.82)	(1.34)	(0.89)	(29.18)	(34.45)	(8.26)	(3.94)	(7.13)	(5.60)
						72%	17%	11%		50%	12%	10%	18%	10%

Note. a. For each group, the first row is mean, the second row with parentheses is standard deviation, and the third is percentage of frequency.

b. Prior knowledge was assessed by the prior knowledge rubric: high-knowledge (3 points), middle-knowledge (2 points), and low knowledge (1 point)

c. Prior belief (bD) was belief-distance from belief origin: $\sqrt{d(peo)^2 + d(gov)^2}$. Therefore, although both pro-Israel and pro-Palestine showed positive numbers, the actual belief was opposite in a Cartesian coordinate.

d. Belief change (ΔbD) was calculated as $bD(post) - bD(pre)$: The pro-Israel group's belief was nearly consistent, the pro-Palestine increased, and the neutral group negatively increased.

e. Total time was measured by the iMTC tool. The basic unit is minute.

f. Internet search: Basic measure is frequency of Internet search (W/M: word meaning, Con.: concept, Sour: source).

g. In the Strategy use columns, total five codes were categorized by a constant-comparison method. C (considering text content), AR (acceptance and resistance), M (monitoring), E (evaluation), and IS (Information need and search)

Change of Topic-related Reader Belief after Comprehension

The first research question was: *Do readers' beliefs change after reading multiple controversial texts and Internet searching?* Regarding to this question, I describe whether changes occurred in the three groups. Next, participants' interview data are presented to explain the aspects of belief change across the groups.

Change of Topic Belief

There are possible patterns of stability and change of beliefs. First, if there was no belief change after reading, participants' beliefs were not highly influenced by text comprehension process. Second, if participants' beliefs were strengthened and moved towards an extreme stance, it is likely that the participants experienced *biased assimilation* during reading (i.e., attitude polarization; Lord et al., 1979). Last, if the participants' beliefs were weakened towards a more neutral stance, the participants either had advanced epistemic beliefs (e.g., synthesizing conflicting sources as expert readers; Kitchener, 1983), and/or were persuaded by the other side (Chambliss & Garner, 1996).

The four Likert-scale topic belief questions were administered twice in the pre-reading and post-reading phases. The four items focused on beliefs toward Israeli people, Israeli government, Palestinian people, and Palestinian government. Participants were asked to select one of the five points toward Palestine or Israel: from *very favorable* to *very unfavorable*. The participants' topic belief ratings were assigned from 5 (very favorable) to 1 (very unfavorable). As a result, the participants' data related to topic belief are described in Table 14.

Table 14

Raw Data of Participants' Response to Topic Belief Questions

		<u>Pre-Reading Attitude</u>				<u>Post-Reading Attitude</u>			
		<u>Toward Israel</u>		<u>Toward Palestine</u>		<u>Toward Israel</u>		<u>Toward Palestine</u>	
		People	Gov.	People	Gov.	People	Gov.	People	Gov.
<i>Pro-Israel</i>									
Jacob	(I1)	4	5	3	4	4	5	4.5	4.5
Sophia	(I2)	5	5	1	1	4	5	1	1
Mason	(I3)	5	4	3	2	5	4	3	2
William	(I4)	5	5	5	4	5	5	5	4
Isabella	(I5)	5	5	4	2	5	5	4	1
<i>Pro-Palestine</i>									
Jayden	(P1)	3.5	1	3.5	3	3.5	1	3.5	2.5
Abigail	(P2)	4	2	5	5	3	1	5	5
Olivia	(P3)	3	1	3	4	3	1	3	5
Jackson	(P4)	4	1	5	3	4	1	4	4
Michael	(P5)	5	2	5	3	5	2	5	3
<i>Neutral</i>									
Ava	(N1)	3	3	3	3	2	2	4	4
Emily	(N2)	3	3	3	3	4	2	4	3
Ethan	(N3)	4	4	3	4	3	3	4	5
Daniel	(N4)	3	3	3	3	4	4	3	3
Elizabeth	(N5)	3	3	3	3	3	3	3	3

Note: The response number designates that: 1. Very unfavorable, 2. Fairly unfavorable, 3. Neither favorable nor unfavorable, 4 Fairly favorable, and 5. Very favorable

Three composite scores (i.e., belief difference, belief distance, and change of belief difference) were calculated in order to identify changes in topic beliefs. The first scores were *belief difference* (d) scores, in which I subtracted belief about Palestinian people (or government) from belief about Israeli people (or government) (i.e., $d(\text{peo}) = \text{Belief about Israeli people} - \text{Belief about Palestinian people}$; $d(\text{gov}) = \text{Belief about Israeli government} - \text{Belief about Israel government}$). The belief difference score was an indicator to what extent a participant possessing positive beliefs related Israel over positive beliefs related Palestine: a positive number indicated a pro-Israel belief and a negative number indicated a pro-Palestine belief. The second score was *belief distance* score (bD) that calculated distance between a point ($d(\text{peo})$, and $d(\text{gov})$) and the belief

origin (0,0) in order to combine the two belief distance scores. Finally, the *belief change* (i.e., the change of the belief distance, ΔbD) was calculated between pre-belief distance and post-belief distance (i.e., $\Delta bD = bD_{post} - bD_{pre}$). I used the belief change score (ΔbD) as a proxy measure to determine belief change of each individual and group (Table 15).

Table 15

Individual Participants' Belief Difference, Belief Distance, and Change of Belief

	Belief Difference ^a				Belief Distance ^b		Belief Change ^c
	Pre-Reading		Post-Reading		bD(pre)	bD(post)	ΔbD
	d(peo)	d(gov)	d(peo)	d(gov)			
<i>Pro-Israel Group</i>							
I1	1	1	-0.5	0.5	1.41	0.71	-0.71
I2	4	4	3	4	5.66	5.00	-0.66
I3	2	2	2	2	2.83	2.83	0.00
I4	0	1	0	1	1.00	1.00	0.00
I5	1	3	1	4	3.16	4.12	0.96
<i>Pro-Palestine Group</i>							
P1	0	-2	0	-1.5	-2.00	-1.50	0.50
P2	-1	-3	-2	-4	-3.16	-4.47	-1.31
P3	0	-3	0	-4	-3.00	-4.00	-1.00
P4	-1	-2	0	-3	-2.24	-3.00	-0.76
P5	0	-1	0	-1	-1.00	-1.00	0.00
<i>Neutral Group</i>							
N1	0	0	-2	-2	0.00	-2.83	-2.83
N2	0	0	0	-1	0.00	-1.00	-1.00
N3	1	0	-1	-2	1.00	-2.24	-1.24
N4	0	0	1	1	0.00	1.41	1.41
N5	0	0	0	0	0.00	0.00	0.00

Note

- Belief difference score was calculated [Belief about Israel – Belief about Palestine]. This score indicates that how participants prefer Israel to Palestine. Positive number shows that pro-Israel belief and negative number shows that pro-Palestine belief
- Belief distance score was calculated [$\sqrt{d(peo)^2 + d(gov)^2}$] (A distance between the belief origin (0, 0) and a participant's position in the coordinate (d(peo), d(gov))). This score indicates strength of belief for each participant. For pro-Palestine group, negative sign was attached because they were in the opposing position to pro-Israel participants.
- Belief change (ΔbD) was calculated [$bD(post) - bD(pre)$]. This score indicates direction and amount of belief change. The pro-Israel group's belief was consistent, the pro-Palestine increased, and the neutral group negatively increased.

Table 15 describes each participant's belief change. For the pro-Israel group, two participants' beliefs weakened slightly ($\Delta bD = -0.71, -0.66$), two members' beliefs were constant ($\Delta bD = 0$), and one members' belief increased ($\Delta bD = 0.96$). Overall, the average of the belief change was negligible (-0.08). In the pro-Palestine group, participants' beliefs strengthened after reading. Three participants' beliefs increased ($\Delta bD = 1.30, 1.00, \text{ and } 0.76$), one was constant ($\Delta bD = 0$), and the other one's belief decreased ($\Delta bD = -0.50$). The average belief change was 0.51 in the pro-Palestine group. Finally, the neutral group's belief change was bigger than the pro-Israel and pro-Palestine groups. Except for one person, four participants' beliefs changed. Three of the participants increased their beliefs toward Palestine ($\Delta bD = -2.83, -1, -1.24$) while one participant increased beliefs toward Israel ($\Delta bD = 1.41$). The average of change was 0.73 in favor of Palestine.

By using belief distance data in Table 15, I represented belief change in a visual belief space (Figure 22). Based on the data that represented each participant's position, I circled the grouped data in order to identify each group's belief change pattern.

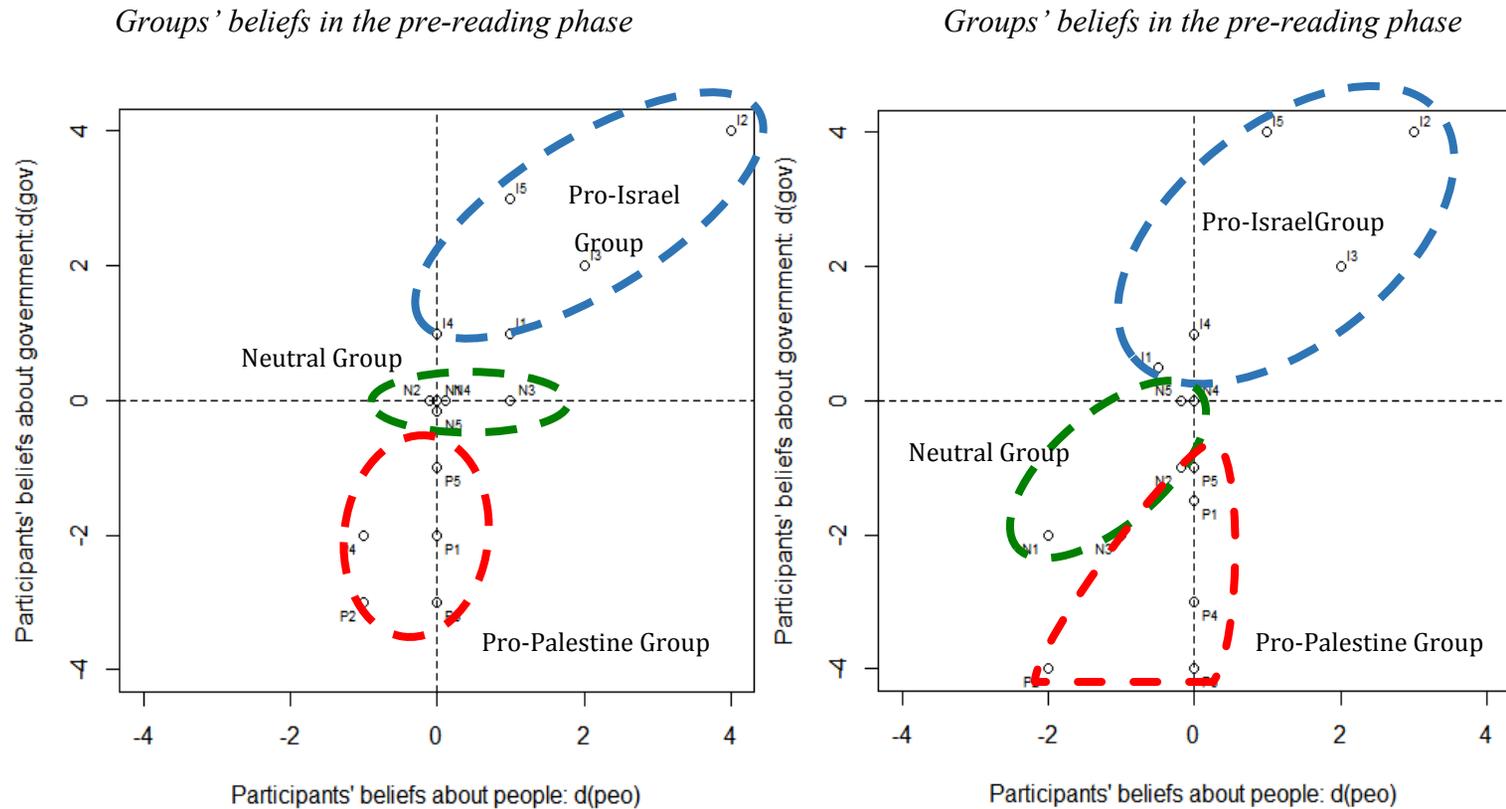


Figure 22. Visualization of three participant groups' belief changes on a Cartesian coordinate

- Note.*
1. The index, belief difference (d) was calculated from: (i) $d(\text{peo})$ [x-axis] = Belief about Israeli People – Belief about Palestinian people; (ii) $d(\text{gov})$ [y-axis] = Belief about Israel Government – Belief about Palestine Government.
 2. $d(\text{peo})$ was plotted on the X-axis and $d(\text{gov})$ was plotted on the Y-axis on a Cartesian coordinate. The plot was drawn by using Statistics-R (ver. 3.01).
 3. Individual participants were represented as symbols (e.g., I1, I2, ... N5). In addition, the three dotted circles were manually inserted in order to identify individual participants' dispersion within a group.

Two patterns were identified by the comparison of the two belief spaces (i.e., Cartesian coordinates) (Figure 22). The first pattern appeared in the pro-Israel group. The pro-Israel participants were scattered in the quadrant I plane (top right) of the belief space in both pre-reading and post-reading phase. Their beliefs about people in the post-reading phase moved slightly to the x-axis after reading. This indicated that the pro-Israel group gained positive thoughts about Palestinians after reading. However, the pro-Israel participants' beliefs about governments were constant in the y-axis, meaning that the participants' beliefs about the Palestinian government did not change. As most of the participants appeared in *quadrant I* after reading, the pro-Israel group was *belief-constant* across reading.

The second pattern was shown in both the pro-Palestine and neutral groups. In the post-reading phase, their belief stances moved toward quadrant III (bottom left). The participants' move toward the bottom-left in the belief space indicated that participants in both groups gained positive beliefs about the Palestine people and government (or negative beliefs about Israel) after reading. When determining belief change patterns, it was important to distinguish between the pro-Palestine and the neutral groups. The pro-Palestine participants' beliefs *strengthened* after reading. However, it was not a good expression that the neutral group participants' belief strengthened because they had no prior beliefs regarding Palestine or Israel. Rather, the neutral participants' beliefs were formed by their reading experiences. In this sense, the pro-Palestine group was the *belief-strengthened* group and the neutral group was the *belief-formed* group.

In sum, Figure 22 illustrates that the three groups' belief positions became scattered after reading multiple controversial texts. While the pro-Israel group's beliefs

were constant, both pro-Palestine and neutral groups' beliefs moved towards a pro-Palestine stance. This finding was similar to previous studies of belief polarization (Lord et al., 1979): participants' prior belief gaps increased toward extreme after reading controversial texts because they preferred belief-consistent text information to belief-inconsistent information. The phenomenon of belief polarization was considered as psychological *bias* (Lord et al., 1979; Taber & Lodge, 2006). Therefore, the belief change of this study indicated that participants in this study showed bias during reading multiple texts.

One question remains: why did some participants of the pro-Israel and pro-Palestine groups fail to change their beliefs? As topic beliefs influenced participants' belief change, does prior knowledge have similar impacts on belief change? A test of the Spearman's rank correlation coefficient was used to address the relationship between individual participants' belief change (ΔbD) ($M=0.576$, $SD = 0.96$) and prior knowledge ($Mdn = 2$). Using an alpha level of 0.05, this test was found to be statistically significant, $\rho = -0.544$, $p < 0.05$. In Figure 23, it is notable that high knowledge readers (I3, I4, P1, P5; PK=3) were placed around 0 (i.e., no belief change; $\Delta bD = 0$), although other participants were more spread out in terms of belief change. This indicates that participants with high prior knowledge had smaller belief change, while participants with low prior knowledge experienced greater belief change.

As a result, it appeared that the likelihood of belief change increased when participants' topic beliefs were strong and prior knowledge was low. One possible explanation for this conclusion was participants' bias. In other words, participants with

low knowledge and high belief showed more biased assimilation in that they searched and interpreted text information to maintain their beliefs.

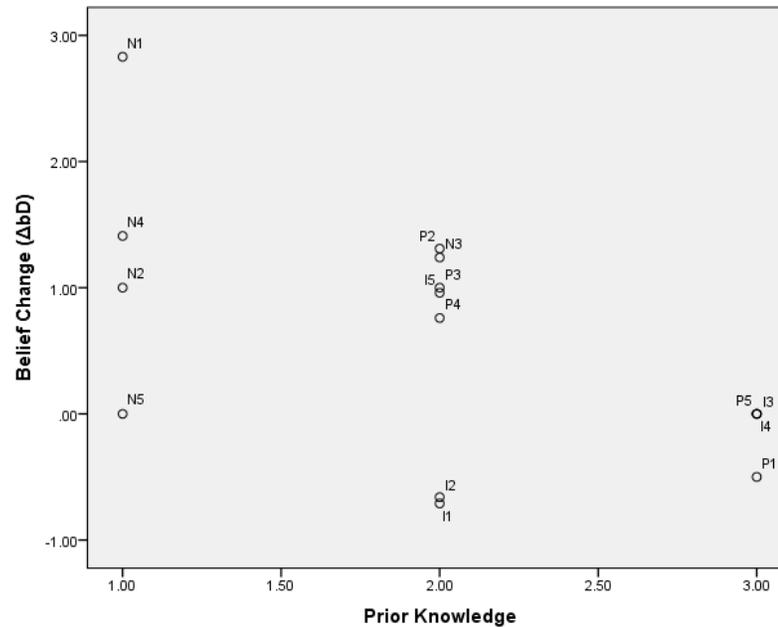


Figure 23. Scatterplot between belief change (ΔbD) and prior knowledge

Belief Change in Relation with Topic Beliefs and Prior Knowledge

As another way to understand participants' belief change, I interviewed participants about their thoughts on their belief changes:

Did your stance on the issue of Israeli settlements in the West Bank change after reading the multiple documents and Internet searching? Could you please explain how this happened, based on your reading experience?

Table 16 includes passages of interviews, in which participants described their thoughts on belief change based on topic beliefs and prior knowledge. The interview showed that high prior knowledge tended to stifle participants' belief changes.

Table 16

Excerpts of Participants' Interview about their Thoughts on Belief Change

Participant	Excerpts from the Participant Interview	
High topic beliefs and high prior knowledge	Mason (I3)	Like, you probably know, I'm pretty knowledgeable about the Palestinians I mean, once again, I've heard a lot about stuff they've said...
	William (I4)	Uh, no. So obviously I have a very strong bias as I said, so as far as I was reading both sources critically, and I was being much more critical of the anti-settlement posts... But nothing was really present to sway my opinion.
	Jayden (P1)	No not at all, I mean, I think the reading and research that I've done was far more extensive than that so I think nothing has been compelling or new.
	Michael (P5)	No, my stands did not change... So, a lot of this stuff was familiar to me, I didn't really learn that much.
High topic beliefs and low/middle prior knowledge	Jacob (I1)	I don't think it changed. After reading the last one, about the legal loopholes that ... it weren't illegal, I think that [the legal loophole] would be very interesting
	Sophia (I2)	So, I think that my stance did change but not drastically, because it just kind of introduced more information, like specific information that happened.
	Isabella (I5)	I definitely learned more about the arguments that different sides make... So, do my stance of Israeli settlement changed? Yes a bit, because... now I feel little more sympathetic towards to Palestinians.
	Abigail (P2)	Then my stance on the issue of the Israelis settlement in the West Bank changed. No, I just feel like I learned a lot more uh to back the opinions that I had earlier... Uh, yes strengthen, yeah.
	Olivia (P3)	I mean, it didn't really change much, with the fact that I'm still, my sympathies are more for the Palestinians, but I definitely think that what the government of Israel is doing is completely wrong.
	Jackson (P4)	Although I understand that the Jews are also being targeted, they're not suffering as much as the Palestinians are... So my sympathies go more toward the Palestinians.
Low topic beliefs and low/middle prior knowledge	Ava (N1)	My answer changed because after reading the texts, I felt that Israel was being very unfair and selfish.
	Emily (N2)	Um, so I think, I mean like obviously it changed [for pro-Palestine] and stuff and being more knowledgeable at this time like it was helpful.

- | | |
|-------------------|--|
| Ethan
(N3) | Honestly, I don't think it really changed too much. I may be, more, in order for me to like, pro-Palestinian state but I don't think it really changed too much. |
| Daniel
(N4) | From the article, it seems like Israel has better argument from this information alone... Palestine does not have very favorable argument. |
| Elizabeth
(N5) | I'd say not really. It's such a like dense topic and it seems like there is a lot of history behind it and many sides. So, I still need more search. |
-

The high knowledge participants in both the pro-Israel and pro-Palestine groups said that their beliefs did not change because they already had enough information about the issues. For example, Michael (P5), mentioned that “No, my stands did not change... So, a lot of this stuff was familiar to me, I didn't really learn that much.” Similar responses appeared in other three high knowledge participants regardless of their topic beliefs.

The medium and low knowledge participants in the pro-Israel and pro-Palestine groups (i.e., high topic belief and medium/low prior knowledge) showed mixed thoughts about their belief change. While pro-Israel participants answered that their beliefs did not change significantly, most pro-Palestine participants answered that their beliefs were strengthened. For instance, a pro-Israel participant (Jacob, I1) pointed out, “I don't think it changed. After reading the last one, about the legal loopholes that... it wasn't illegal, I think that [the legal loophole] would be very interesting.” In this excerpt, Jacob referred to the “legal loophole” in Text 5's (pro-Israel text) description, which stated that Israeli settlement did not violate international law due to the loophole in the law. Although he mentioned that his belief did not change, he focused on the evidence to support for his existing beliefs. On the other hand, most pro-Palestine participants' beliefs increased

after reading. A pro-Palestine participant (Abigail, P2) stated, “Then my stance on the issue of the Israelis settlement in the West Bank changed. I just feel like I learned a lot more, uh, to back the opinions that I had earlier... Uh, yes strengthen, yeah.” For Abigail, the newly read information from texts was used to support her beliefs. Despite individual differences, two common patterns appeared in the participants with high topic beliefs and low/middle knowledge. First, the medium and low knowledge participants’ beliefs changed in a direction to strengthen their prior topic beliefs. Second, the middle and low knowledge participants’ magnitude of belief change was greater than the participants with high knowledge.

Finally, the neutral group consisted of low topic and low/medium knowledge participants. For this group, participants’ beliefs changed because they gained newly added information from texts. As they had neutral or no prior beliefs, diverse patterns of belief change were found in this group. For example, Ava (N1) said, “My answer changed because after reading the texts, I felt that Israel was being very unfair and selfish.” However, Daniel (N4) said the opposite: “From the article, it seems like Israel has better argument from this information alone... Palestine does not have very favorable argument.” Finally, Elizabeth (N5) said, “I’d say not really [my belief was changed]. It’s such a like dense topic and it seems like there is a lot of history behind it and many sides. So, I still need more research.”

In sum, prior knowledge played a specific role in belief change, with participants’ topic beliefs. It seemed that topic belief influenced the directions of belief change (pros and cons), while prior knowledge hindered the belief change. Both quantitative and qualitative analyses supported this finding.

Aspects of Belief Change across Groups

The previous sections described the quantitative summary of belief change across groups, based on the participants' topic belief ratings on the Likert scales. With the belief rating responses, participants also demonstrated whether their beliefs were changed or unchanged (Appendix L, M). Based on these qualitative responses, I describe the patterns of belief change according to the three groups: the pro-Israel group, the pro-Palestine group, and the neutral group.

Pro-Israel group. In the post-reading interview, participants reported their thoughts on belief change and the reasons for the change, or lack thereof. Overall, the pro-Israel group was belief-constant. In the interviews, three participants in this group explicitly mentioned that their belief did not change regardless of reading experience in this study. First, Mason (I3) and William (I4) answered that their beliefs were constant after reading because they already had knowledge and got no new information from reading. For example, Mason's account represented this perspective:

Like, you probably know, I'm pretty knowledgeable about the Palestinians. I mean, I've heard a lot about stuff they've said. But I have heard a lot of stuff about things they [Palestinians] were over-dramatizing. I mean once again, I know a lot about Israel. I know they've been hurt and how they've been attacked since their creation, literally. So yeah, and they still are, a lot of Arabs are saying we want to drive them out of the land. So yeah, I already had the knowledge and what's happening.

William (I4) also reported that he did not change his belief at all, although he recognized his biased stance during reading. Both Mason and William's cases demonstrated that these pro-Israel participants kept their favorable belief toward Israel because of prior knowledge. In addition, Jacob (I1) also reported that his topic belief did not change, although he did not mention about his prior knowledge level, as Mason and William did.

Two other participants, Sophia (I2) and Isabella (I5), mentioned that although they learned the Palestinians' situation, their basic beliefs did not sway. Sophia (I2) showed that her beliefs were influenced by reading the multiple texts, but the amount of the change was negligible. One reason for the constant beliefs against the other side's information seemed to relate to her identity and attachment to Israel. For example, she accepted a pro-Palestine argument, "They [Israelis] are also technically breaking the [international] law." Nevertheless, she still believed Israel should exist due to her historical backgrounds. In a similar vein, Isabella (I5) responded that she learned the arguments of the Palestinian side, but her beliefs did not change much. She reported, "I definitely learned more about the arguments that different sides make... their argument why the land they want is theirs." However, she described that she did not change her beliefs toward the conflicts.

Overall, the pro-Israel group kept their preexisting beliefs despite reading controversial texts containing other viewpoints. Even when they gained new knowledge from reading other sides, their basic beliefs did not sway. This pattern was opposite to the pro-Palestine group that strengthened their belief after reading the same text set.

The pro-Palestine group. While many pro-Israel participants stated that their beliefs did not change, many pro-Palestine participants showed that their beliefs became strengthened after reading. These participants used pro-Palestine information to support their preexisting beliefs. For example, the two participants (Abigail [P2] and Olivia [P3]) reported that they favored more Palestine after reading, because they gained knowledge that supported Palestine. Given that there were also supporting articles for Israel, the participants' responses reflected confirmation bias (Nickerson, 1998), meaning they gave

more weights to belief-consistent (i.e., pro-Palestinian) information than belief-inconsistent (i.e., pro-Israeli). For example, Abigail (P2) reported that she learned more pro-Palestine opinions and evidence through this reading. By valuing more belief-consistent information than other side's information, Abigail increased her pro-Palestine beliefs after reading. In a similar way, Olivia (P3) also revealed that her reading experience confirmed her beliefs about the Palestine-Israel conflict:

I mean, it didn't really change much, with the fact that my sympathies are *more* for the Palestinians, but I definitely think that what the government of Israel is doing is completely wrong. Well, after reading this, it just *confirms more of my beliefs* that the Israeli government is hypocritical and that they're [*sic*] taking away [Palestinians'] unalienable rights (*Italics are added*).

In this excerpt, Olivia emphasized “hypocritical” Israel government based on her reading. Given that the text materials provided both pros and cons of Israeli governments' policies, she focused mainly on the negative aspects of Israeli government. Justification of the Israeli perspective was deemphasized. As a result, she concluded, “It just confirms more of my [pro-Palestine] beliefs.”

This pattern also appeared from other participants. In an interview with Jackson (P4), he cited information in Text 2 (pro-Palestine text) to support his argument: “There's 280 liters of water in comparison to 60 liters of potable water. You're [Israelis are] not allowing them [Palestinians] to even drink water... You're not allowing them to have any means of survival.” This excerpt also reflected a fact that the newly added information was used as a source to strengthen Jackson's belief. However, he did not explicitly mention the other side's information.

The remaining two other participants (Jayden [P1] and Michael [P5]) reported that their beliefs did not change after reading experiences since they already possessed

enough knowledge about the conflict. This case was similar to high knowledge participants in the pro-Israel group.

To summarize, the pro-Palestine readers strengthened their preexisting beliefs after reading texts containing other viewpoints. They focused more on belief-consistent, pro-Palestine information than pro-Israeli information. This pattern was opposite to the pro-Israel group that maintained their belief after reading the same text set.

The neutral group. Members of the neutral group had no specific stance and belief in the pre-reading session. However, after reading, three participants had more pro-Palestine beliefs, one was constant, and one gained pro-Israel beliefs. Therefore, it was appropriate to say that the neutral group showed more diverse belief change patterns than the other two groups. Three participants (Ava [N1], Emily [N2], and Ethan [N3]) showed learning experience of reading multiple texts and adopted a pro-Palestinian stance. To illustrate, Ava (N1) reported that what she learned about the conflict surrounding Israeli settlements in the West Bank influenced her stance:

I didn't know anything about the Israeli settlements in the West Bank so reading all the sources definitely helped me understand the situation a bit more. I guess my stance did change because I felt some form of anger and disappointment with the Israelis for settling on the land that was not given to them. All the articles I read portrayed the Palestinians as the victim in the situation and whoever wrote the article did a sufficient job to make me feel that the Israelis were the true antagonists.

Emily (N2) also mentioned, "I mean, obviously it [my belief] changed and s being more knowledgeable at this time like it was helpful." In her interview, Emily recalled the story of the forced exile of Native Americans and thus had more compassion for Palestinians, although she still had positive beliefs for both Israelis and Palestinians. Ethan (N3) also revealed pro-Palestinian beliefs after reading, "I was raised Christian and usually

Christians support Israel, and I do support a state of Israel. But I don't support Israelis and their decisions so much and their actions having treated their neighbors [Palestinians].”

While the three participants supported a pro-Palestine viewpoint after reading, this was not true of all the cases. One participant (Daniel, N4) stated that he supported a pro-Israel viewpoint after reading because the pro-Israeli texts were more persuasive (e.g., “From the article, it seems like Israel has better argument from this information alone... Palestine does not have very favorable argument.”).

Despite the diverse belief changes, participants in the neutral group commonly pointed out that there was still a *lack of information* because this topic was complex and required a significant level of knowledge. For example, Elizabeth (N5) stated, “It's such a like dense topic, and it seems like there is a lot of history behind it and many sides. So, I still need more research.” Ethan (N3) also needed for more information, “I guess I'll have to read more articles I guess, on Palestinian point of view or the law that supports Palestinians or their counter arguments.”

In sum, the neutral group showed more diverse of belief changes than the pro-Israel and pro-Palestine groups. The majority of the participants in the neutral group showed pro-Palestine beliefs after reading, while some participants showed neutral or pro-Israel beliefs. In addition, they reported both learning experiences of reading and need for more information about the conflicts. The difference between the neutral group and the other two groups (i.e., pro-Israel and pro-Palestine groups) indicated that topic beliefs played a significant role during comprehension processes.

Summary

Figure 24 provides a visual summary of results of belief change in this study. It describes the influence of topic beliefs and prior knowledge on belief change in relation with bias.

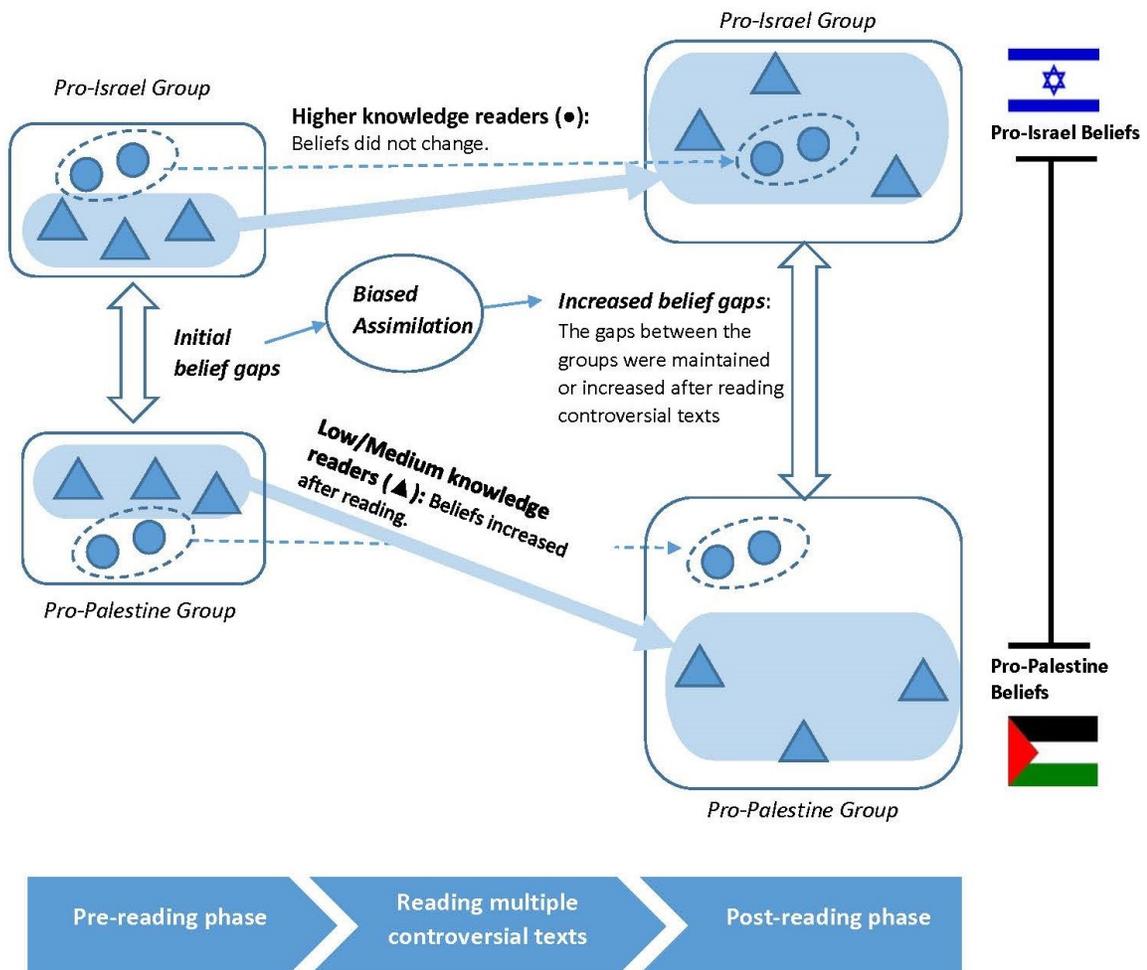


Figure 24. Visual summary of influence of topic beliefs and prior knowledge on belief change in relation with bias

Note. Small circles (●) are high prior knowledge participants. Small triangles (▲) are medium/low prior knowledge readers. Dotted arrows are high knowledge participants' non-belief change across reading. Blue arrows are middle/low prior knowledge participants' belief change across reading. Big arrows designate belief gaps between pro-Israel and pro-Palestine groups. The biggest arrow on the right side indicates degree of beliefs between pro-Israel and pro-Palestine.

As seen in both quantitative and qualitative results, belief gaps between the pro-Israel and pro-Palestine groups maintained or increased after reading. The maintained, or increased belief gaps between pro-Israel and pro-Palestine groups can be regarded as an indicator of biased assimilation process of the groups (Lord et al., 1979). Second, the primary influence of belief change was participants' prior topic beliefs before reading. Third, belief change was also influenced by prior knowledge. High prior knowledge participants did not much modify their beliefs because they already had enough knowledge about the Palestine and Israel conflict. In other words, the high knowledge readers read information, which was not new to them, so that they did not need to change or update their beliefs. Or, it was also possible that the readers with high prior knowledge had high bias and could not update their beliefs. On the other hand, medium and low knowledge participants changed their beliefs toward a direction to strengthen their beliefs.

Analyses showed that participants' belief change was related to both reader's topic beliefs and prior knowledge. However, it was not clear how topic belief was related to prior knowledge in this study. This study was not designed to distinguish the effects of prior knowledge and beliefs because I recruited participants according to beliefs rather than prior knowledge (i.e., the prior knowledge assessment was post hoc). Therefore, future research is required to distinguish topic beliefs and prior knowledge in relation with multiple text comprehension and bias.

Analysis of Reading Time, Reading Order, and Internet Search

The second research question was: *Do readers with strong beliefs exhibit different reading patterns (e.g., reading order and time, and Internet search) from those with less strong or neutral beliefs?* To answer this question, I compared the amount of reading

time and reading order patterns across the groups. Finally, I analyzed Internet search patterns that included searched keywords, search purposes, and proportion of Internet search time to the total reading times.

Amount of Reading Time

I developed the iMTC (Internet-based multiple text comprehension software) to investigate different parameters of this study. The iMTC provided the start and end times of each participants' reading of each text. While the average amount of time to read all texts was 51.76 minutes, there were large individual difference in reading time. For example, Emily (N2) (76.17 minutes, the longest reading time) spent nearly three times the amount of time reading as Michael (P5) spent (23.72 minutes, the shortest reading time). The raw data of individual participants' reading time are provided in Appendix G. Table 17 showed each group's average reading time per source of text.

Table 17

Descriptive Statistics: Amount of Reading Time

	Map 1	Map 2	Text 1	Text 2	Text 3	Text 4	Text 5	Internet Search	Total
Pro-Israel group	2.20 (1.16)	1.56 (0.29)	9.89 (2.19)	8.47 (2.74)	8.10 (1.58)	8.61 (1.63)	9.53 (2.10)	3.16 (2.92)	55.51 (8.31)
Pro-Palestine group	2.82 (1.33)	1.38 (0.43)	10.28 (5.75)	9.68 (5.26)	7.79 (3.02)	6.86 (2.49)	6.87 (2.19)	2.90 (3.52)	48.60 (19.32)
Neutral group	3.03 (1.60)	1.32 (0.83)	11.34 (2.55)	9.85 (3.21)	9.01 (2.69)	9.23 (1.82)	9.67 (3.30)	1.73 (2.47)	55.18 (13.93)

Note. All units are minutes. Parentheses indicate standard deviation.

The primary interest of this analysis was to identify whether the three groups spent similar or different amounts of time when reading texts that took different stances towards the Israel-Palestine conflicts. According to bias researchers (Edwards & Smith,

1996; Taber& Lodge, 2006), readers with strong beliefs spend more time reading belief-inconsistent texts than the belief consistent texts because readers must invest more cognitive effort to disconfirm opposing arguments. One purpose for the analyses of amount of reading time was to examine whether participants in this study showed such biased time spent in reading. Thus, I investigated participants' differences in amount of reading time between belief-consistent texts and belief-inconsistent texts.

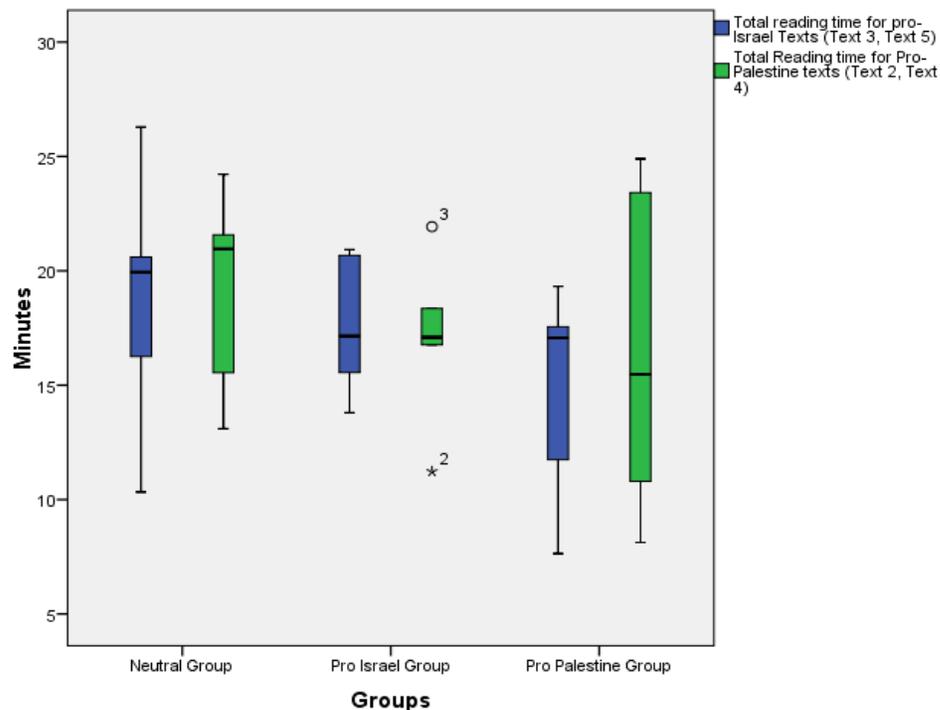


Figure 25. Box plots: amount of reading time to read

Note. The box plot showed three types of data: (a) the dark line in the middle line of the boxes represented the median of reading time for each object (i.e., text, map, Internet search, and total), (b) the bottom and top of the boxes represented the 25th and 75th percentile of reading time, and (c) dots represented outliers.

To provide an overview of reading times, box plots of the three groups were constructed using statistical software (SPSS, v. 20). In Figure 25, the three columns represented reading time of three groups. In addition, reading time was separated between

pro-Israel texts (Text 3 and Text 5) and pro-Palestine texts (Text 2 and Text 4). As shown in the Figure 25, there were no specific patterns of reading time across the groups as well as text stance (pro-Israel vs pro-Palestine texts), despite different variation of reading time.

Based on the overview, I also performed statistical tests to check the differences in reading time across groups. Since the sample of this study was small in number (five observations per one group), it was not clear that the sample data were sufficiently satisfactory for the ANOVA assumption of normality. Therefore, I conducted Kruskal-Wallis One-way Analysis of Variance test (Gibbons & Chakraborti, 2003). The Kruskal-Wallis test was a nonparametric method, requiring fewer assumptions than ANOVA (an equivalent parametric test of Kruskal-Wallis One-way ANOVA).

The null hypothesis of the test was that the mean reading time for the groups was the same. I set nine distinct null hypotheses about reading time (Map 1, Map 2, Text 1, Text 2, Text 3, Text 4, Text 5, Internet reading time, and Total reading time). The Kruskal-Wallis tests were used to compare median ranks among the three groups (pro-Israel, pro-Palestine, and neutral group). Using an alpha level of 0.05, none of these tests were found to be statistically significant for all of the nine tests, thereby failing to reject the null hypotheses (Table 18).

Table 18

The Reading Time Comparison Result: Test Statistics^{a,b}

	Map 1	Map 2	Text 1	Text 2	Text 3	Text 4	Text 5	Internet	Total
Chi-Square	.740	1.040	1.860	.180	.620	2.480	3.020	1.352	.260
Df	2	2	2	2	2	2	2	2	2
Asymp. Sig.	.691	.595	.395	.914	.733	.289	.221	.509	.878

Note. a. Kruskal Wallis Test; b. Grouping Variable: group

Table 18 shows that topic belief was not a significant factor in influencing reading time. One possible explanation for the insignificant time difference across groups was attributable to large individual differences in reading times. For example, total reading time in the pro-Israel group was between 38 and 61 minutes, the pro-Palestine's time was between 24 and 68 minutes, and that of the neutral group was between 41 and 76 minutes. As a result, this study did not provide evidence that reading time was related to readers' belief. This result was contrary to the previous bias studies (e.g., Edwards & Smith, 1996; Taber & Lodge, 2006) in which participants spent more time to read belief-inconsistent texts than belief-consistent texts.

There were three possible explanations for the differences between previous studies and the current study. First, the setting was different. Previous studies used short texts and sentences (e.g., 16 sentence-length arguments in Taber & Lodge, 2006) when comparing time differences between participants. This study used five texts (average 718.8 words) that contained very complex subtopics (e.g., history, law, international treaties) about the Palestine-Israel conflicts.

Second, this study used a relatively small sample. There were notable individual differences in reading time so that one participants' idiosyncratic time spent influenced the group mean. In addition, the small number of participants meant less statistical power.

Finally, it is possible that reading time was not a sensitive measure for detecting readers' bias in multiple text comprehension. As I will describe in a later section, participants showed cognitive strategy efforts both on belief-consistent and belief-inconsistent information. In other words, participants revealed their rationales when they accepted or rejected text contents, according to their beliefs and prior knowledge.

Reading Order

The iMTC recorded reading time data. Based on the time data, I drew reading order graphs for individual participants (Figure 26). The reading order graphs represented participants' reading sequence as time proceeded (e.g., each cell indicated one minute). There were no specific patterns of reading order in groups. This means that participants' topic beliefs did not influence reading order.

I observed two common patterns from the reading order graphs. First, graphs of reading order indicated that participants read text materials in a *linear manner*. They viewed the two maps first, and then progressed from Text 1 to Text 5, sequentially. This order seemed to be influenced by the iMTC environment, in which maps placed at the top and text materials were ordered next in order (Text 1, Text 2 ... Text 5). The linear reading pattern exhibited by most of the participants in this study confirmed the previous findings that (a) readers read each text one by one, rather than skimming the set of multiple texts (Maggioni et al., 2010), and (b) they followed given text orders rather than reconstructed the orders (Stahl et al., 1996). Two exceptions were two neutral students (Emily, N2; Elizabeth, N5) who reviewed Map 1 and Text 1 at the end of the entire reading. However, their basic reading patterns were also linear reading.

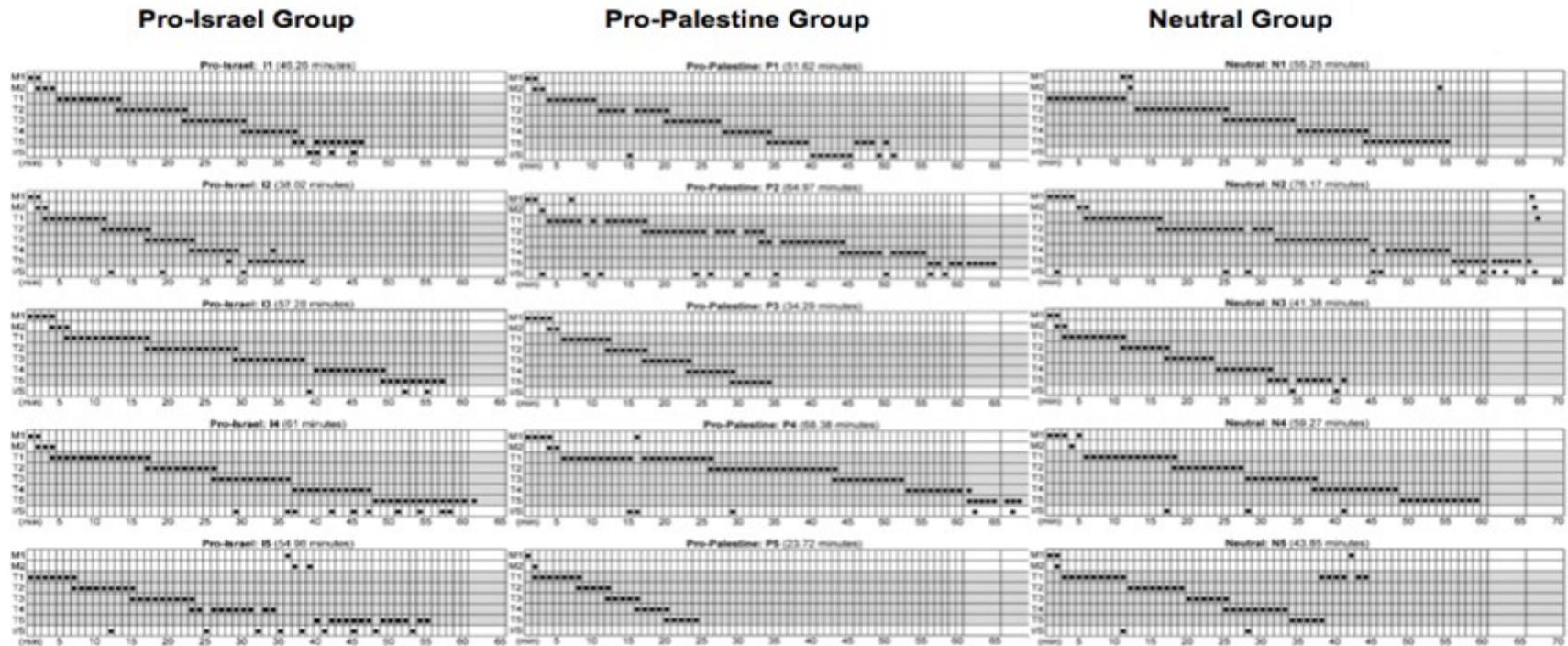


Figure 26. Reading order graphs

On the vertical line, each symbol indicates what participant read and searched M1 (Map 1), M2 (Map 2), T1 (Text 1), T2 (Text 2), T3 (Text 3), T4 (Text 4), T5 (Text 5), and I/S (Internet search). On the horizontal line, each number (e.g., 5, 10, 15) indicates reading time (unit: minute). In the reading order graph, each cell indicates one minute. Overall, participants looked at maps first and read from Text 1 to Text 5 in a linear manner. During reading, participants searched on the Internet during reading. In general, reading patterns seemed similar, except N1 and N5: The two neutral participants revisited Map 1 and Text 1 in order to review of the text materials. For detailed descriptions, I put the enlarged version of the reading order graphs in Appendix H.

Participants used two maps at the beginning stages of reading in order to find basic information about the Israeli settlements in the West Bank. They spent more time to read Map 1 (Israeli and Palestinian borders in history) than Map 2 (Geographical locations of the Israeli settlements in the West Bank). As revealed in the linear patterns of reading *texts*, participants' reading patterns of *maps* were also sequential. With some exceptions (e.g., P4's reading Map 1 while reading Text 1), participants did not go back to read the two maps during reading. In other words, participants usually focused on the two maps before reading Text 1 and did not go to read the maps during comprehension of five texts.

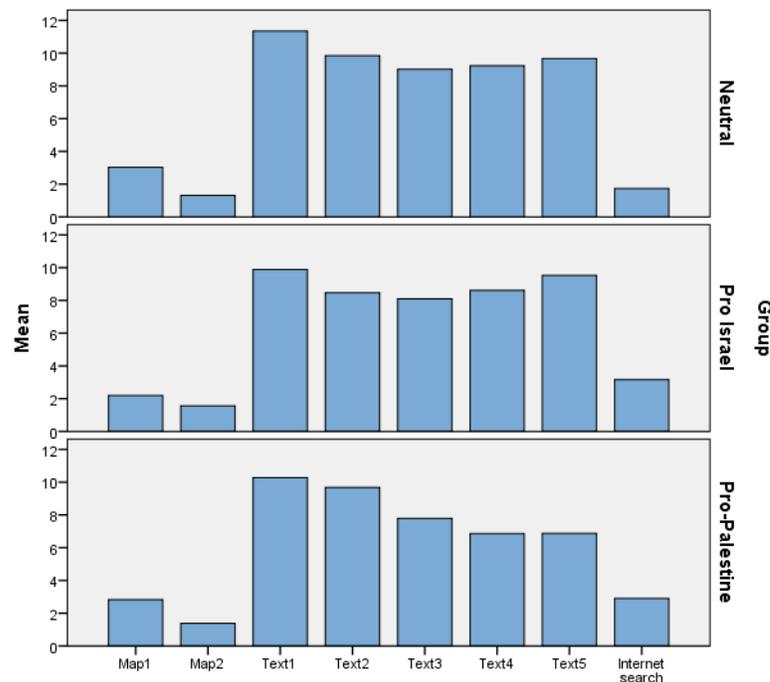


Figure 27. Bar graph of reading time for the three groups

Second, participants spent more time on the *first text*, which was little longer than other subsequent texts. This finding was consistent with the Gernsbacher's (1990) *Structural Building Framework*. According to this model, readers spent more time in

reading the first text than reading subsequent texts in order to build representation of the text based on the first incoming information. Calculation of each text showed that the first text (Text 1) took more time than subsequent texts in all the three groups (Figure 27).

Besides participants' two patterns of linear reading and spending more time on Text 1, no other patterns were found. Participants' Internet searches were idiosyncratic and showed no specific patterns beyond those mentioned. For two participants (Isabella, I5; Ava, N1), Text 1 was read first while maps were read while reading other texts. However, verbal protocol data indicated that their reading of Text 1 first was by mistake rather than intention. For example, a participant (Isabella, I5) stated, "And here is what I needed to see probably should've started with the map." Thus, it was not considered a specific reading order pattern. In addition, participants' Internet searches were idiosyncratic rather than showing common patterns in terms of reading order. As a result, reading order was not also a sensitive measure to identify influences of participants' topic belief and bias.

Internet Search

I analyzed participants' Internet searches related to Internet search times and frequency, searched keywords and types, and search purposes.

Internet search time and frequency. Internet search time was calculated from the iMTC time log, in the same way of the previous reading time section. In addition, the proportion of Internet search to total reading time, search frequency, and average of iInternet search time were calculated (Table 19). The average Internet search time of the pro-Israel group was 3.18 minutes, or 6% of the total reading time. These participants

searched an average of 5.6. times, with an average search time of 30.58 seconds. For the pro-Palestine group, the total Internet search time was 2.9 minutes, or 5% of the total reading time. They searched an average of 4.6 times and spent 22.64 seconds per search. Finally, the neutral group spent 1.73 minutes performing Internet searches, using 3% of the total reading time. They searched an average of 2.6 times and spent 18.49 seconds per search.

Table 19

Descriptive Statistics of Internet Search

	Internet search time (minutes)	Total reading time (minutes)	Proportion of Internet search	Search frequency	Average search time (seconds)
Pro-Israel	3.18 (2.91)	52.51 (9.29)	0.06 (0.05)	5.6 (2.97)	30.58 (19.83)
Pro-Palestine	2.9 (3.52)	50.60 (19.32)	0.05 (0.06)	4.6 (4.45)	22.64 (28.39)
Neutral	1.73 (2.47)	55.78 (14.00)	0.03 (0.03)	2.60 (3.78)	18.49 (14.40)

Note. Parenthesis indicates standard deviation (SD).

In order to test the group differences in Internet searches, the Kruskal-Wallis tests were used to compare median ranks of Internet search time, the proportion of Internet search, search frequency, and average search time among the three groups. Using an alpha level of 0.05, none of these tests were found to be statistically significant for all four tests, thereby failing to reject the null hypotheses (Table 20).

Table 20

Test Statistics of Nonparametric Test ^{a,b} (Kruskal-Wallis One-Way Analysis of Variance)

	Internet search time	Proportion of Internet search	Search frequency	Average search time
Chi-Square	1.350	1.591	1.092	.967
Df	2	2	2	2
Asymp. Sig.	.509	.451	.579	.617

Note. a. Kruskal Wallis Test; b. Grouping Variable: Group

The test results showed that there was no statistical difference between groups with regard to their Internet searches. Therefore, it was concluded that topic-beliefs did not relate to Internet searching time.

Searched keywords and types. All of the search keywords from individual participants are represented in Appendix K. For the analysis, types of searched keywords were classified into three categories: word meaning, concept, and source (Table 21).

Table 21
Frequency of Searched Type

	Word Meaning		Concept		Source	
	Category	<i>f</i> (%)	Category	<i>f</i> . (%)	Category	<i>f</i> . (%)
1st	Legal terms (i.e., sine quibus non, sui generis, de jure)	18 (50%)	International treaty and public report (e.g., Road map for peace, Rome statue)	13 (57%)	Text 4 (e.g., The Blaze, Glenn Beck)	6 (60%)
2nd	Conflict related terms (e.g., annexed, adduces, armistice, concession)	14 (39%)	Important organization and persons in the conflict (e.g., Prime Minister Sharon, Hamas)	5 (22%)	Text 5 (i.e., , The Begin-Sadat Center for Strategic Studies)	2 (20%)
3rd	Others (i.e., moratorium, environs, cogently, Messianic)	4 (11%)	Geographical information (i.e., Jordan, Israel, Judea and Samaria)	3 (13%)	Map 2 (i.e., Foundation for Middle East, Merle Thorpe, Jr.)	2 (20%)
Other			Situation of Israeli settlement (i.e., settlement outpost, Israeli settler water hilltop)	2 (9%)		
Total	69 (100%)	36 (52%)		23 (33%)		10 (14%)

Participants searched for definitions of key words most frequently (n = 36 times, or 52% of the total Internet search). In terms of searched words, legal terms (e.g., *sine quibus non*, *de jure*) were the object of 50% of the searches, while conflict-related terms (e.g., *annexed*, *adduces*) garnered 39% of the searches. Second, participants searched for concepts 23 times, 33% of the total search. Diverse concepts were searched: international treaties and public reports (e.g., *road map for peace*), important organizations and persons in conflict (e.g., *Hamas*), and geographical information (e.g., *Jordan*). Last, participants searched for source information 10 times, 14% of the total Internet search. Many participants searched for Text 4, followed by Text 5 and Map 2. Overall Internet search types and frequency are presented in Table 22.

Table 22
Frequency and Percent of Searched Type across the Groups

	Word Meaning		Concept		Source		Total
	Frequency	Percent	Frequency	Percent	Frequency	Percent	
Pro-Israel Group	13	46%	10	36%	5	18%	28 (100%)
Pro-Palestine Group	10	43%	10	43%	3	13%	23 (100%)
Neutral Group	13	72%	3	17%	2	11%	18 (100%)
Total	36		23		10		69

Based on the search type data, I examined possible differences of search types across the groups. For both pro-Israel and pro-Palestine groups, word meaning and concepts were searched with similar frequency (Table 22). However, the neutral group searched for word meaning frequently (72%), while search for concepts were low (17%). These results raised a further question: Do differences in Internet search between groups

relate to participants' topic beliefs and bias, or low prior knowledge? This question was not answered in the current study and remains for future study.

Summary

This section examined whether participants' topic beliefs influenced their reading processes, as measured by reading time and order, and Internet searches. I examined whether there were differences in reading times across groups. Previous studies showed that participants spent more time reading belief-inconsistent texts than belief-consistent texts, revealing disconfirmation bias. In this study, nonparametric tests revealed no statistical differences; the findings of this study were different from the previous studies. Three possible explanations were discussed: different study designs between the previous studies and this study (e.g., lengths of text materials), small sample size of this study, and characteristics for time measure (i.e., reading time may not be an appropriate measure for detecting bias).

Next, I examined whether topic beliefs influenced participants' reading order. The rationale for this examination was that participants may more frequently revisit specific texts rather than other texts based on beliefs. Analysis of reading order revealed that there were no differences in reading orders across groups. Rather, I found two common patterns. First, participants' reading was linear (i.e., participants read from first text to the final text without looking back). Second, participants read the first text carefully and then the subsequent texts in order to determine the overall theme of the text set. Third, Internet search patterns, including search time and frequency, search types, and Internet search purposes were examined. I found that participants frequently used the Internet during multiple text comprehension, even if this option was not required. However, I did not

find any specific group differences in Internet searches across groups, despite minor differences of Internet search patterns.

Analysis of Strategic Processing

The final research question was *how do individual differences in topic-related reader belief influence reading strategy use?* This section describes types of strategic processing codes by participants, frequency and patterns of strategic processing, and case examples of strategy use in relation to bias.

Types of Strategic Processing

Five types of think-aloud comments were encoded from participants' verbal reports and examined during the study: Considering text content (C), Acceptance and resistance (AR), Monitoring (M), Evaluation (E), and Information need and search (IS) (Appendix I).

Considering text content. This category described readers considering text content based on their prior knowledge or previously read information (Pressley & Afflerbach, 1995). It included paraphrasing, elaboration/inference, and summarization.

Table 23

Examples of Considering Text Content

<i>Source</i>	<i>Text</i>	<i>Reader</i>
William (I4), Text 4	French judge Christine Chanet, who led the panel, said Israel never cooperated with the probe, which the council ordered last March.	So it says, "Well, they tried to do it earlier and it didn't work"
Emily (N2), Text 1	During the first decade of Israeli occupation, there was comparatively little civil resistance to Israeli authorities and very little support among Arab residents of resistance activity.	So, I guess things are kind of peaceful at this point, so that's good. Alright just a little resistance so, just kind of dealing with it and maybe hoping that, that things kind of stay at peace I guess and people keep this base that they have at the time.

In Table 23, the first example showed that William paraphrased the target text in order to understand it in his own words. The second example showed that Emily used inference or elaboration using prior knowledge in order to understand the text. The two examples indicated that participants considered text content, including identification of main ideas.

Acceptance and resistance. This category described readers' acceptance of, or resistance to, text content based on readers' beliefs and prior knowledge (Table 24). In fact, the acceptance and resistance category encompasses two strategic processing codes operating in opposite ways. However, I included the two processing codes in one category because both commonly represented *readers' constructive judgment of* accepting or resisting of text information based on prior knowledge and reader' beliefs.

Table 24

Examples of Acceptance and Resistance

<i>Source Text</i>	<i>Text</i>	<i>Reader</i>
<i>Acceptance</i>		
Jackson (P4), Text 4	All settlement activity in the occupied Palestinian territory, including east Jerusalem, is illegal under international law.	Okay, another thing why the West bank settlement was not justified.
Sophia (I2), Text 3	And consequently, instead of lamenting that the status quo is not sustainable, the international community should work together with the parties to improve it where possible and make it more viable.	And I guess that it's helpful that I can get another opinion in the matter just because they have been fighting about this for so long that maybe they need someone to come in and actually help with peace-making.
<i>Resistance</i>		
Jackson (P4), Text 3	While the status quo is not anyone's ideal, it is immeasurably better than any other feasible alternative.	That is very wrong, very ignorant statement.
Abigail (P2), Text 3	Moreover, the Palestinians have repeatedly refused to implement a negotiated two-state solution. The American government and its European allies should abandon this failed formula once and for all.	There's been no proof of that so far that they have repeatedly refuse. But there has been proof that the Israelis have been repeatedly refused to get out of the Palestinian land. Now he just sounds like an asshole.

The first and second examples illustrated readers' acceptance of text content. In the first example, Jackson accepted the content of a target sentence, saying, "[This information] was another thing [reason] why the West bank settlement was not justified." Consistent with pro-Palestine beliefs, Jackson accepted this information without providing a rationale for accepting information. In the second example, a pro-Israel participant, Sophia, accepted the text content with her explanation.

The third and fourth examples showed readers' disagreement, rejection, or counterarguments against text content based on prior knowledge and topic belief. In the third example, Jackson simply resisted the text content. However, in the fourth example, Abigail resisted text content with her explanation.

Monitoring. This category described readers' metacognitive strategy use, including monitoring the self, detection of comprehension difficulties, fixing difficulties, or, confirmation of comprehension. For example, two readers monitored their comprehension problems (Table 25).

Table 25

Example of Monitoring

<i>Source</i>	<i>Text</i>	<i>Reader</i>
Elizabeth (N5), Text 1	The Arab state whose creation was envisioned by the 1947 UN partition plan never came into being, and the West Bank was formally annexed by Jordan on April 24, 1950, although this annexation was recognized only by Great Britain and Pakistan.	After reading the third paragraph, it is very confusing to me because it seems like there's a lot of little issues going on in the land.
Ava (N1), Text 1	Within its present boundaries, it represents the portion of the former mandate retained in 1948 by the Arab forces that entered Palestine after the departure of the British.	That last sentence is kind of confusing to me because I don't know who... So "the Arab forces entered Palestine" after the British left, so, I thought it already belonged to the, wait ok, that makes sense because the Israelis occupied that area.

The first example showed Elizabeth’s detection of comprehension difficulty due to lack of prior knowledge. However, the second case showed that Ava solved the comprehension difficulty after feeling the comprehension problem. The sentence Ava read at that time did not include what countries took place in Israel/Palestine, although this sentence stated that Arab forces entered the land. Based on the previous information and prior knowledge, she inferred that “Israelis occupied that area.” This case also was also included in the monitoring category.

Evaluation. This category described readers’ evaluation of text, focused on source information, bias prediction/detection, evaluation of author, evaluation of text, and comparing sources for evaluation (Table 26).

Table 26

Examples of Evaluation

<i>Source</i>	<i>Text</i>	<i>Reader</i>
Emily (N2), Text 3	<ul style="list-style-type: none"> • Title: Israel’s Settler Are Here To Stay • Author: Dani Dayan (The chairman of the Yesah Jewish communities in the West Bank) • Source: Opinion page, The New York Times • Date: July 25, 2010 	Okay so this is an opinion page very important from the New York Times and the author is the chairman of the Yesah Jewish communities in the West Bank. Where was text two from, um, date unknown okay, so that makes things a little tricky since text two is, the date is unknown. It’s hard to compare when this was happening, but, a lot of this stuff I guess, the person that they reference is from the early 2000s. So that one would not be as recent as this one is from July 2010.
Jackson (P4), Text 3	<ul style="list-style-type: none"> • Title: Israel’s Settler Are Here To Stay • Author: Dani Dayan (The chairman of the Yesah Jewish communities in the West Bank) • Source: Opinion page, The New York Times 	Alright, this is going to be biased for the Jewish people, the title says it all with the author the chairman of “Yesah Jewish communities in the West Bank”. It’s not like he’s some random Jew, he is in the West Bank and he’s a chairman of something.
Ethan (N3), Text 3	The settlements of Judea and Samaria are not the problem — they are part of the solution.	This guy, I don’t know if all Jewish people or all Israelis are like this strong of their opinions but he probably definitely reflects some of what the, like religion ideology that Text 2 was talking about. But it’s kind of sad that this man doesn’t really concede much at all.

Table 26 provides three sub-types of evaluation. The first (Emily, N2) and second (Jackson, P4) participants showed evaluation of the same source information about Text 3. However, they evaluated the source information differently. While Emily identified source information that contained author, publication, and date information (*source information*), Jackson focused on author bias in Text 3 (*bias detection/prediction*). In the third example, a participant (Ethan, N3) evaluated the author as extreme ideologist at the end of the reading (*evaluation of text*).

Information need and search. This category described readers' statements of information need and Internet searches. All actual Internet searches (which appeared in the previous section) were coded in this strategy type. In addition, readers sometimes expressed information need, but did not search information on the Internet. This case was also encoded as information need and search category.

Table 27

Examples of Information Need and Search

<i>Source</i>	<i>Text</i>	<i>Reader</i>
Jacob (I1), Text 5	It also runs contrary to Israel's obligations under the Road Map" for a Middle East peace settlement.	I should probably learn more about this "Road Map"
Jacob (I1), Text 5	While some governments of Israel have favored the physical expansion of settlements or the increase of their population, settlement growth has been driven by the preferences of private citizens.	Interesting. Though it kind of goes against the whole, was it the right wing or left wing that really wants that to happen?

Table 27 describes two cases of information need. In the first example, Jacob thought that he needed more general facts and descriptions about the *road map* that explicitly appeared in a text sentence. In the second example, he felt a need for specific information that was not explicitly mentioned in the target sentences.

Participants' strategic processing was coded into five categories: Considering text content, Acceptance and Resistance, Monitoring, Evaluation, and Information Need and search. The next section describes how the five categories were used according to the groups.

Frequency and Patterns of Strategy Use

Based on encoded participants' verbalization data (Appendix I), individual participants' frequency of strategic processing were counted (Appendix J). Based on the coded strategy data, I counted the frequency of strategy codes for each group (Table 28).

Table 28

Descriptive Statistics: Frequency of Strategy Use

		C	AR	M	E	IS
Pro-Israel group	<i>M</i>	42.60	27.28	2.80	9.40	14.80
	<i>SD</i>	(33.34)	(17.25)	(3.11)	(3.51)	(6.91)
	<i>Mdn</i>	29	27	2	10	11
Pro-Palestine group	<i>M</i>	21.20	38.40	3.20	9.60	7.40
	<i>SD</i>	(14.08)	(6.58)	(4.66)	(10.26)	(6.11)
	<i>Mdn</i>	17	38	1	8	7
Neutral group	<i>M</i>	43.20	8.60	7.00	10.60	7.60
	<i>SD</i>	(34.45)	(8.26)	(3.94)	(7.13)	(5.59)
	<i>Mdn</i>	30	11	7	14	5

Note. *M*: mean, *SD*: Standard deviation, *Mdn*: Median

Figure 28 portrays the mean of frequency of strategic processing for each group, and illustrates both similarities and differences in terms of strategy use. First, considering text content (C) was the most widely used strategy in both pro-Israel group and neutral group. Second, both the pro-Israel and pro-Palestine groups frequently employed the strategy of Acceptance and Resistance (AR). Third, Monitoring (M) was relatively frequent in the neutral group, whereas it was less frequent in the other two groups. Fourth, evaluation (E) was similarly less frequent in all the three groups. Fifth,

Information need and Search (IS) was frequent in the pro-Israel group than the other two groups.

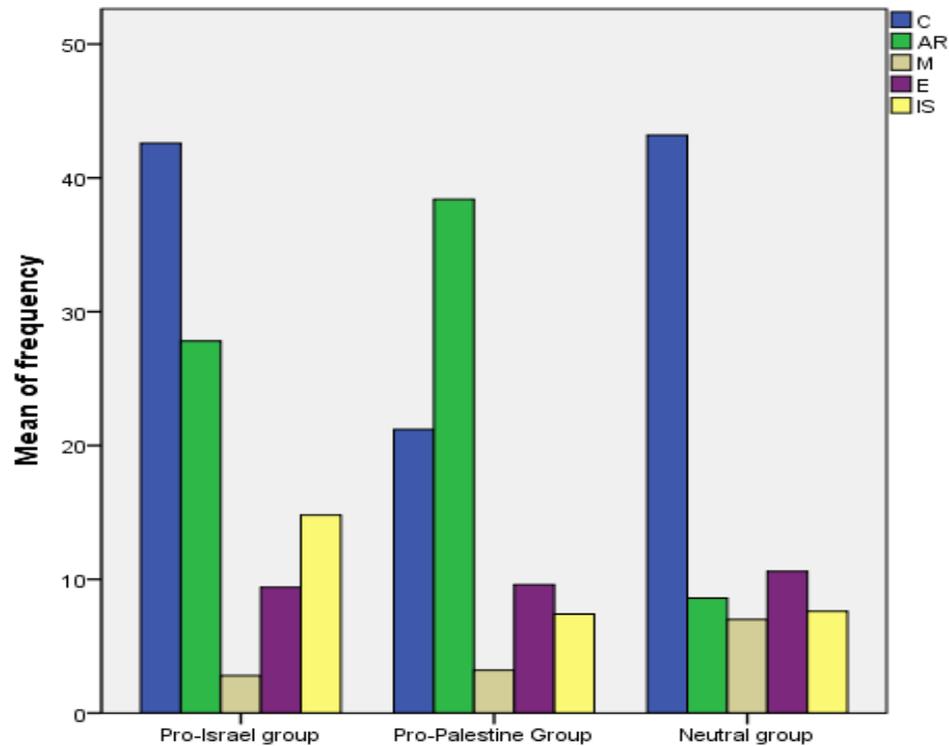


Figure 28. Mean of frequency of think-aloud strategic processing

When comparing belief groups (pro-Israel and pro-Palestine) and the neutral group, differences appeared in the category of Acceptance and Resistance (AR) and Monitoring (M). In order to identify the differences between the belief groups and the neutral group, Kruskal-Wallis one-way ANOVA tests were performed on the frequency of each processing code (i.e., C, AR, M, E, IS). The result of the Kruskal-Wallis tests revealed that only the Acceptance and Resistance (AR) showed a statistically significant effect, $\chi^2(2) = 8.511, p < 0.05$. No other processing codes reached statistical significance (Table 29).

Table 29
Kruskal-Wallis One-way ANOVA Test for the Strategic Processing across Groups

	C	AR	M	E	IS
Chi-Square	1.217	8.511	2.815	.337	2.545
Df	2	2	2	2	2
Asymp. Sig.	.544	.014	.245	.845	.280

a. Kruskal Wallis Test; b. Grouping Variable: Group

Since the only significant effect was that of the acceptance and resistant (AR), post-hoc pairwise comparisons of AR was performed using the Mann-Whitney *U* test. For this post-hoc test, the Bonferroni correction was calculated as a critical p-value (i.e., $1/3 * 0.05 = 0.017$) in order to prevent family-wise type I error.

The three post-hoc comparisons revealed that the frequency of the Acceptance and Resistance (AR) was statistically significant between the pro-Palestine and the neutral group, $U = 0$, $z = -1.892$, $p < 0.017$ (Table 30). For the other comparisons, frequency of acceptance and resistance was not significantly different at 0.017 level (i.e., critical value of the Bonferroni correction).

Why were there no statistical differences between the pro-Israel and neutral groups while there was a difference between the pro-Palestine and neutral groups? One reason for the non-significant difference between pro-Israel and neutral groups could be explained by the individual differences of pro-Israel participants. For example, participant I4's frequency of AR was 7, whereas other participants' frequency of AR was over 20 (i.e., I1: 31, I2: 20, I3: 54, and I5: 25). In other words, I4's low frequency of AR contributed to the non-significant test result. For that reason, I4 was an exceptional case in the pro-Israel group. When I4 was not included in this sample, there would have been statistical difference between the two groups.

Table 30

The Results of Three Post-hoc Pairwise Comparisons Using the Mann-Whitney U Test for the Acceptance and Resistance

	Group	Mean Rank	Sum of Ranks	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)	Exact Sig.
Pro-Israel and pro-Palestine group	Pro-Israel	4.1	20.5	5.5	20.5	-1.467	0.142	.151a ^a
	Pro-Palestine	6.9	34.5					
Pro-Israel and neutral group	Pro-Israel	7.3	36.5	3.5	18.5	-1.892	0.059	.056 ^a
	Neutral	3.7	18.5					
Pro-Palestine and neutral group	Pro-Palestine	8	40	0	15	-2.619	0.009	.008 ^a
	Neutral	3	15					

With this caveat, I believe that the use of the AR was an important distinguishing characteristic between the pro-Israel group and the neutral group, although statistical significance was not found. This conclusion showed that topic belief was related to readers' strategy use, especially for the Acceptance and Resistance. In other words, the AR was the only identifiable indicator with which to distinguish between the belief groups (i.e., the pro-Israel and pro-Palestine groups) and the neutral group.

Based on this result, the next task was to investigate how the AR was used similarly or differently across groups. I used two analyses to investigate how participants used the Acceptance and Resistance. The first approach was to use quantitative analysis of AR. In this approach, I distinguished acceptance processing from resistance processing, in order to identify how participants used the two sub-strategies differently according to belief-consistent and belief-inconsistent texts. The second analysis was a qualitative investigation of participants' verbal reports. In this analysis, I compared and contrasted participants' AR usage by examining how participants accepted or resisted text information according to their beliefs.

Frequency of Participants' Strategic Processing: Acceptance and Resistance

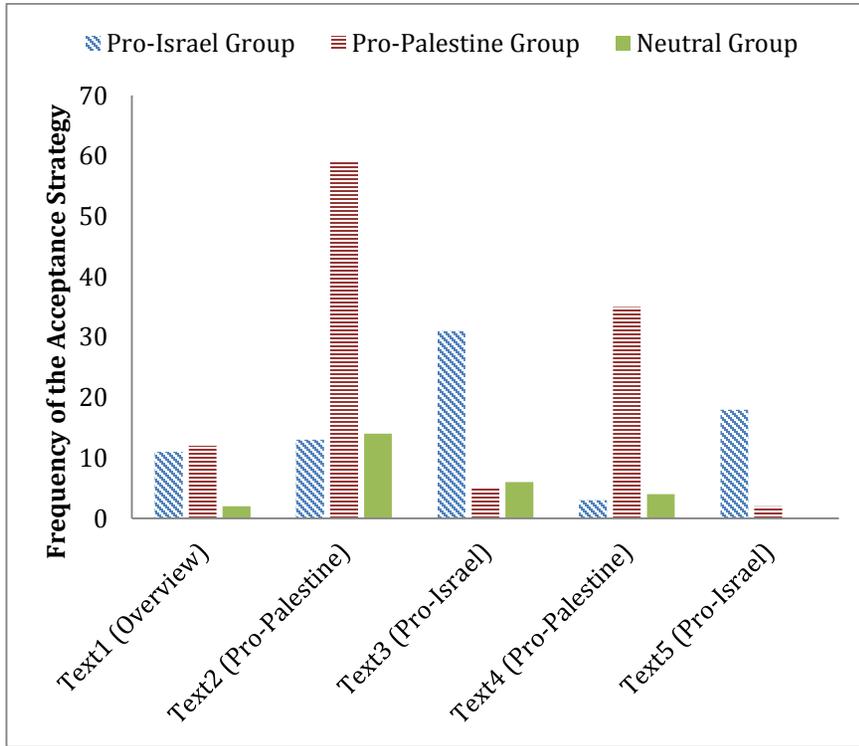
Participants' frequency of all strategic processing (C, AR, M, E, IS) per text was calculated (Appendix J). Among the five types of strategic processing, I focused on Acceptance and Resistance because it was only the identified strategic processing category that distinguished between belief groups and the neutral group. In addition, I counted acceptance (A) and resistance (R) separately in order to identify how the three groups used AR differently across the five texts. The three groups' frequency of acceptance and resistance per each text is calculated in Table 31.

Table 31
Frequency (Percent) of Acceptance and Resistance per Each Text

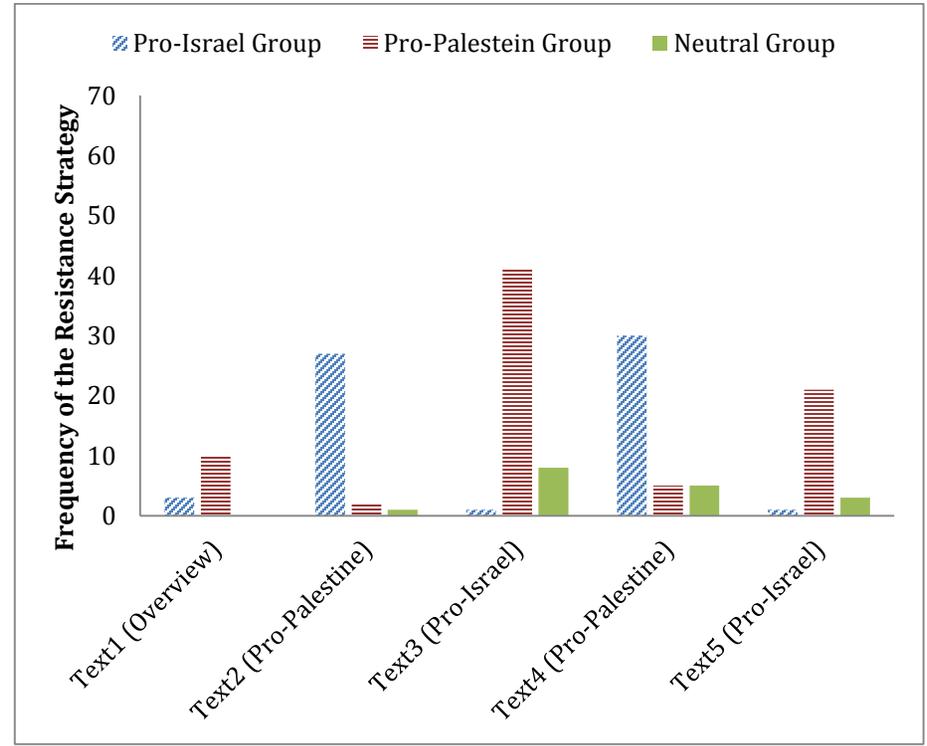
	Text 1	Text 2	Text 3	Text 4	Text 5
<i>Acceptance strategy</i>					
Pro-Israel Group	11 (11%)	13 (14%)	31 (32%)	3 (3%)	18 (18%)
Pro-Palestine Group	12 (13%)	59 (74%)	5 (7%)	35 (48%)	2 (3%)
Neutral Group	2 (2%)	14(17%)	6 (9%)	4 (6%)	0 (2%)
<i>Resistance strategy</i>					
Pro-Israel Group	3 (3%)	27 (29%)	1 (1%)	30 (33%)	1 (1%)
Pro-Palestine Group	10 (11%)	2 (3%)	41 (54%)	5(7%)	21 (32%)
Neutral Group	0 (0%)	1(1%)	8 (11%)	5 (%)	3 (4%)

Note. Percentage was simply calculated as a ratio of the target frequency to the total frequency. Percentage of acceptance: $A/(C+AR+M+E+IS)$; Percentage of resistance: $R/(C+AR+M+E+IS)$

For the Acceptance, the pro-Israel group showed a high frequency of use in Texts 3 and 5 (pro-Israel stance), while the pro-Palestine group frequently used Acceptance in Texts 2 and 4 (pro-Palestine stance). On the other hand, frequency of resistance was in contrast to that of acceptance. The pro-Israel group showed high resistance to Texts 2 and 4 (pro-Palestine stance), whereas the pro-Palestine group showed high resistance to Texts 3 and 5 (pro-Israel stance). Such opposing patterns between the two groups are represented in Figure 29. Given that the neutral group showed constant low frequency of Acceptance and Resistance, the high frequency of AR in both the pro-Israel and pro-Palestine groups suggested confirmation bias (i.e., a cognitive bias in which a reader prefers information that confirms his or her prior beliefs) during text comprehension.



Bar graph of acceptance frequency



Bar graph of resistance frequency

Figure 29. Bar graphs of acceptance and resistance frequency per text

The participants' biased strategic processing could also be examined for the consistency of the text stances and AR. Table 32 shows that there was a high acceptance rate of belief-consistent texts (pro-Israel group: 75%, pro-Palestine group: 93%) and a low acceptance rate of belief-inconsistent texts (pro-Israel: 25%, pro-Palestine: 7%). In addition, the resistance rate was high in belief-inconsistent texts (pro-Israel group: 97%, pro-Palestine group: 90%) and low in belief-consistent text (pro-Israel: 3%, pro-Palestine: 10%). This pattern clearly indicated that both the pro-Israel and pro-Palestine groups comprehended texts in a biased way. Such biased patterns did not appear in the neutral group.

Table 32

AC Strategy Pattern of Pro-Israel and Pro-Palestine Group

		Pro-Israel stance (Text 3 and Text 5) <i>Frequency (Percent)</i>	Pro-Palestine Stance (Text 2 and Text 4) <i>Frequency (Percent)</i>	Total
Acceptance	Pro-Israel	49 (75%)	16 (25%)	65 (100%)
	Pro-Palestine	7 (7%)	94 (93%)	101(100%)
Resistance	Pro-Israel	2 (3%)	57 (97%)	59 (100%)
	Pro-Palestine	62 (90%)	7 (10%)	69 (100%)
Total				294

Case Examples of Participants' Strategic Processing: Acceptance and Resistance

As described in the previous section, both the pro-Israel and pro-Palestine groups showed Acceptance and Resistance in an unbalanced way according to their beliefs. I believed that such unbalanced strategic processing was one aspect of participants' bias during comprehension. This section describes three case examples of participants' biased strategic processing. First, I will compare a pro-Palestine participant and a neutral participant in order to show biased strategic processing. Second, I will describe how

participants of different beliefs responded differently to two contradictory excerpts.

Finally, I will compare a pro-Israel participant with a pro-Palestine in terms of strategic processing.

Case 1: Comparison between a pro-Palestine participant and a neutral participant. I compared a neutral participant (Ethan, N3) with a pro-Palestine participant (Abigail, P2) in their reading of controversial texts. One excerpt from Text 2 described Israeli settlers' violent attacks on Palestinians. The other excerpt from Text 3 argued for the legitimacy of Israeli settlement.

The neutral participant's (Ethan, N3) four verbal reports showed that the participant kept a careful and critical stance on both texts (Figure 30). In the Text 2, Ethan tried to understand the situation in first part of the excerpt by *considering text content* (A). Then Ethan used the *resistance* by raising a question about the violent attack because the settler's violent attack was reported only by Palestinians in the West Bank (B). In this resistance, he added that this fact needed to be verified by an "independent party's survey." When Ethan read Text 3, there were similar patterns. He *evaluated* the text source first and predicted that text source was pro-Israel (C). In the following sentence, he *resisted* the author's idea because it was illogical: The author's argument for moral justification of Israel's settlement was not morally justified because the author viewed Palestinians state as a recipe for disaster (D). Thus, Ethan, a neutral participant, examined the source information in a balanced way.

On the other hand, a pro-Palestine participant (Abigail, P2) accepted and resisted text information according to her belief (Figure 31). In Text 2, Abigail *accepted* the settlers' violent acts against Palestinians as truth (E). Then she revealed her anger against

Israeli settlers due to compassion for Palestinians, saying “But it’s their land. Why are you going to prevent them from harvesting? They’re hungry” (F). On the other hand, Abigail used Resistance strategy in Text 3. Rather than accepting or evaluating information, she resisted text information continually (G, H). Based on comparison of the two participants, it could be concluded that the pro-Palestine participant was more biased. Abigail’s verbal report pattern was consistent with her beliefs. In other words, she tended to accept belief-consistent information and to resist belief-inconsistent information. Such a biased approach seldom appeared in Ethan’s case (N3).

A neutral participant's (N3) Think-aloud

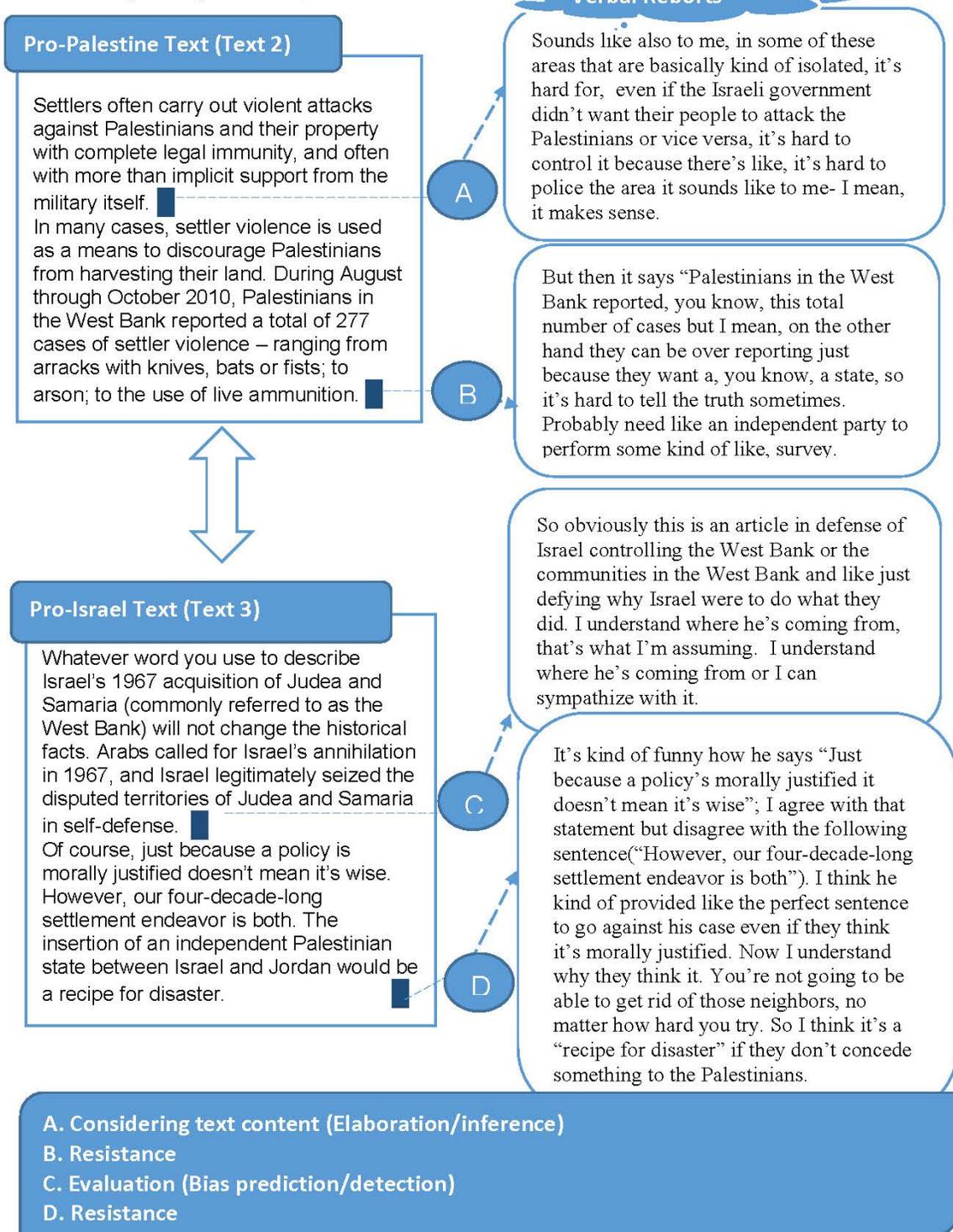


Figure 30. A neutral participant's (Ethan, N3) example of unbiased reading

A pro-Palestine participant's (P2) Think-aloud

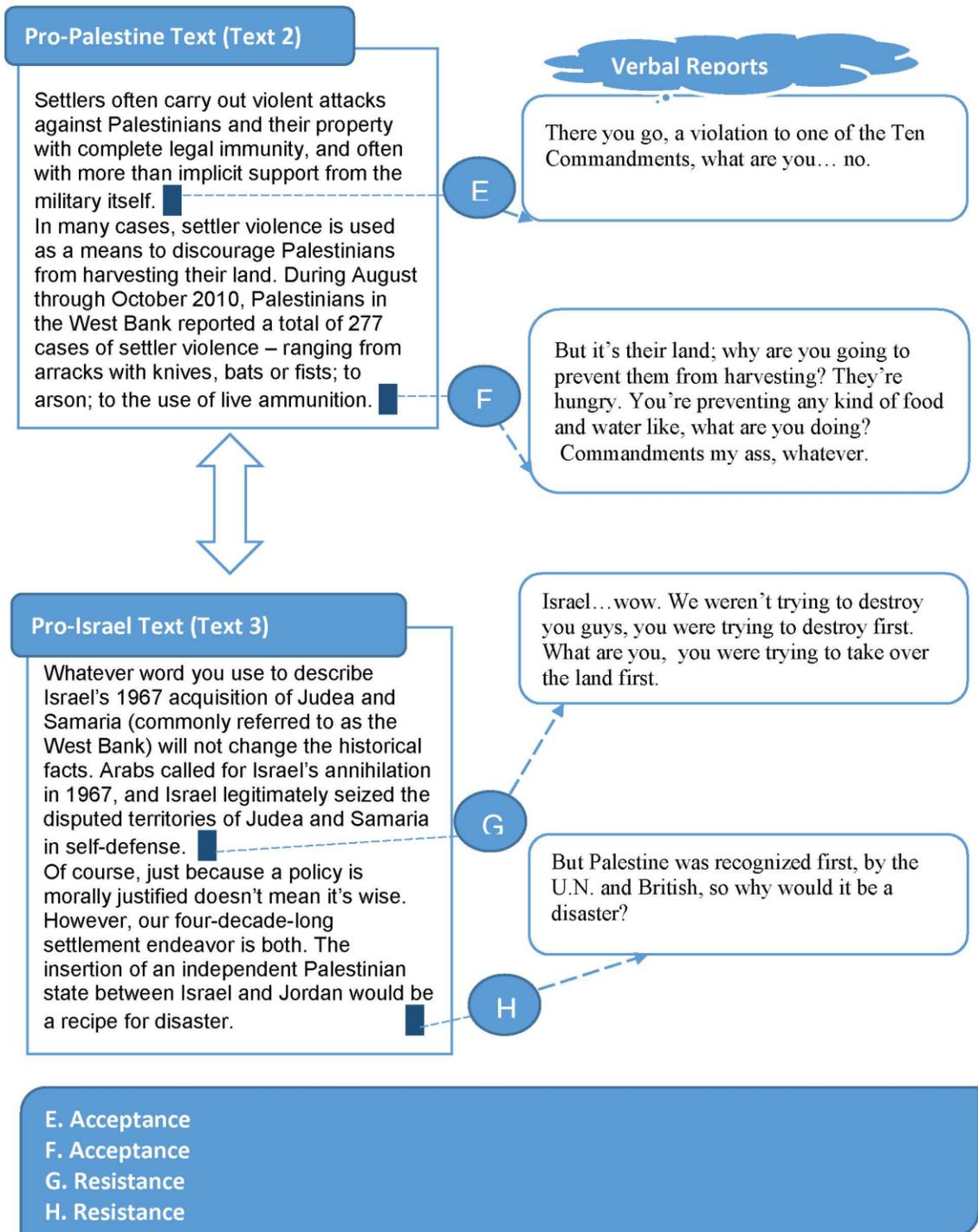


Figure 31. A pro-Palestine participant's (Abigail, P2) example of biased reading

Case 2: Comparison of six participants' think-aloud related to two contradictory text passages. Case 2 compared the six participants' verbal reports on two contrasting text passages. Figure 32 presents text passages from Text 2 (pro-Palestine stance) and Text 5 (pro-Israel stance). The passage from Text 2 described unequal water consumption between Israeli settlers and Palestinians in the West Bank. With this passage, readers showed different responses in their verbal reports. The pro-Israel participants tried to ignore such inequality (I1: "I just want to know why there's such difference; West people are drinking more"), or required more information to verify (I3: "I'd like to see the source of something that says that"). On the other hand, pro-Palestine participants regarded this passage as confirmatory evidence for their beliefs (P1: "Yeah, this is the definition of an apartheid," P4: "That just goes to show you that they're ridiculously unfair"). However, the neutral group showed no such acceptance or resistance strategies on the text passage. One neutral participant considered text content by paraphrasing (N1: "The Israeli people in the West bank are drinking more water, almost three times more water..."). The other neutral participant activated her prior knowledge by linking Palestinians' situation with Native Americans' experiences (N2).

Text 2 (for pro-Palestine stance) “Israeli West Bank settlers consume an amazing 280 liters of water per day per person compared to 86 liters per day available for Palestinians in the West Bank - only 60 of which are considered portable.”

Verbal Comments

I just want to know why there’s such difference; West people are drinking more, and how they know that.

I’d like to see the source of something that says that; I don’t know what that means. I don’t know where they got that number from.

Yeah, this is the definition of an apartheid. In fact, one will be surprised that now it actually- Ramallah in the West Bank gets more annual rainfall than London. Yet these Palestinians are living with a developing world rate’s consumption of water.

That just goes to show you that they’re ridiculously unfair. They’re not even doing it, even according to the U.N. That’s stupid. So you have 280 liters of water. And they have only what, 60 liters that are like, actually drinkable? And they still have more land? And they’re considering peace? Whatever.

And the Israeli people in the West Bank are drinking more water, almost three times more water than the Palestinians of the West Bank.

This is exactly what we talked about and how it compared, um, kind of giving land just based on like settlements and stuff. Settlements in like these kind of safer lands and, um, stuff like that just it says prime agricultural land confiscated from Palestinians like we compared that to, um, taking land from the Native Americans and like putting them on little reservations and stuff ...

Text 5 (for pro-Israel stance) “While recent years have seen some debate on the meaning of foreign territory, considerable state practice supports the traditional view that captured territory is “foreign” only when another state has sovereignty.”

Verbal Comments

I1 Interesting thing to bring up, actually... Interesting. It’s a way to look at that.

I3 Meaning the Palestinians don’t have sovereignty yet, they can’t be occupied, it can’t be foreign... The Palestinians never, ever, in 2000 years had the sovereign government meaning who, they were never in charge of the land ever, so now this is very new... Before, they never asked for it, they never asked for a sovereign government.

P1 I can’t even stand this. Okay, he’s trying to pull out a legal argument to justify Israeli occupation. I mean, these are laws written by Imperial White supremacist forces in the world, and they’re just justifying it in the language written down in some book in some language written down in law...The other state didn’t even get a chance to get sovereignty so like, you’re like double screwing over the Palestinians. I mean, this is just ridiculous.

P3 Because of that, that’s where all the issues are coming from. There’s some sort of issue with the law and...

N1 Ok, and then this sentence describes the meaning of foreign territory.

N2 ← Okay, I guess it’s interesting how like “foreign” is defined here. It’s kind of like how something is defined can have a huge meaning and a huge application in terms of this conflict. Like the definition of foreign, foreign territory.

N3 →

Figure 32. Participants’ think-aloud to two contrasting text passages

On the other hand, pro-Palestine participants showed reversed responses. One participant (P1) resisted text content by criticizing the author's purpose and other countries' cases (P1: "I mean, these are laws written by Imperial White supremacist forces in the world, and they're just justifying it in the language written down in some book in some language written down in law"). Another participant (P3) did not reveal her stance on the issue. In the neutral group, their responses were similar to when they read pro-Israel passage. They paraphrased text information (N1: "This sentence describes the meaning of foreign territory") or recognized the importance of definition in international conflict (N3: "Okay, I guess it's interesting how like "foreign" is defined here. It's kind of like how something is defined can have a huge meaning and a huge application in terms of this conflict").

Case 2 also showed similar patterns to Case 1. The pro-Israel and pro-Palestine participants were not far from bias when compared to the neutral group. However, the two cases focused on only two contrasting two texts. Case 3 analyzed whether such bias occurred in the entire five texts.

Case 3. Comparison of verbal reports between a pro-Israel and a pro-Palestine

participant. In this section, I chose two participants, one pro-Israel (Mason, I3) and one pro-Palestine (Jackson, P4) for comparison of reading strategy use across the multiple texts.

Text 1. Text 1 provided an overview of the Palestinian-Israeli conflict and did not indicate any stance toward the issue. The three text passages in Text 1 provided geographical and historical information about the West Bank. Although Text 1 took a neutral stance on the West Bank, participants reacted differently in terms of their strategy use (Table 33).

The first text passage in Text 1 was a brief history of the West Bank. Mason (I3) showed disagreement with the use of the term “occupation” used in Text 1 because “it was our [Jewish] land before.” Jackson (P4) recognized new information that Jordan had controlled the West Bank for several decades. The second passage described that the West Bank (excluding East Jerusalem) was called Judea and Samaria in Hebrew. Mason revealed his pro-Israel belief that East Jerusalem should not be cut off from the whole city of Jerusalem because it was a traditional religious city for the Jewish people. However, Jackson disregarded the ancient biblical names, raising a question about racial identity between ancient and contemporary Jewish Israelis, saying “Even so, they’ve left their land years and years ago and have settled in other places, so does it make it theirs?” In these examples, readers interpreted Text 1 based on their beliefs, although the text did not show any partiality. The third passage described that the West Bank was a disputed land; both Mason and Jackson agreed with this description.

Table 33

*Comparison of Verbal Reports between Mason (I3) and Jackson (P4) in Text 1
(Overview)*

Passages in Text 1	Mason (I3)	Jackson (P4)
West Bank, area of the former British-mandated (1920–47) territory of Palestine west of the Jordan River, claimed from 1949 to 1988 as part of the Hashemite Kingdom of Jordan but occupied from 1967 by Israel.	I just have a bickering about “occupy”. They were attacked by these countries and we just reunified what was before Israel. I don’t like the term “occupation” because it was our land before. We lived there, we captured it in order to revamp security. Jordan never went- if you want to call it “occupied”, then when it was, to the Palestinians call; before 1948, the land was occupied by the British, or occupied by Jordan, the West Bank, Judea and Samaria. They never called it theirs, Israel claimed them, then it’s occupied.	Okay, so when I stopped at the first place after I figured out that “1988 as part of the Hashemite Kingdom...” I did not know that the kingdom of Jordan claimed the West Bank of Palestine and I just knew that it was British-mandated or colonized by the British. I had no idea that it was taken over by Jordan. I don’t know really, how that can help me through making my point about the West Bank being- how, about settlements in the West Bank not being justified but I can keep reading on.
The territory, excluding East Jerusalem, is also known within Israel by its biblical names, Judaea and Samaria.	So there’s Judaea and Samaria, and East Jerusalem, I also have a big thing; you can’t separate the holy city. For many people it’s the most holy city in the world; you can’t just cut in half. Bruin was once cut in half; that was a capital, and that was not good. But now you want to cut off. There are a lot of holy sites all over Jerusalem. You’ve cut off. You’ve called it East Jerusalem. You can’t. Jews now can’t visit many of those sites. Or because right now, Israel’s controlled by everyone. Israel’s still kind of quasi-controlling the Temple mount because Palestinians are in charge, Israel’s very limited on when they can come or go at all. It’s completely under Palestinian control.	Biblical names don’t help much at all because I’m not getting into any religion issue right now. I’m talking about mainly political, I mean, people might make claim that the Jews owned that area a long time ago, you know, when the Hebrews were living in Israel in the past but I mean, those Jews, who knows if they were the Jews living there today. And even so, they’ve left their land years and years ago and have settled in other places, so does it make it theirs? Doesn’t seem like it does. While people had houses set up, I mean, that doesn’t really help me out that much.
The approximately 2,270-square-mile area is the centre of contending Arab and Israeli aspirations in Palestine.	Yeah, it’s probably one of the most contending piece of land in the world.	Well yeah, okay. Well if Israel and Palestine, at least the Palestinians, they want to build on it, I guess that’s what aspirations mean in this segment. They want to build on it, they want to use it for whatever land with regards to this is talking about the West Bank, which is what the text’s title is. Again, I can maybe use that as something to show how- why the Israelis would want to settle in the West Bank despite them not being.

Text 2. Text 2 was pro-Palestinian, arguing that Israeli settlement in the West Bank was illegal. The three passage in Text 2 (Table 34) described two negative aspects of Israeli settlements: Jewish extremism and Israeli settlers' violent attacks on Palestinians. The first and second passages described the crucial impact of extremist Jews on the Israeli community. As a result of possessing pro-Israel beliefs, Mason showed resistance to use the term, "extremist." Rather, he described them as "religious rabbis" because they followed biblical commandments: "I'm not really sure why they call it extremists because this is in the bible." On the other hand, Jackson interpreted the extremist Jews' leadership roles in the army as problematic because such biased leaders encouraged Israeli settlers to maintain the current conflict between Palestinian residents and Israeli settlers. By accepting these two passages, Jackson reinforced his prior pro-Palestine belief, "I'm sure this is up to read among the Jewish community and this can show why Israel's settling in the West Bank is not justified."

Israeli settlers' violent attacks on Palestinians were reported in the third passage. In terms of violent attack, the two participants had different thoughts. Mason resisted the arguments, citing counter-evidence that there was also Palestinian violence against Israelis. He said, "The Palestinians go and throw stones at [Israeli] cars... break windshields. These aren't little pebbles, these are massive stones." On the other hand, Jackson surprised at read this Israelis' violent acts against the Palestinians. He accepted this information without doubt, saying, "That's not fair, it's not right, it's not justice." The three passages showed a pro-Palestine perspective. As seen above, Mason resisted the contents Text 2 described, while Jackson accepted the content and reinforced his prior beliefs.

Table 34

Comparison of Verbal Reports between Mason (I3) and Jackson (P4) in Text 2 (Pro-Palestine Text)

Passages in Text 2	Mason (I3)	Jackson (P4)
These religious, or "ideological," settlers are relatively few — around 130,000 of the total half-a-million — but their actions have an outsized-impact.	Because they believe they should live in the land.	Okay, that makes why they're "few". What type of impact? Let's read on because I'm pretty sure they'll tell me.
For example, the number of extremist religious Jews joining the Israeli army, and assuming leadership positions there, is currently on the rise. A number of extremist Rabbis have begun warning Israeli troops against the consequences of evacuating Jewish settlers from their homes, saying that performing such an act would be in violation of the Ten Commandments revealed to Prophet Moses from Almighty God.	Once again, I don't believe in extremism; I don't believe they should call them "extremists"... They're saying that you can't, you're not allowed to, there's actually this thing in the bible where you're not supposed to give up land; and it actually says in the bible you shouldn't give up the land of Israel because it's your heritage. I don't call this extremism. I call this a religious rabbi. This is in the bible, are you going to deny the, if you don't, if you deny the bible, you can't be called religious, almost. But in some ways, maybe it's, in order to keep people safe, that's why they're called "extremists", because, I'm not really sure why they call it extremists because this is the bible.	So you got extremists coming in the army and taking leadership positions and convincing others below them that it is right, what they're doing, to not that settlements are right and they should not be taking out Jews from homeland. And I'm sure this is up to read among the Jewish community and this can show why Israel's settling in the West Bank is not justified. It's being led in part by the biased leaders who are, in this text, extremists, so I'll use that as another point.
Settlers often carry out violent attacks against Palestinians and their property with complete legal immunity, and often with more than implicit support from the military itself.	I've heard about this stuff; normally it's called now "price tag events" when for example, the Palestinians go and throw stones at cars which kill, they break windshields. These aren't little pebbles, these are massive stones, and they may do this price tag event. There's also cases where the Israeli government is dismantles a settlement, and they do this price tag event and deface a mask or something like that. That's not good- I do not accept- I do not believe that is right, that is definitely wrong.	Surprising, shocking. I've seen stuff like this before. Here it is written down. I don't know how the attacks on people and property can be legal under any circumstances. It doesn't make sense to me, living here and a free country, in United States of America and it doesn't make sense for me. Maybe it makes sense for somebody else living somewhere else without freedom, but that doesn't make sense for me so I can use that as- it's not justified to be settling in the West Bank and they can carry out violent attacks against Palestinians. I mean, the Palestinians. That's not fair, it's not right, it's not justice.

Text 3. Text 3 was written by a chair of a Jewish settlement community and represented the voice of Israeli settlers. Three passages in Text 3 (Table 35) argued that Israel deserved the West Bank territory due to historical validity, and that Israel defended the territory from annihilation in the Six-Day War against neighboring Arab countries in 1967. First, two passages argued for the historical validity of Israeli occupation of the West Bank. Mason accepted the information by showing his pro-Israel beliefs. He said, “Here we go, now we see that it’s more of a Jewish- Israeli article. Once again, this is what I believe also.” He reinforced the idea that Israel won two self-defense wars, 1948 and 1973 Yom Kippur War, in addition to the 1967 Six-Day War. He continued his agreement with this article because he had the same views as the religious Jewish author. On the other hand, Jackson resisted the author’s point in two ways. First, he searched information at Map 1, arguing that the land was not previously disputed, but instead was Palestinian land. Second, he criticized the author’s rhetoric in using the term *moral claim* because Israel seized Palestinian land.

The third passage included the author’s more aggressive perspective. The author claimed that a newly established Palestinian state in the West Bank would be a disaster. Mason did not clearly agree to the author’s argument but understood why the author’s point could be acceptable. He said, “You’ll have another Gaza and that’s where you have a terrorist organization in control constantly launching missiles.” On the other hand, Jackson criticized the author’s phrase “recipe for disaster.” He showed great resistance to the author’s argument because he believed that Israel oppressed Palestinians, who lived in terrible conditions. For Jackson, the author’s argument was nonsensical. The patterns

of readers' acceptance and resistance in Text 3 were opposite to the patterns in the previous text, Text 2.

Table 35

Comparison of Verbal Reports between Mason (I3) and Jackson (P4) in Text 3 (Pro-Israel Text)

Passages in Text 3	Mason (I3)	Jackson (P4)
<p>Whatever word you use to describe Israel's 1967 acquisition of Judea and Samaria (commonly referred to as the West Bank) will not change the historical facts. Arabs called for Israel's annihilation in 1967, and Israel legitimately seized the disputed territories of Judea and Samaria in self-defense.</p>	<p>Here we go, now we see that it's more of a Jewish- Israeli article. Once again, this is what I believe also. Not only 1967 but 1948, and 1973; this happened more than once but all the time.</p>	<p>I didn't read that the territories were disputed at all. I didn't read that they were disputed. I read that they were not in Israeli control. Judea and Samaria; so I read about that earlier. Those were the biblical names, let's go back to that and see where I can find that. Have to figure out what area that was. And I can look at the map; not that one, this one. (Looks at Map 1) I'm pretty sure that's in the West Bank. And they're saying that that is disputed but that was not for their taking in the first place, so not really disputed, okay.</p>
<p>Israel's moral claim to these territories, and the right of Israelis to call them home today, is therefore unassailable. Giving up this land would mean rewarding those who've historically sought to destroy Israel, a manifestly immoral outcome.</p>	<p>Once again I believe this is more how I feel as a religious Jew, who I feel has a connection with Israel. I believe this is how I feel.</p>	<p>How is it a moral claim because these territories were seized? That doesn't really make sense. Morals have to deal with feeling. I mean, I'm reading this text and I'm trying not to look at it in a bad way but I mean, I've already got something from the title; not much I can use here.</p>
<p>Of course, just because a policy is morally justified doesn't mean it's wise. However, our four-decade-long settlement endeavor is both. The insertion of an independent Palestinian state between Israel and Jordan would be a recipe for disaster.</p>	<p>Israel could, Palestinians could get an army while I'm really conflicted on the view of "should they have a state, should they not have a state". You have to look at both sides, I'm just, how will you defend your borders? That's one of the biggest things. You have the Palestinian state. You'll have another Gaza and that's where you have a terrorist organization in control constantly launching missiles. It's just very hard but the whole world wants this but it's very hard to understand how this will work. That's one of the biggest problems Israel's having when they're negotiating this.</p>	<p>I'm not going to argue with that; I'm not going to argue against that. I don't know what would happen so I mean, a "recipe for disaster" in what way, because if you fight back against them. So now people are trying to keep them down and prevent them from having a state but at the same time, people are living in terrible conditions so we're preventing them from having a state, I don't think that's the right thing to do. So it doesn't really make sense, what the author is saying.</p>

Text 4. From a pro-Palestine stance, Text 4 addressed the United Nations' report on Israeli settlement. The gist of the report was that Israeli settlement violated international law due to violation of Palestinians' human rights (Table 36).

The first passage addressed the report of the UN Human Rights Council. Mason resisted this excerpt because UN is "extremely biased" against Israel. He illustrated that the number of UN resolutions against Israel (i.e., 65) was higher than those addressing other problematic countries. Contrarily, Jackson considered several points from the passages by paraphrasing the sentences. He showed no acceptance or resistance at this point.

The second and third passages were supporting details and interpretations of the UN report. The second passage included a Pakistani lawyer's (a UN panel member) opinion about illegality of Israeli settlement. Mason resisted the lawyer's opinion on two points. First, he asserted that the Pakistani lawyer was not eligible to evaluate illegality due to the situation of human rights in Pakistan. Second, he pointed out unclear concepts of "international humanitarian law." Jackson detected his comprehension difficulties because many legal terms and reports appeared in the text.

The last passage was a Palestinian Liberation Organization (PLO) executive member's opinion that Israeli settlement was a war crime. Again, Mason resisted this opinion by doubting how this argument reached a valid conclusion. On the other hand, Jackson accepted this information and counted additional points to support his belief that Israeli settlement was illegal. Overall, the two participants' patterns of strategic processing in Text 4 were similar to Text 2 (pro-Palestine text).

Table 36

Comparison of Verbal Reports between Mason (I3) and Jackson (P4) in Text 4 (Pro-Palestine Text)

Passages in Text 4	Mason (I3)	Jackson (P4)
The report's conclusions are not legally binding, but they further inflame tensions between the U.N. Human Rights Council and Israel, and between Israel and the Palestinians. Israeli officials immediately denounced the report, while Palestinians pointed to it as "proof of Israel's policy of ethnic cleansing" and its desire to undermine the possibility of a Palestinian state.	Once again, the UN is extremely biased as you can- as 65 against Israel and only a few against others. So it's hard to listen to this logic.	Okay, so UN has prevented Israel from continuing to have these settlements going on. Not legally binding, but bring up tensions. Alright. I see that "denounced the report, while Palestinians pointed to it as "proof of Israel's policy of ethnic cleansing".
The report also references legal opinions, other reports and a number of articles in the Israeli press. Another panel member, Pakistani lawyer Asma Jahangir, said the settlements "seriously impinge on the self-determination of the Palestinian people," an offense under international humanitarian law.	But once again, I believe there is human rights violations in Pakistan, I mean, why? Hold on to your country. Look into your own country, why look at this? And once again, I feel like it's debatable saying, the Palestinian people never had a country, per say? So they want one? I mean, I believe they should have. I still believe that in some way maybe they should have one but I don't understand, this is very unclear, this "international humanitarian law" being violated.	So this is from a report. So they're going against international law because they are harming people. Probably the PLO...I need to read that again. So this is a lot of law stuff, so I don't really understand much.
[The Palestine Liberation Organization executive member said,] "All the Israeli settlement activities are illegal and considered to be war crimes according to the International Criminal Court's Rome Statute as well as the Fourth Geneva Convention."	So they're going to call these people "war crimes"? This is a little confusing how they can come to that conclusion.	So not only is it illegal. It can be war crimes that can be used as a point.

Text 5. Using the Levy report published in Israel, Text 5 dealt with debates on international law. The author of Text 5 was a law professor with a pro-Israel stance. One of the main arguments of Text 5 was that international law did not apply to the Israelis' occupation of the West Bank (Table 37).

The first passage showed the Levy report's reasons for the legality of Israeli settlement. International law (i.e., the Fourth Geneva Convention) stated that belligerent occupation of a foreign country's land was illegal. Israel's occupation of the West Bank did not apply to this situation because no foreign country had sovereignty over the West Bank when Israel occupied the land. Mason accepted this information and showed a very agreeable feeling about it, saying, "Palestinians never, ever, in 2000 years had the sovereign government meaning, they were never in charge of the land ever, so now this is very new." Jackson, on the other hand, reserved his opinion about this information.

Another reason for the legality of Israeli settlement appeared in the second passage. There was a Jordanian-Israel peace treaty in 1994 stating that there was no belligerent occupation. Mason did not comment on this specific except. However, Jackson avoided engaging in a legal debate, instead providing a moral argument against Israeli settlement. For Jackson, Israeli settlement was illegal, not because it violated international law, but because there were oppressed Palestinians in terrible living conditions. Finally, the third passage described that the Israeli government's transportation of people to the West Bank was legal. Again, Mason agreed and criticized the UN's double standard regarding Israel, whereas Jackson resisted this idea. In Text 5, the two participants' patterns of strategy use were similar to Text 3 (a pro-Israel text), which showed that the two participants understood texts based on their topic beliefs.

Table 37

Comparison of Verbal Reports between Mason (I3) and Jackson (P4) in Text 5 (Pro-Israel Text)

Passages in Text 5	Mason (I3)	Jackson (P4)
While recent years have seen some debate on the meaning of foreign territory, considerable state practice supports the traditional view that captured territory is “foreign” only when another state has sovereignty.	Meaning the Palestinians don’t have sovereignty yet, they can’t be occupied, it can’t be foreign if there’s nothing sovereign. The Palestinians never, ever, in 2000 years had the sovereign government meaning who, they were never in charge of the land ever, so now this is very new. Only when Israelis and Jews have taken and are in charge of the land, they want the land. Before, they never asked for it, they never asked for a sovereign government.	Because of that, that’s where all the issues are coming from. There’s some sort of issue with the law and...
As Dinstein wrote, the rules of belligerent occupation cannot be applied to Israel’s presence in the West Bank “in light of the combined effect of ... the Jordanian-Israeli Treaty of Peace of 1994 and the series of agreements with the Palestinians. There is simply no room for belligerent occupation in the absence of belligerence, namely, war.”	(no comment)	Alright, so they’re saying that because of the war, they own the land and it’s not foreign territory and so that’s why they’re legally allowed to do it so. And I can see where they’re making that point on terms of their falling which specifics to the law being written, so that’s going to cause some issues. Legally, I want to make my point about it not being justified but not, again, morally or anything. I mean, there’s still violence going around in that area and there’s still terrible living conditions of Palestinians. So is it right? No, it’s not right still; doesn’t make it right.
There is no precedent for any other state being adjudged to have violated the Fourth Geneva Convention simply on the basis of permitting or facilitating private preferences in the way Israel has done.	Which is why, again, the UN has been accused of double standards, extreme bias. Israel is some sort of unique country. Tiny, tiny, tiny country that kind of had a double standard.	So they’re saying, they’re trying to take away the blame away from the government of Israel and put it towards the people who are just going there by themselves. Doesn’t make it right.

Overall, Case 3 also showed that participants stood texts based on their beliefs. Both Mason and Jackson accepted belief-consistent texts and resisted to belief-inconsistent texts. The Case 3 also confirmed that the participants used strategy in a biased way.

Case Analyses of Individual Participants in Relation to Beliefs

The previous analyses focused on different strategic patterns across the three groups, based on acceptance (A) and resistance (R). Based on this analyses, different patterns of acceptance and resistance are clear. In addition, the use of acceptance and resistance depended on participant's belief orientations (e.g., pro-Israel beliefs vs. pro-Palestine beliefs). While the previous analyses described the overall differences across the groups, including reader bias, they were not sufficient to describe the roles of beliefs in relation to comprehension processes in detail. One approach to reflect participants reading process in depth was a case study approach in which small samples of participants' think-aloud protocols were intensively analyzed and compared (Coiro & Dobler, 2007; Hartman, 1995; Goldman et al., 2012).

In this analysis, I chose one participant per each group in order to compare similarities and differences in comprehension patterns in relation to reader belief: (a) a belief-centered reader (strong belief), (b) a belief-associate reader (less strong belief), and (c) a neutral reader. The determination of the belief-centered and belief-associate reader was based on the ratio of AR to the total five think-aloud codes: I put 40 percent as a criterion. For instance, if AR was more than 40% of the total think-aloud reports, I put a participant as a belief-centered reader. Below 40% of AR ratio was put as a belief-associate reader. Finally, a neutral reader was selected from the neutral group. Accordingly, Jayden (P1) was selected as a strong belief reader, Isabella (I5) as a belief-associated reader, and Emily (N2) as a neutral belief reader. It needed to note that the three participants were intentionally selected in order to represent diverse readers' beliefs from the three groups. For example, Jayden, a pro-Palestine participant, was a

representative case for a strong belief reader (belief-centered reader). However, it did not mean that all pro-Israel participants were strong belief readers. In a similar vein, there were also strong belief readers in the pro-Israel group.

This section consists of two sections. First, I provide a comparison for the three participants' comprehension process as an overview. Next, each of the three participants' comprehension patterns is analyzed respectively.

An overview of the three participants' reading. One way to compare the participants' reading of multiple texts was to represent participants' strategic verbal comments in relation to reading timeline. For example, Cho (2011) represented participants' strategy use patterns in relation to timeline (20 minutes). In a similar vein, this study represented the three participants' strategic processing patterns as time flowed. However, I represented participants' verbalization according to the think-aloud prompt marks rather than timelines, in order to compare participants' processing at specific points.

Three patterns were identified from the timeline maps (Figure 33). First, there was a difference between Jayden (belief-centered reader) and Emily (neutral reader) in terms of strategy use. While Jayden reported high rates of acceptances and resistances, Emily (neutral reader) usually focused on considering text contents. Isabella (belief-associate) was placed between Jayden and Emily. Next, Jayden and Isabella were sensitive to the texts with stances, either pro-Israel or pro-Palestine texts. In other words, Jayden and Isabella showed consistent patterns toward pro-Israel texts (Text 1 and Text 3) and pro-Palestine texts (Text 2 and Text 4). However, Emily did not show such consistent responses according to text stances. Finally, as revealed in the previous analyses,

Jayden’s (pro-Israel reader) use of acceptance and resistance was opposite to Isabella (pro-Israel reader).

	Belief-centered reader (Jayden, P1)						Belief-associated reader (Isabella, I5)						Neutral-belief reader (Emily, N2)						
	C	A	R	M	E	IS	C	A	R	M	E	IS	C	A	R	M	E	IS	
M1					E							IS						IS	
M2					E							IS						IS	
Text 1	[1]				E												E		
	[2]																		
	[3]		A																
	[4]																		
	[5]				M														
	[6]					E						IS							
	[7]					E						E							
	[8]					E													
	[9]			R							M		IS						
	[10]					E						IS							
	[11]										M								
	[12]	C					IS												
	[13]	C																	
	[14]		A													A			
	[15]																		
	[16]																		
	[17]											IS							
	[18]			R						A									
	[19]																		
	[20]																		
	[21]																M		
	[22]																		
	[23]					E													
	[24]																		
Text 2	[1]				E												E		
	[2]																E		
	[3]		A														E		
	[4]																E		
	[5]																E		
	[6]																		
	[7]		A																
	[8]		A																
	[9]		A																
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	[23]					E													
	[24]																		
Text 3	[1]					E						E						E	
	[2]																	E	
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	[4]																		
	[5]			R															
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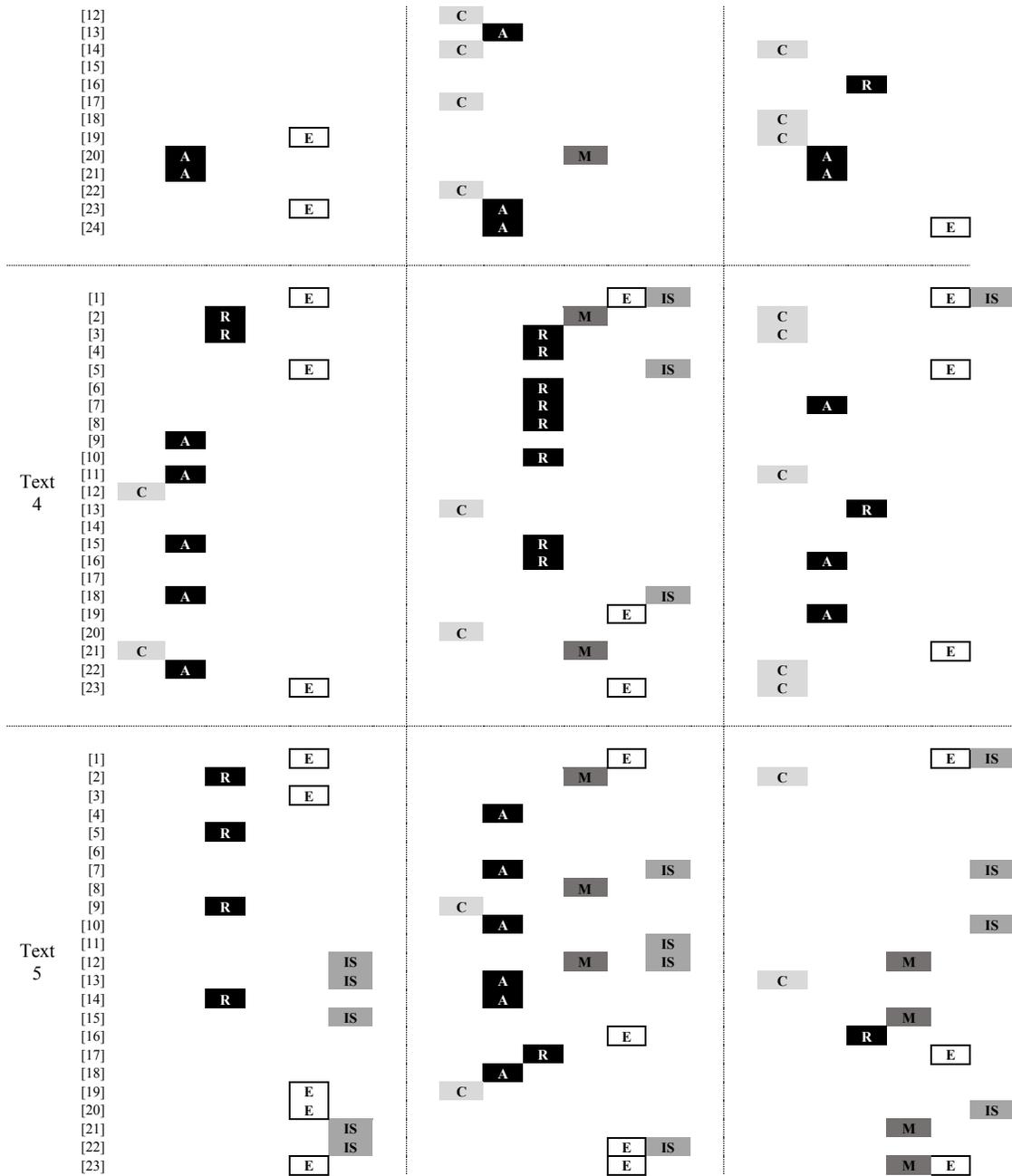
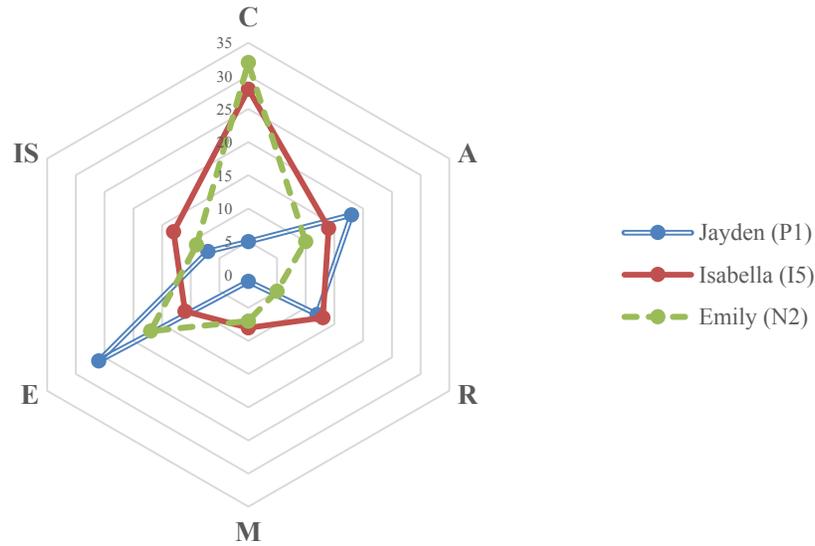


Figure 33. The three readers’ verbal reporting timeline according to think-aloud prompt marks

Note. (a) The five codes (C, A, R, M, E, IS) represent participants’ verbalization codes (C: Considering text content, A: Acceptance, R: Resistance, M: Monitoring, E: Evaluation, IS: Information need and search). (b) The number between square brackets in the second column designates an ordinal number that tells a position of a verbal prompt mark in a text (e.g., “Text 5 [2]” indicates the second think-aloud prompts in Text 5).

The different patterns across the three readers became clear when comparing sums of each verbalization code. As a radar chart, Figure 34 describes three participants' sums of each verbalization code based on their think-aloud protocols.



	Jayden (P1)		Isabella (I5)		Emily (N2)	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
C	5	8.06%	28	37.84%	32	45.07%
AR	30	48.39%	27	36.49%	15	21.13%
A	18	29.03%	14	18.92%	10	14.08%
R	12	19.35%	13	17.57%	5	7.04%
M	1	1.61%	8	10.81%	7	9.86%
E	26	41.94%	11	14.86%	17	23.94%
IS	7	11.29%	13	17.57%	9	12.68%
Total	62	100.00%	74	100.00%	71	100.00%

Figure 34. A radar chart and table for the three readers' verbalization in multiple text comprehension

Figure 34 shows sums of the frequency (percentage) of verbal codes from each participant. The radar chart in Figure 34 clearly distinguishes Jayden and Emily, while Isabella's think-aloud places between the two readers. As a belief-centered reader, Jayden (P1, a pro-Palestine participant) who showed high acceptance and resistance (AR), as

well as evaluation (E). Isabella (I5, a pro-Israel participant) was a belief-associate reader who revealed also high AR as Jayden. However, she did also high considering text content (C) but showed fewer evaluations (E) than Jayden. Finally, Emily's (N2, a neutral participant) pattern was similar to Isabella. She showed high considering text contents (C) during comprehension. However, unlike Jayden and Isabella, she showed less frequent acceptance and resistance (AR) compared to Jayden and Isabella. Based on the overall observations above, I describe each participant's strategic pattern in the next section.

Jayden's reading. Jayden was a belief-centered reader. He was a frequent evaluator of text contents based on his prior knowledge and beliefs (42%). In addition, he tended to accept text contents that was consistent with his beliefs (29%) and resisted to the belief-inconsistent contents (19%). The tendency of high evaluation and AR (acceptance and resistance) was revealed in the entire of texts and maps.

When reading two maps and Text 1 which were provided as general background information about the conflicts, Jayden evaluated the quality and fairness of the text materials. The frequent evaluations of these neutral text materials appeared in the belief-centered readers like Jayden, which did not appear from other readers such as Isabella and Emily. When reading Map 1, he determined that the Map 1 was biased, "I find this [Map 1] slightly biased in that it starts with the UN partition plan. [T]his map really does not give a voice to any Palestinians who were there." On the other hand, he favored the Map 2, "Now this is a much better map because this kind of paints a full story." The evaluation of the neutral text materials was possible due to both his high knowledge and strong beliefs. For example, he revealed high knowledge about the West Bank area and

related historical events that did not appear in the given maps. He reminded of historical agreements (e.g., Oslo Accords), institutions (e.g., Fatah), and zones (i.e., Zone A, Zone B, and Zone C) in the West Banks from Map 2 by only his prior knowledge:

In 1996, the U.S. had facilitated the Oslo Accords and it was an agreement that basically screwed over the Palestinians by empowering Fatah and the West Bank to break up the West Bank into three zones which are the Zone A, Zone B, and Zone C, Zone A with the smallest, within the central part of West Bank, where most of the West Bank population is but it's the smallest geographical area, Zone B is supposed to be mixed use, Zone C is for, is by far the largest area; like 75 percent of the West Bank area. It's under full Israeli control and essentially Zone C encloses Zone B, Zone B encloses on A, and it leaves the Palestinians in an apartheid, in an outdoor prison. I kind of wish the map showed that, but I think it kind of still shows the illegal settlements and I'm satisfied with it.

As shown in the previous analyses, Jayden (pro-Palestine group) exhibited different strategic patterns between pro-Israeli texts (Text 2 and Text 4) and pro-Palestinian texts (Text 3 and Text 5). When reading pro-Palestine texts, he tended to show positive evaluations of authors and was likely to accept the contents from the sources. For example, Jayden evaluated the author of the Text 2 in a positive way (“So I think the author here is well intended.”). One of his evaluations was, “It’s a pretty good article. I like how it talks about the extremism among the Jewish settlers.” The high acceptance rate for text contents and positive evaluation were due to the stance that Text 2 provided. Jayden frequently mentioned that Palestinians were oppressed from Israelis, and their voices were silenced. Jayden interpreted that Text 2 played a role to reveal the oppressed Palestinian voices:

So generally I like this article [Text 2]. It gives a voice to the oppressed, and it writes the article from the perspective of those who are suffering opposed to this one, which is a general, an Encyclopedia Britannica [Text 1], a general overview. For example, you know, middle class intellectuals in the West and the United

States, you do want to have an intellectual, middle class, imperialistic view of the world.

When he read Text 4, similar reading patterns were observed. He also showed a high rate of acceptance and positive evaluation. Where Text 4 reported illegality of the Israeli settlement activities under the international law, Jayden responded, “Yup, I totally [agree]. Here it says the ‘All the Israeli settlements... war crimes, according to the Fourth Geneva Convention.’ They are indications of slow ethnic cleansing. I agree with that.” Even both texts took pro-Palestinian texts, Jayden favored Text 2 to Text 4. “If you notice that the illegal Israeli settlement article [Text 2] and that United Nations article [UN Reports cited in Text 4] both portray, or both portray or talk about the existence of Palestinians within the West Bank under Israeli state occupation, while this one [Text 4] really doesn’t provide a voice about that at all.” Overall, Jayden favored belief-consistent texts with high rates of acceptance and positive evaluation.

Jayden’s reading approach to pro-Palestinian texts was opposite to the pro-Israeli texts (Text 3 and Text 5). He showed consistent resistances to text contents from pro-Israel texts, in accordance with his rationale and beliefs. In fact, the elaborated resistance to text contents was one of frequently observed verbalizations that belief-centered readers showed in common. In Text 3, Jayden resisted the author’s idea that Israeli settlement was legitimate as Israelis’ self-defense:

I’m already turned off. He refers to the West Bank as Judea and Samaria, which is a form of cultural appropriation. It’s the same thing what European colonists did to the North America. They take over the land, they give it new names, and they kind of erase the history that it has. Referring to as “Judea and Samaria” which are fictional biblical names and erased from history the name that has existed there for hundreds of years by the native population, same as acting as what the Europeans did. It also refers to Palestinians as Arabs, which is what all the Israeli right wing likes to do with it. The Jewish Israeli right wing will group all Arabs

together as if they're not. Palestinian society is already politically diverse and it has a lot of cultural and political deviations between the other thirty Arab countries with Middle East and Africa. Yet, this author thinks they're one cohesive unit of people that's like-minded and it's inherently what's fascist and racist. So I mean, I'm not going to enjoy reading this article.

In this verbalization, Jayden resist two ideas in Text 2. First, Israeli historical validity, represented as Judea and Samaria, was unsubstantiated in the land of Palestine (e.g., fictional biblical names). The other idea was Israeli perspectives about Arab countries: he regarded them as limited and misunderstood. In this way, Jayden continually resisted arguments and information that appeared in the pro-Israeli texts.

Table 38

Jayden's R-E-R Pattern in a Belief-inconsistent Text

Verbal report	Target sentences	#
<p>"Israel's moral claim to these territories, and the right of Israelis to call them home today, is therefore unassailable." Why, because it was self-defense? Colonizing a land and then having a native rebellion accusation [inaudible] does not make it self-defense. And there's no "moral claim" to Israel. Its right wing; it's the same as North America; it's the same as manifest destiny.</p>	<p>Israel's moral claim to these territories, and the right of Israelis to call them home today, is therefore unassailable. Giving up this land would mean rewarding those who've historically sought to destroy Israel, a manifestly immoral outcome.</p>	R
<p>So this guy is a full right-wing fascist and he doesn't even want to Palestinians any kind of dignity.</p>	<p>Of course, just because a policy is morally justified doesn't mean it's wise. However, our four-decade-long settlement endeavor is both. The insertion of an independent Palestinian state between Israel and Jordan would be a recipe for disaster.</p>	E
<p>So this guy is assuming that all Palestinian refugees are extremists, inherently racist. He's worried about a population dynamic that only truly, the right-wing worry about. They worry about being outnumbered by Palestinians because if a democracy exists and the Palestinians are on the merge, the Jews, then democratically, the Jewish dominance would fall apart. And they want to suppress the right of Palestinians and maintain the majority in order to remain dominance which is inherently supremacist and racist.</p>	<p>The influx of hundreds of thousands of Palestinian refugees from Syria, Lebanon, Jordan and elsewhere would convert the new state into a hotbed of extremism. And any peace agreement would collapse the moment Hamas inevitably took power by ballot or by gun.</p>	R

Note. R and E denote think-aloud codes: R (resistance) and E (evaluation)

One interesting observed pattern was R-E-R pattern (resistance-evaluation-resistance). He showed high resistance of text contents (R), evaluated text contents or authors in a negative way (R), and resisted again the further text contents (R). The R-E-R pattern was observed frequently in Jayden. This example above illustrated how Jayden resisted the text contents and evaluated the author in a critical stance, which in turn influenced later interpretation of text contents (Table 38).

Isabella's reading. In general, belief-centered readers' (e.g., Jayden) reading patterns were distinguished from neutral readers (e.g., Emily). While belief-centered readers frequently accepted and resisted text contents (AR), neutral readers focused on identifying and considering text contents (C). As a belief-associate reader, Isabella's reading patterns seemed to stand between Jayden (a belief-centered reader) and Emily (a neutral reader). In other words, her reading showed a high frequency of acceptance and resistance (AR: 36%), as well as a high rate of considering text content (C: 38%). On the other hand, the frequencies of evaluation (E: 11%) and information need and search (IS: 13%) were relatively low. In addition, with pro-Israel beliefs, Isabella's (I5, pro-Israel participant) acceptance and resistance patterns were opposite to Jayden (pro-Palestine participant). When Jayden showed frequent acceptances in the pro-Palestine texts (Text 2 and Text 4), Isabella resisted to contents in these texts. In the pro-Israel texts, the acceptance and resistance patterns were reversed. However, Isabella's the frequency and strengths of acceptance and resistance (36%) seemed less intensive than Jayden (48%).

When reading background information (Map 1, Map 2, and Text 1), Isabella tried to understand what the texts (maps) said. She paraphrased text, linking the contents to her prior knowledge and experience. More often than not, she realized that the issue was

more complex and contested issues than she previously thought (“I wonder why the West Bank is such a focus. It seems like more contested issue.”). She also expressed learning pleasure that she learned from reading, “I’m amused because I have learned about this area and I’ve never heard of a King Hussein before.” While many verbalizations were based on considering text contents (37%), Isabella sometimes showed pro-Israel beliefs (“What I said previously, is made a point here, the PLO refused to negotiate with Israel. I feel like they’re always someone pulling out the negotiations.”).

When reading pro-Palestine texts (Text 2 and Text 4), Isabella sometimes resisted text contents and critically evaluated the authors. It was similar to Jayden’s case in that Isabella showed resistance to belief-inconsistent texts. For example, she resisted arguments in Text 2 that U.N. announced a report the Israeli settlement was illegal (“I never knew that the settlements were an illegal. I didn’t realize that they were actually an illegal. And United Nations see it as an illegal, why is it still happening?”). She also questioned the fairness of the U.N. report because the report was based on an interview with small samples (“Wow, so it's saying that they weren’t authorized to investigate in Israel, so they went to Jordan to talk to 50 people. That is not a study. That is not a fair study, who spoke with the impact of the settlement.”). In another example, in Text 4, the author cited that Pakistani lawyer’s opinion that the settlements “seriously impinge on the self-determination of the Palestinian people” under international humanitarian law. Isabella resisted to the argument by doubting the trustworthiness and authority of the lawyer:

I don’t know why I give very little value. It's telling me a random pack a standing lawyer says “The settlements impinge on the self-determination.” Who is she? At least with a judge or Prime Foreign Ministry or Secretary of General, I give them

a little bit of value what they say. But a random pack of... I don't care with you are going to have to say. Of course, you are going to say is a problem.

However, Isabella's resistance and evaluation was relatively low compared to Jayden, (belief-centered reader). She sometimes agreed partially with the pro-Palestinian perspectives. To illustrate, she recognized that extreme religious Jews could be sources of conflicts.

I think it's interesting that they [extremist religious Jews] are saying that removing [Israeli] people from their home to be a [Ten Commandments] violation. Of course, I bring it back to a religion, because the people that are living there, and who are dealing this, like I said earlier extreme religious people. And anyone extreme in my line equals conflict in violence and any end of extreme.

When reading belief-consistent texts (Text 3 and Text 5), Isabella often accepted text contents while evaluating texts in a positive way. For example, she accepted the pro-Israeli argument that Israeli settlement was a solution to conflict, rather than a problem ("And obviously this is great way to end it, 'the settlements are not the problem, they are part of the solution.'"). At some points, she deeply agreed with the author in Text 3 ("Yeah. The checkbook policy has failed now [as it] will in the future. Wow, it just says exactly what I was saying, 'In the areas targeted for evacuation most of us are ideologically motivated and do not live here for economic reasons.'"). The positive evaluation also occurred in Text 5. After she identified the titles and authors in Text 5, she showed positive attitudes because the text revealed pro-Israeli beliefs ("Now here is the title much more up in the air. 'Reinvigorating the Discussion of Israel's Rights in the West Bank.' For once, it's not saying illegal Israelis' settlements, saying Israelis' right. I really like this. And entire of the author is probably Jewish. This was from 2012.").

However, unlike Jayden, Isabella sometimes raised doubts authors' arguments and evidence, even when reading belief-consistent texts. For example, she showed resistance to the idea that Israel did not explicitly order settlements:

And when it says, "there was never an ordered decision by the state of Israel on settlements", to me that was not a good thing, this is an Israeli government shelving themselves about the topic that they don't want to discuss that's not the necessary the best way to go about it, it seems like they are scheming.

Isabella's *critical stance for belief-consistent texts* were rarely found in the belief-centered reader. Jayden (belief-centered reader), for example, did not mention about weakness points from belief-consistent texts. Isabella, on the other hand, raised questions even for belief-consistent texts when she identified some missing or weak points. Such difference was one distinct point between belief-centered reader (Jayden) and belief-associate reader (Isabella).

Besides acceptance and resistance, Isabella tried to consider the text's meaning by paraphrasing, inferencing, and conducting information search. Compared with Jayden (8%), Isabella showed four times of considering text contents (38%). She often tried to link the contents of text with her prior knowledge, "I remember reading an article now that was about when the settlers are taken from their homes and how it really is problematic." At other points, she mentioned, "And I don't like the two-state solution. I remember reading an article about Obama on the past year that was saying that he was possibly supporting the two-state solution, which made me upset." In addition, she sometimes detected her comprehension difficulties and tried to fix (M: 11%), which was rarely found in Jayden (M: 2%).

Emily's reading. Emily's reading was different from the previously mentioned two participants, Jayden and Isabella. Overall, Emily showed low acceptance and

resistance (21%), compared to the two participants. The rate of resistance was especially low (7%). On the other hand, her considering of text content was highest (C: 45%): Emily rarely resisted text contents but tried to understand what texts said. In addition, Emily was a high evaluator when she read texts (E: 24%). By reading title, author, and date information, she sourced about text and predicted text contents. Although Jayden was also a high evaluator (E: 42%), Emily was different from Jayden because Jayden's evaluation was primarily for bias prediction and detection about the source.

Emily's did not show different reading approaches between pro-Israel texts (Text 3 and Text 5) and pro-Palestine texts (Text 2 and Text 4). Therefore, I describe Emily's reading patterns regardless of the text stances. Rather, her reading patterns were summarized for the following three points. First, Emily usually used paraphrase, inference, and self-explanation in order to consider text contents. The percentage of the considering text content was 45% of all her verbal reports (cf., Jayden 8%, Isabella 38%). Emily often tried to explain herself what the text meant. For example, she reminded of Native Americans when she read descriptions about inequality of water consumption between Palestinians and Israelis:

This is exactly what we talked about and how it compared, um, kind of giving land just based on like settlements and stuff. Settlements in like these kinds of safer lands and um, stuff like that just it says prime agricultural land confiscated from Palestinians like we compared that to, um, taking land from the Native Americans and like putting them on little reservations and stuff and how that was kind of comparable to this. So reading it now it's all making sense again in how that's like a really big issue because it's taking away so much and you have to be able to travel. First of all, like, around the space you were given and then it's dangerous to travel outside of your space to go get resources. So yeah, it's like a big problem.

Second, Emily was a good evaluator. She evaluated each source by looking titles, authors, publication source, and dates (Table 39). To decide importance and trustworthy source, she considered two criteria. One was recency of source, and the other was (balanced) stance of text. Emily tried to compare sources by considering which source was published recently (“So that one [Text 2] would not be as recent as this one [Text 3] that is from July 2010.”). In addition, she also often examined whether reading sources was balanced. For example, when she read Text 4, she mentioned:

Okay, just to kind of get an idea of where this is coming from because I don’t want it to be reading something that’s like from the super this side or that side point of view that like come from some random student group. So it’s just like a basic political site.

During reading, Emily was sensitive to stance of text. For example, when Emily read that Israeli settlement in the West Bank was described as illegal colonies, she reminded that the text description was *framed* (“Oh, already sounding like it’s kind of framing it to be against Israelis [be]cause it’s saying like illegal colonies.”). Unlike Jayden and Isabella, Emily was likely to seek for balanced reading about the conflicts. Emily evaluated texts frequently in order to see balanced information, which was different from Jayden, who evaluated text contents by his beliefs.

Finally, when comparing Emily’s verbal reports with those of Jayden and Isabella, relatively low rates of acceptance and resistance were observed in Emily’s verbal reports. She sometimes showed her agreements in both pro-Israeli and pro-Palestinian texts. However, it was rare for Emily to strongly disagree about the contents with the authors. As previously shown, this pattern was markedly differed from pro-Israel and pro-Palestine readers.

Table 39

Emily's Verbal Reports on Source Evaluation

Text	Emily's Verbal Reports on Sourcing (Evaluation)
Text 1	And this is from <i>Britannica online</i> in 2010. It's a little old .
Text 2	So from the <i>CEPR website</i> , okay, <i>Council for European Palestinian Relations</i> . Okay so I guess this is okay, just from like the source that it's coming from; if it's the European Palestinian relationships, it sounds, or relations, it sounds a little bit like it's going to be sided on the Palestinians . So if it's <i>illegal Israeli settlement</i> , not so certain if it's going to be entirely one sided , um, okay.
Text 3	Okay so this is <i>an opinion page</i> very important from the <i>New York Times</i> and the author is the <i>chairman of the Yesah Jewish communities in the West Bank</i> . Where was Text 2 from? Um, date unknown okay, so that makes things a little tricky since Text 2 is, the date is unknown. It's hard to compare [Text 2 with Text 3] when this was happening, but a lot of this stuff I guess, the person that they reference is from the early 2000s. So that one would not be as recent as this one is from <i>July 2010</i> .
Text 4	<i>United Nations Report Says Israel's Settlements Violates Palestinians' Human Rights</i> . Okay. And this is from <i>the Blaze</i> . Okay. Oh this is very recent , 2013. I'm gonna look up the Blaze quickly and see. [Google preview page] (She read) 'The Blaze is a news, information and opinion site brought to you by a dedicated team ...' okay. Let see. I'm gonna try, the Wiki to just get directly about their page. [Wikipedia page: 'The Blaze'] So own by, say, [read] 'a libertarian conservative news, information, and entertainment television network (and affiliated properties) founded by talk radio personality Glenn Beck.' Okay. Glenn Beck. 'The majority of its programming is broadcast from its headquarters in Dallas, Texas at the historic studios located in Las Colinas. The network is available primarily. Okay. So, if it's available through internet streaming, then I feel like it's going to be kind of reaching out to a lot of people . So they're going to try to keep things pretty balanced . Okay it just seems like, okay a lot of political stuff it's not like, oh and sketch comedy. Okay, just to kind of get an idea of where this is coming from because I don't want it to be reading something that's like from the super this side or that side point of view that like come from some random student group. So it's just like a basic political site.
Text 5	<i>The Begin-Sadat (BESA) center for strategic studies</i> . And this is just a year, I guess, six month earlier than Text 4. So July, 2012. And it's saying ' <i>The Levy Report: Reinvigorating the Discussion of Israel's Rights</i> ' So [it's] saying more for Israel .

Note. Italics are titles, authors, sources, and dates that appeared in the target text. **Bolds** are added to reveal Emily's evaluation of the sources.

Participants' Reflection: Influence of Topic Belief on Comprehension

In the post-reading phase, participants were asked to reflect on their reading. I asked participants to reflect whether their belief about the Palestine-Israel conflict influenced their comprehension.

Participants' self-reflections on the influence of topic belief were reported in Appendix M. Based on the transcribed reports, it was clear that both pro-Israel and pro-Palestine participants recognized the influence of belief. Three roles of topic belief in comprehension were reported: interpretation framework, protecting filter of preexisting belief against anti-belief sources, and evaluation as a tool of source reliability.

First, topic belief operated as an interpretive framework. For example, Jacob (I1) mentioned, "Prior attitudes and beliefs definitely helped my comprehension of the topic." Jackson (P4) also showed that although he was not too biased, he usually read multiple texts with a Palestinian viewpoint; he elaborated, "When I read the texts, I'm thinking more for the Palestinian people and how they have suffered and things like that but I'm trying my best as an American not to be biased." The role of beliefs as interpretive framework was also revealed in Jayden's (P1) interview. Jayden believed in differences between commercial and public media, which framed his interpretations and evaluations of texts:

A lot of the information is intentionally trying to mislead you for some type of greater cause that's funded by a lot of money. For instance there's "A-pack" which is the American's Political Action Committee which is super right-wing, powerful pack that has funded the lobbyist committee to go to war against Iraq and done some terrible things and it really has this far right-wing agenda and their talking points are repeated and repeated in a lot of form of media. So, I think when I read the texts, I've fallen out the right-wing political structure... When I search information on the Internet, there's a lot of sources that are funded by corporations like ABC, CBS, CNN, FOX or whatever. They're funded by

commercials and by corporations, so their interest really isn't journalism as much as just making money—it's surviving. You have [also] other forms of journalism, which are funded through public donations, publicly funded or donations from individuals, as opposed to corporations. They must be trustworthy and they give voice to Palestinians and voice to the oppressed. They're much more trustworthy source of information and I like those things a lot.

Second, participants tried to keep their topic beliefs, which in turn influenced their comprehension process. For example, Olivia (P3) reported that she checked new information during reading to determine if it fit with her prior belief: "I just kept myself in check with it just because it's something that I believed in." In another case, William (I4) was careful to read when texts did not match his beliefs. He reported, "I definitely think I'm biased about my prior attitudes. So when I was reading the text I was definitely critical of the anti-settlement texts." Isabella (I5) also showed that she *reinterpreted* information according to her belief:

I already knew how I felt about the issue, so when I was reading, I was just looking for the support to find the support that would back-up my own argument and I intended to do that in research a lot of people do. So when I re-texted [reinterpreted] like the most interesting parts either going to be a one that's a completely supporting my argument or completely poking a direct hole on my argument.

Finally, topic belief influenced evaluation of source information. For example, Abigail (P2) revealed, "When I evaluated the texts definitely, yeah because I already had an idea in my head and um, when I was reading I was kind of looking to satisfy that attitude and belief." In addition, William (I4) noted, "When I evaluated the texts, same thing. I was obviously scrutinizing the pro-Palestinian texts more closely, though I did try to throw some scrutiny on the Israeli texts." One interesting point was revealed in Olivia

(P3)'s report. She reported that her evaluation approach to science texts was different from evaluation approach to political texts:

If I were to read something that's in science, I would probably evaluate it the way that I would evaluate it something that someone tells me, in one person. So like, "Okay, so, this is something to take into consideration"... They're different, it's very different on how, because science is something that you're like, "Okay, this is someone's research and you know it's very well did and can be changed or not". But then when you have politics, you have a certain set that you know, this is what you believe in. And most of the time what you believe in, it doesn't change necessarily. But with science it's like, "Oh, this is someone's opinion", you know that. But when you see politics, it's something that you believe as firmly right or wrong.

In sum, participants recognized that their beliefs influenced comprehension as an interpretive framework, filtering tool for preexisting belief, and evaluation aid. The three roles were related to each other. Topic belief provided a framework of comprehension, and helped readers determine important information, and evaluate texts for trustworthiness.

Summary

This section described whether there were differences across groups in terms of strategic processing. In the five encoded think-aloud processing codes (i.e., C, AR, M, E, S), only the frequency of Acceptance and Resistance (AR) was significant enough to distinguish group differences. Further analysis showed that participants used different Acceptance and Resistance, which in turn resulted in belief changes and biases. Further analysis was conducted on how participants used the AR. As expected, participants showed more acceptance in belief-consistent text and more resistance in belief-inconsistent texts.

Three case analyses were conducted to examine how participants used Acceptance and Resistance. The case analyses also confirmed that participants used AR differently based on their belief. Participants kept their belief using counter-evidence and strengthened their belief during reading belief-consistent texts. In addition, three participants were selected according to their beliefs. As expected, the three participants' reading patterns were clearly distinguished according to possessed beliefs and stances, implying that readers' beliefs played a crucial role in strategic processing. Interviews focusing on participants' reflections on their reading also support this interpretation. In their reflections, participants saw their belief-influenced comprehension process as an interpretive framework, a belief-filter for counter-evidence, and an evaluative tool of text sources. Therefore, it was concluded that participants' strategic processing supported the idea that belief played a role like knowledge structure or schema (Kardash & Howell, 2000). In addition, the topic belief was a cause of bias that led readers to treat text information and evidence in an unbalanced way.

CHAPTER 5: DISCUSSION AND CONCLUSION

This study was designed to identify the relationship between topic-related reader beliefs and comprehension of multiple texts. The results showed that readers with strong beliefs showed different comprehension strategic patterns than readers with weak beliefs, while there were few differences in terms of reading time and order. Readers with strong beliefs showed more acceptance of belief-consistent information and more resistance to belief-inconsistent information. This biased strategic processing was not present in readers with neutral beliefs.

In this chapter, I discuss theoretical contributions of this study by focusing on the role of reader's belief in the context of multiple text comprehension. Then I conceptualize reader bias in relation to readers' belief and prior knowledge. Next, I describe methodological contributions of this study, its limitations, and suggestions for future research.

Theoretical Contributions

Comprehension of multiple texts requires complex cognitive processing (Rouet, 2006), and the readers' task is more than constructing an understanding of each text. In a situation of comprehending multiple sources, a set of texts may represent different perspectives that include various arguments and evidence. Therefore, readers in this situation are required to analyze, compare and contrast, and synthesize different texts in order to build a coherent mental representation.

Previous literature focuses on cognitive factors that promote a coherent mental representation from the diverse sources. Prior knowledge is recognized as one of the most important factors in comprehension (Bigot & Rouet, 2007). Readers' expertise and experience in the domain are also recognized as influencing successful comprehension

(Wineburg, 1998). Metacognitive skills and strategies are a helpful guide to readers' success (Stadler & Bromme, 2007). In addition, sourcing skills and strategies are essential to identify, link, and construct intertextual relationships (Britt & Aglinskas, 2002). Recently, the role of epistemic belief (Bråten, Britt, Strømsø & Rouet, 2011) in text comprehension has been explored, providing evidence that readers' beliefs about knowledge and knowing promote integration of different text sources into a coherent mental model. Research in the aforementioned areas informs our understanding of multiple text comprehension. Readers are able to construct a coherent mental representation from separate sources of texts because they have prior knowledge, metacognition, sourcing skills, and epistemic belief.

However, there is less research on reader's topic belief. In addition, much research on multiple text comprehension assumes that readers are unbiased meaning constructors. This study reveals that topic beliefs are powerful factors for comprehension. In addition, readers are prone to bias when they read multiple texts that contain diverse perspectives, much like authors.

Roles of Reader Belief in Multiple Text Comprehension

This study reveals that readers' beliefs are of consequence in reading multiple controversial texts: these beliefs influence readers before reading, during reading, and after reading. Reader belief acts as an interpretive framework in pre-reading. Readers already have their own beliefs, perspectives, and stances as well as knowledge prior to reading. Reader beliefs determine which texts (information) are important, trustworthy, and meaningful, and which texts are not. When topics of texts closely relate to readers' identities and interests (e.g., religions, politics, social issues, academic discussions,

careers and job-related decisions, or even consumer reviews), readers do not look at texts as neutral, third party observers. Rather, they involve themselves in debates, taking stances, struggling, and arguing for their beliefs. In the situation of multiple text comprehension in particular, there are many perspectives, arguments and evidence around the text topics. In this situation, readers accept and resist text content based on their beliefs. In this sense, readers' beliefs play a role in creating an interpretive framework that evaluates, accepts, or resists information while reading.

During reading, readers construct meaning from text. In a situation of multiple text comprehension, successful readers become aware of that texts have different perspectives, foci, arguments, and evidence. These readers employ diverse strategic efforts to construct meaning. They consider tentative meanings, constructed from words, sentences, and paragraphs, using elaboration and inferences. Monitoring is an essential strategy when comprehension difficulties arise. Readers also evaluate sources, authors, and text quality. When evaluating, they sometimes compare and contrast several sources together. During reading, readers' often assess that they need more information when they feel they have a lack of prior knowledge or read new belief-inconsistent information. When online searching is available, readers search for word meaning, concepts, and sources on the Internet.

As part of their strategic approach to reading, readers also accept and resist text content based on the prior knowledge and their beliefs. Text information is *filtered* through readers' belief frameworks. Readers accept information that they believe to be true and resist information they believe to be false. Belief-consistent information is well memorized and used to support prior beliefs. When arguments are strong enough to

challenge beliefs, readers may have doubts, minimize the importance of the information, or provide counter evidence against it.

This study shows that readers do not exclusively try to examine what texts say, as previous studies point out. In addition, this study reveals that readers accept or resist text contents based on their beliefs, which many studies do not focus on. This finding does not mean that readers with strong beliefs have blind prejudice and cannot see other sides. Rather, readers are able to see other sides' strengths and weaknesses when they accept or reject information. In addition, readers are aware of their preferences and biases during reading. However, more often than not, readers evaluate belief-consistent information more favorably and belief-inconsistent information more unfavorably. In other words, readers do not treat belief-consistent and belief-inconsistent information the same way.

After reading, readers' initial beliefs are constant or strengthened after reading multiple texts. Readers' beliefs seem to act as a filter. While belief-consistent information permeates the belief framework, belief-inconsistent information is taken out of memory. When I interviewed participants about their decisions related to Israeli settlement in the West Bank, many participants remembered belief-consistent information as supporting evidence for their belief justification. Pro-Israel participants selected evidence that supported actions taken by the State of Israel while pro-Palestine participants chose evidence that supported actions taken by Palestine. As a result, the pro-Israel and pro-Palestine groups' initial beliefs become polarized after reading controversial texts. The reflection interview also supported that participants were aware of the roles of belief and prior knowledge. Participants recognized their preferences and

biases toward a specific stance and topic. They tend to support one side despite recognition of their bias.

Prior research on comprehension of multiple texts does not focus on the roles of reader belief. Instead, many previous studies concentrated on how readers successfully built a coherent mental model as unbiased readers. One reason for focusing on unbiased reading in the previous studies is that researchers tend to select text materials that are unfamiliar to readers (e.g., causes of extinction of dinosaurs, historical justification of U.S. invasion of Panama 1989). Researchers select unfamiliar topics because they want to know how readers learn multiple texts. Despite the academic significance of these studies, I believe that the previous studies illustrate only part of what it means to comprehend multiple texts. More often than not, readers tend to read multiple texts when they are familiar with topics. When readers are familiar with topics, readers' beliefs operate to influence their comprehension processes.

By comparing readers with strong beliefs and readers with neutral beliefs, this study shows that reader belief is an important factor influencing multiple text comprehension for the readers with strong beliefs. Reader belief is influential before, during, and after reading. In addition, reader belief causes reader bias. When reading multiple texts that have different stances and perspectives, reader belief plays a crucial role. By focusing on reader belief, this study contributes to extend a territory of research on multiple text comprehension.

Understanding Reader Bias

In the social psychology area, studies in cognitive bias describe participants' tendency of favoring information that is consistent with belief, and dismissing belief-

inconsistent information (Lord et al., 1979; Greitemeyer et al., 2009). The research on reader bias is conducted in order to seek answers to why participants' different opinions and perspectives were not easily negotiated or agreed. Several important findings include belief polarization (i.e., different parties' beliefs become polarized after controversial information; Lord, et al., 1979), disconfirmation bias (i.e., participants' reading time in belief-inconsistent information is longer than reading time in belief-consistent information due to dispute belief-inconsistent information; Edwards & Smith, 1996), confirmation bias (i.e., participants' favor evaluation of belief-consistent information to belief-inconsistent information; Greitemeyer et al., 2009), and selective exposure (i.e., participants' biased information searching for belief-consistent information; Fisher et al., 2005). Unfortunately, researchers in the area of multiple text comprehension rarely consider the bias related findings, although they select controversial texts in the designs of studies.

In addition, although these findings in social psychology contribute to the understanding of reader bias in multiple text comprehension, there are three limitations in using these findings in the area of multiple text comprehension. First, as previous studies use short-length texts (ranging from several sentences to short paragraphs) for research, it is not clear whether their findings are applicable to reading longer texts. Second, as previous studies use short texts, the topics selected in those studies are not complex, consisting of clear pros and cons. For example, they include short arguments for debating issues (e.g., death penalty, parental use of corporal punishment) in which participants select arguments that fit with their beliefs. However, choosing either pro or con arguments in the previous study is not similar to understanding multiple texts with

diverse arguments, evidence, and perspectives. The current study includes historical backgrounds, main arguments of each stance, and supporting evidence (e.g., U.N. report, Levy report); readers must handle diverse information. Finally, previous studies in social psychology do not focus on readers' strategy use during comprehension

For this reason, this study extends previous findings of bias into the situation of multiple text comprehension. I address whether previously found bias-related phenomena are involved in multiple text comprehension, including belief polarization, disconfirmation bias (reading time and order), biased information search, and biased strategy use.

Belief-polarization. Belief-polarization (or attitude polarization) is a traditionally identified effect of bias (Lord et al., 1979; Taber & Lodge, 2006). Belief polarization occurs when readers confirm belief-consistent information and disconfirm belief-inconsistent information. As a result, readers' preexisting beliefs become more extreme after reading controversial texts. The current study helps us better understand the phenomenon of the belief-polarization. While pro-Israel participants kept their beliefs steady, pro-Palestine participants strengthened their beliefs. For the pro-Israel group, readers maintained preexisting beliefs despite reading controversial texts containing other viewpoints. Even if the pro-Israel participants gained new pro-Palestine information (e.g., Palestinians' suffering in the West Bank), their basic beliefs did not sway. On the other hand, pro-Palestine participants focused on text information from a pro-Palestine stance to support their preexisting beliefs, whereas they tried to minimize arguments and evidence of a pro-Israel persuasion.

Nevertheless, the results do not describe readers who are blind to new and challenging information. Rather, readers consider other sides, deal with complexity, experience confusion, and reflect on their own beliefs. When they see other sides' arguments and evidence as persuasive, readers sometimes struggle to keep their prior beliefs and stances. However, analysis of readers' strategic processing shows that readers' overall strategic response is to keep and strengthen their beliefs when confronted with compelling information that represents other sides of arguments.

Disconfirmation bias in reading time and reading order. Disconfirmation bias (Edwards & Smith, 1996) describes when readers spend more time reading other sides' information in order to dispute belief-inconsistent arguments and evidence. This study did not find evidence of disconfirmation bias in terms of participants' reading times. There are at least two reasons for the lack of time differences when participants are reading belief-consistent and belief-inconsistent texts. The design and setting of this study differ from previous research settings. Previous studies include only a few sentences or short paragraphs presented in a laboratory setting. In other words, researchers focused mainly on participants' reading time differences, when participants are asked to read several sentences or paragraphs with belief-consistent or belief-inconsistent topics. Therefore, these studies can focus on reading differences between belief-consistent and belief-inconsistent arguments. However, this study uses multiple longer texts that provide diverse concepts, facts and opinions. Although I control lengths and difficulties of texts, there may be unknown factors that influence participants' reading time. Therefore, it is possible that diverse factors (e.g., sentence structures, dense concepts and details) play a role as *confounds* in preventing from revealing reading time

differences between belief-consistent and belief-inconsistent texts. In addition, it is probable that participants' bias may not be detected in reading time measures. Further research is needed to investigate the efficacy of time measures in detecting bias.

I also examined individual readers' reading order patterns with the purpose of identifying the relationship between patterns of reading order and bias. The rationale for examining reading order is to identify whether readers (re)visit belief-inconsistent texts or belief-consistent texts in accordance with their belief. The results show that there are no distinguishable reading order patterns across the groups. All readers' reading orders are linear (i.e., from reading the first text, second, third until the final texts without looking back). Therefore, it is hard to conclude that readers are biased in terms of reading order patterns in this study.

In addition to linear reading patterns, I found that readers focused more on first texts than the subsequent texts. This finding relates to Gernsbacher's (1990) structural reading framework. Regardless of participants' belief stance, many participants spent more time in focusing on the first text. This result implies that readers try to build a foundation of reading from the first text in order to prepare for reading subsequent texts. Since this study presented a neutral textbook-like text first, it is not clear that the first text effect continues when the first text is not neutral. Further study is worth conducting in various experimental designs in which a first text is assigned as various conditions (e.g., first text as pro-Israel text or pro-Palestine text).

In an earlier study (Kim, 2012), I compared graduate students with undergraduates, and found different reading patterns between the two groups. For example, the graduate students showed diverse reading patterns (e.g., toggling back and

forth between different texts), whereas the undergraduates showed a common linear reading pattern. However, such differential reading order patterns did not appear in the undergraduate participants of this study. At this point, it would be better to assume that reading order is more strongly influenced by reading experience and expertise than reader belief. Further study is needed to verify this conjecture.

Biased information search. Biased information search is called selective exposure, where readers select belief-consistent information (Fischer, Jonas, Frey, and Schultz-Hardt, 2005). Previous studies show that readers seek out belief-consistent information rather than seeking diverse perspectives, which in turn builds bias related to controversial topics (e.g., political debates) (Stroud, 2007). This study showed that Internet searching is a frequent reading behavior during comprehension of multiple texts. Without researchers' prompts, many participants searched on the Internet due to their own information need. Except for the two cases of justification of beliefs (i.e., Internet searches for the purpose of confirming beliefs or refuting another side's argument), there was no attempt to use the Internet in a biased way. One possible explanation for the low frequency of biased Internet searches is that readers were already given a large amount of text to read, so they felt they could not afford to search for and read more information. However, there is no specific evidence to support this idea. Further study is needed to examine when and how readers search on the Internet and use other resources to support their beliefs.

Biased strategic processing. Finally, this study found that readers show clearly distinct strategy use patterns between groups. Among the five encoded strategic processing categories (i.e., Considering text content, Acceptance and Resistance,

Evaluation, Monitoring, Information need and search), readers with strong beliefs verbalized a high frequency of strategies related to acceptance and resistance of text information when compared with readers with neutral beliefs. This phenomenon becomes clearer when examining the types and frequency of acceptance and resistance. Readers with pro-Israel beliefs tend to show more acceptance for texts with a pro-Israel stance and more resistance to texts with a pro-Palestine stance. For the pro-Palestine texts, this tendency is expressed in an opposite way. Comparison of participants' verbal protocol at the same excerpts proves this pattern. In other words, on the same points of think-aloud prompts, participants' acceptance and resistance are clearly distinguished

The finding of this study is comparable to Richter's (2011) theory of epistemic validation. According to this model, readers routinely check the consistency between prior knowledge and text information. However, one further point that this study found is that readers not only examine the consistency of *prior knowledge* and *text information*, they also check the consistency between *reader beliefs* and *text information*. A contribution of this study is the description of readers' strategic processing in relation to bias, as previous studies did not focus on readers' strategy use. Previous studies usually examined reader bias in terms of time difference or product measures (e.g., belief survey, comprehension essay) rather than directly focusing on readers' strategy use and patterns. Therefore, this study contributes new knowledge to the literature of multiple text comprehension as it reveals reader bias at the level of strategic processing.

This study identifies how readers are biased in a complex situation of multiple text comprehension. Readers tend to keep their beliefs and stances, reflecting their prior knowledge during comprehension of controversial multiple texts. Although readers

recognized arguments and evidence of belief-inconsistent texts, they tried to establish a coherent mental model based on their preexisting beliefs. In doing so, readers tended to accept more information from belief-consistent texts and resist belief-inconsistent texts. As a result, readers' initial beliefs became strengthened as reading proceeded. After reading, readers remembered belief-consistent information more positively and precisely. When readers were asked to reflect on their decision about the conflict, many participants remembered arguments and evidence that were consistent with their initial beliefs.

I note that readers do not always use strategies in a biased way. Their primary purpose is to construct meaning from a set of texts by considering text content, evaluation, monitoring, and information need and search. However, at the same time, readers tend to keep their beliefs by using acceptance and resistance. The unbalanced strategy use between acceptance and resistance results in reader bias.

Methodological Contributions

This study also contributes to the methodological developments in multiple text comprehension for two related ways. First, this study includes multiple measurements related to text comprehension. Second, this study develops a measuring tool, iMTC, in order to use multiple measures for control and measurement of multiple text comprehension.

Multiple Measurements of Comprehension

For the study of processes of multiple text comprehension, I used multiple measures: (a) reading process measures (e.g., reading time, reading order, internet search), and (b) think-aloud protocols. The basic idea to use multiple measures originates from Magliano and Graesser's (1991) three-pronged framework which details that any measurement and method have weaknesses in revealing the comprehension processes.

However, if we combine several methods together, the multiple-measure approach can compensate for the limitations of single methods. Researchers have measured reading times to compare and contrast how individual readers devote cognitive efforts in reading (e.g., constructing texbase and situation model) differently (Kintsch et al., 1975), or identify reading order to understand the readers' reading sequence (Wineburg, 1998). Researchers also use think-aloud protocols for understanding readers' strategy use (Pressley & Afflerbach, 1995).

The two measurement approaches have different strengths and limitations with some overlap. First, the measurement of reading processes (e.g., reading time, reading order) allows identifying individual's comprehension processing patterns during reading. While it identifies readers' different reading trajectories across multiple texts, it is hard to infer what types of strategy are employed during reading. Next, the think-aloud method collects data of participants' verbalized thoughts. While it provides meaningful qualitative data about reading processes, it is limited because it requires researchers' inference and interpretation of verbal reports.

In this study, I use the two measures simultaneously to capture diverse aspects of participants' reading comprehension processes. However, readers' beliefs and bias were captured more accurately in verbal protocols than in reading time and order. For example, readers' reading time in belief-consistent texts is not significantly different from belief-inconsistent texts. The measure of reading time does not explain the differences, as previous studies showed (e.g., Reading inconsistent-text requires more time for disinformation bias in Edwards & Smith, 1996). On the other hand, verbal protocol data reveal that readers devote cognitive efforts not only to reading belief-inconsistent texts

(e.g., resistance) but also to reading in belief-consistent texts (e.g., acceptance). Without multiple measures, the inferences about negligible difference of time between reading belief-inconsistent texts and belief-consistent texts are rarely possible. By using multiple measures, this study contributes to the methodological need for multiple measures in research of multiple text comprehension.

Tool Development (The iMTC Environment)

In order for use of multiple measures of this study, I develop a tool (Kim & Cho, 2011), which is designed to help me flexibly combine and use the two measuring approaches. The study demonstrates that the iMTC provides robust data analysis for triangulation. For example, suppose a researcher asks whether readers focus more on the first encountered text than on subsequent texts in comprehension (see, the Structural Building Framework; Gernsbacher, 1996). In this case, the iMTC provides qualitative data (verbal protocol data) as well as quantitative data (the frequency and amount of time). As this tool automatically provides quantitative data (e.g., reading order, reading time), researchers have more time to focus on qualitative analysis, rather than on cumbersome coding and analysis.

I expect that this study contributes to scientific and educational research in at least two ways. First, this study reveals that measurement of multiple text comprehension has diverse paths and provides one important step toward theoretical development of a measuring tool. Previously noted methods working alone have limitations to explore and confirm research hypotheses, while this mixed method approach with triangulation will provide findings that are more valid. Second, this study has practical implications. To date, many studies on multiple text comprehension are hard to design because researchers

have to consider more than one text in their research designs. If a researcher can more conveniently adjust text materials and research conditions, then he or she is more likely to conduct complex research due to affordable time and efforts.

Limitations

This study aimed to investigate the roles of readers' topic beliefs, strategy use, and reader bias in comprehension of multiple texts. As stated in the previous section, this study found that readers with strong beliefs operated strategies to maintain their prior beliefs during reading controversial multiple texts. However, interpretation of this study requires caution because of four possible limitations.

First, this study included two self-report measures: think-aloud protocols and belief questions on the Likert-scale. Although think-aloud method is regarded a useful measure to investigate participants' strategic processing, not all of the participants' thoughts are verbalized (Pressley & Afflerbach, 1995). While this study provided think-aloud prompt marks at the end of every sentence, participants sometimes skipped thinking aloud at the prompt marks, resulting in relatively high frequency of NA (not answered) codes. The coding schemes were based on both existing literature (Goldman et al., 2012; Pressley & Afflerbach, 1995) and collected data. However, I found several cases that did not fit with the established coding scheme: they were encoded NI (not inferable).

In addition to think-aloud data, this study also used self-report measures on topic belief questions on a five-point Likert scale. On the Likert scale, participants were forced to select one of five choices, so the scales may misrepresent the participants' accurate topic beliefs. For that reason, I used additional qualitative interviews to review and verify

of participants' answers on the Likert scale. However, some hidden areas may exist which neither the Likert survey nor interview could capture.

Second, the number of participants in this study was relatively small. Fifteen participants appeared appropriate for examining participants' verbal reports in depth, when considering of the number of participants in other studies (e.g., 7 participants in Bazerman et al., 1985; 8 participants recruited in Afflerbach, 1990, and in Hartman, 1995). However, five participants in each group limited statistical comparisons. Due to the small sample size, I used nonparametric tests between groups, which had less statistical power than the parametric equivalent (e.g., ANOVA). In addition, this study recruited participants by using a maximal variation sampling, one of the purposeful sampling methods. While this sampling method was advantageous to understand belief-relevant reader characteristics, it was limited to generalizing results from the sampling methods.

Third, it was possible that the insertion of think-aloud prompt marks influenced the participants' thought processes. As in the case of the previous study (Afflerbach, 1990), the participants' verbal reports in this study indicated that the display of the think-aloud marks played a role in prompting to reveal participants' thought processes. However, some participants may feel forced to talk their thoughts at the frequent prompt marks, even when they did not have any thought to report. I observed that participants sometimes skipped reporting their thoughts at the prompt marks, and thus I coded such cases as NA (not answered). In my point of view, the NA codes indicated evidence that the frequency of the forced verbal reports was relatively low among the participants. Nevertheless, it should be acknowledged that it was possible that prompting marks had

impact on participants' reading processes. Future research needs to investigate the interaction between think-aloud prompt marks and participants' thought processes.

Fourth, there were possibly unidentified task effects that influenced the results of this study. I designed the study for the consideration of the ecological validity. For example, I provided a reading situation in which participants read several articles on the Internet accessible environment: this reading environment was similar to their online and multiple text reading. However, it was possible that the design of this study influenced participants' reading processes. To illustrate, text materials of this study were displayed as a specific order in the iMTC environment. The maps are placed at the top, and the texts followed next as a specific order. In other words, text materials were ordered as Map1, Map2, Text 1, Text 2 ... and Text 5. Accordingly, most participants followed in this reading order, although they were informed to freely read text materials their own ways. It is open for future research to investigate how the arrangement of text display influences participants' reading processes in multiple text comprehension.

Future Research on Reader Belief and Multiple Text Comprehension

The current study reveals that undergraduate students with strong beliefs are influenced by the topic beliefs and are not free from bias during comprehension. Further study is needed to extend the findings of this study beyond the small sample of this study. In addition, there is a conceptual issue about two related constructs, reader beliefs and bias. The conceptual work needs to be elaborated on not only for theory development, but also for future research progress in this field.

Need for Study in More Extended Population with Diverse Topics

This study explored reader belief and bias in the reading context of multiple controversial texts. To examine the nature of belief and bias, I recruited undergraduate

students who had strong beliefs and stances toward a controversial topic. The recruiting strategy worked out for the exploration of reader belief and bias in multiple texts; this study clearly showed that readers with strong beliefs showed biased strategy use, as opposed to readers with weak beliefs who did not show biased strategy use. Since the participants in this study were undergraduate students, it remains to be determined whether the findings of this study are applicable to younger readers at the K-12 levels. Research showed that younger students (e.g., 5th graders) could read multiple texts and identify source information across texts (Rouet et al., 2012; VanSledright, 2002). In this sense, it is worth studying K-12 students and their understanding of multiple texts in relation to beliefs and biases.

Although research does not directly address reader's belief and bias, similar topics have been studied in the fields of science education (e.g., conceptual change) and literacy education (e.g., persuasion). For example, science education researchers investigate why it is difficult to change readers' misconceptions (Vosniadou & Ioannides, 1998). Literacy research also focused on reader's belief change and persuasion in refutational texts (Chambliss & Garner, 1996; Hynd, 2001). In addition to previous literature, further studies are warranted to investigate topics for which young readers have strong beliefs, and how their beliefs change during reading. Findings may be useful in classrooms as educators help students become aware of beliefs and biases by teaching strategies of critical literacy. For example, we can develop instructional programs that help students reflect on self-belief and stances on topics, analyze authors' views and hidden assumptions, and metacognitive reading strategies of reading process and bias.

Second, we need to conduct studies of belief and bias in reading in diverse topics. The participants in this study were readers with high topic beliefs. However, in many cases, readers do not seem to have as extreme beliefs and stances on controversial topics as the participants in this study. In addition, readers have multidimensional topic beliefs. For example, a reader with conservative beliefs on a certain religion's doctrine may have a neutral political stance and progressive environmental ideology. Further study is needed to understand to what extent readers possess certain beliefs on diverse topics. In addition, we need to investigate how readers comprehend ordinary controversial topics other than "hot" controversial topics such as religion and politics. Are readers' beliefs and patterns of strategy use less biased during comprehension? Alternatively, do readers use different strategic patterns than this study? Readers' strategic use in diverse topics is worth conducting for answering these questions.

Conceptual Issues: Reader Belief and Prior Knowledge

Conceptual differentiation between personal reader belief and prior knowledge is not easy. In this study, I felt topic belief was closely related to prior knowledge. For example, readers' belief change is simultaneously related to the reader's topic beliefs and prior knowledge. However, this study did not clearly distinguish the effects of prior knowledge and beliefs. There are two possible sources accounting for the challenge of clear distinction between the two factors. First, I recruited participants according to beliefs rather than prior knowledge (i.e., the prior knowledge classification of this study was post hoc). Accordingly, although I recruited same numbers of participants according to the groups, there were no participants in high prior knowledge with low beliefs and

low prior knowledge with high beliefs (Table 40). In this condition, it was difficult to infer the independent influence of prior knowledge without topic beliefs.

Table 40

Participant Selection in Terms of Prior Knowledge and Reader Beliefs

	High Prior Knowledge	Middle prior knowledge	Low Prior Knowledge
High Topic-related Reader Belief	<i>A few pro-Israel and pro-Palestine participants</i>	<i>Most pro-Israel and pro-Palestine participants</i>	N/A
Low Topic-related Reader Belief	N/A	<i>One neutral participant</i>	<i>Most neutral participants</i>

The second difficulty was the lack of conceptual clarity between belief and knowledge. Do beliefs include knowledge? According to Alexander and Dochy (1995), there are at least five types of possible conceptual relationship between belief and knowledge: (a) separate entities of two constructs, (b) knowledge subsuming beliefs, (c) beliefs subsuming knowledge, (d) inseparable entities of two constructs, and (e) overlapping of the two constructs. The definitions of (personal) beliefs and (prior) knowledge are philosophical in nature, but are worth investigating as psychological entities.

For example, high knowledge readers show shallow processing when they read well-written texts on familiar topics (McNamara et al., 1996; McNamara, 2001). Does this finding apply to the higher knowledge readers of this study? In other words, many detected biases from readers in this study were possibly attributable to their high beliefs as well as their high prior knowledge. Elaboration of more theoretically precise construct will allow researchers to develop accurate measurements of personal beliefs and prior

knowledge. After developing elaborate measurements, we will know the joint or separate effects of prior knowledge and beliefs on comprehension of multiple texts.

Implication for Educational Practice

The current study focused on undergraduate students' belief and strategy use in reading controversial multiple texts. The purpose of this study is theory building rather than applied instructional practice, so that it focuses on short-term comprehension process and products in a laboratory setting. However, I believe this study can contribute to K-12 classroom practices that would help students become critical readers.

This study suggests that reading instruction should be more than teaching skills and strategies that relate to analyzing and synthesizing multiple sources. In most instructional research of multiple text comprehension, the primary goal is to teach skills and strategies that enable readers to equip essential skills of identifying source information, comparing and contrasting sources, and synthesizing text sources (e.g., Britt & Aglinskas, 2002). Other research focused on teaching metacognitive skills and strategies that help readers understand multiple documents better (Stadler & Bromme, 2007). These skills and strategies are important to understanding multiple texts that are often complex and controversial in nature.

However, as this study addresses, reader beliefs and bias play a significant role in the comprehension of multiple texts. Students should be provided with instructional opportunities to express their own perspectives and beliefs, as authors of texts do. They also have to learn to compare readers' goals with authors' goals. It is important that readers continually recognize their stances during reading, since multiple texts are likely to provide both belief-consistent information and belief-inconsistent information. Such

instructional approaches are more than teaching functional skills and strategies of comprehension.

More than 20 years ago, Freebody and Luke (1990) conceptualized four roles of a successful reader: the code breaker (coding competence: how do I break this code?), the text participant (semantic competence: what content does this text convey?), the text user (pragmatic competence: how do I use the text information for my reading purpose?), and the text analyst (critical competence: what does this text mean to me?). The Freebody and Luke's terms can be used in the current reading situation of multiple texts and online reading. Readers' roles in multiple text comprehension are conceptualized as *code breaker* (single texts reading competence: how do I understand each of texts separately?) and *text participant* (intertextual reading competence: what contents do the set of texts convey?). Furthermore, this study emphasizes that readers should be prepared as *text users* (pragmatic competence: how do I use the multiple sources for my reading goal?) and *text analysts* (critical competence: what do the multiple sources of texts mean to me?).

The more complex roles of readers (i.e., text users and text analyst) are visible when readers understand their beliefs and bias in relation to the perspectives and bias of invisible authors behind the texts. Previous studies in reading research focused on how to activate readers' prior knowledge in order to promote learning (Anderson & Pearson, 1984). In a similar vein, I believe that we need to conduct research and implement instructional practice that activates readers' beliefs and bias in order to promote students' critical reading in the "information society."

Appendices

Appendix A. Summary Table for the Literature Review of Multiple Text Comprehension

Study	Focus	Participants	Texts	Task	Measures	Findings
Afflerbach & VanSledright	Challenges of innovative history texts to middle grade students and those students' historical thinking and reading	Seven 5th grade students	History (early colonial period of Jamestown) / one chapter with 2 embedded texts (a diary excerpt and a poem) and one a chapter excerpt (Words: n/a)	To verbalize students' thinking during reading (i.e., think-aloud protocol)	Student interview (reading habits, interests, and experiences), teacher's rating of students' reading ability, standardized reading scores, and think-aloud protocols	<ul style="list-style-type: none"> • For middle graders, reading multiple texts of history is <i>contextually challenging</i> because of arcane vocabulary, complex syntax, novel genres, and dense information loads, as well as hard intertextual inference • There is huge individual differences in intertextual reading and history understanding. (e.g., <i>Disney effect</i>: for some students, a cartoon film (<i>Pocahontas</i>) was more influential than written accounts due to different history understanding and experience.)
Bråten & Strømsø (2010)	Impact of task instruction and personal epistemology on the understanding multiple texts	184 Norwegian undergraduates	Science (climate change) / 7 separate texts (Average 286 words)	To write a brief summary report to other students how climate changes may influence life on Earth and what are the causes of climate change. (It is an imaginative task)	Measures of word decoding, prior knowledge, epistemology, and multiple-text understanding	<ul style="list-style-type: none"> • There are <i>task effects</i>: argument and summary task conditions help student understand deeper than a global understanding task condition. • Yet, these task effects are moderated by readers' <i>personal epistemology</i>.

Study	Focus	Participants	Texts	Task	Measures	Findings
Bråten, Strømsø, & Britt (2009)	Impact of source evaluation on single or cross-document comprehension	122 college students – proficient readers	Science (climate change) / 7 separate texts (Average 286 words)	To write a brief summary report to other students, as in Bråten & Strømsø (2010)	Multiple-text comprehension tests; source-evaluation questionnaire	<ul style="list-style-type: none"> • Both <i>trustworthiness</i> and <i>document types</i> predict multiple texts comprehension.
Bråten, Strømsø, & Sameulsteun (2008).	The role of topic-specific personal epistemology in multiple texts	184 Norwegian undergraduates	Science (climate change) / 7 separate texts (Average 286 words)	To write a brief summary report to other students, as in Bråten & Strømsø (2010)	Personal epistemology measures, multiple-text comprehension tests; source-evaluation questionnaire	<ul style="list-style-type: none"> • When comparing with students of naïve and simple epistemology, students who have sophisticated <i>source beliefs</i> with sophisticated <i>epistemology</i> are better in multiple-text understanding but might be maladaptive on a particular topic.
Bigot & Rouet (2007)	Impact of prior knowledge, writing task, and hypertext format on student's comprehension of multiple texts	52 college students – 31 with low prior knowledge and 21 with high	Psychology (social influence) / 7 short texts (Average 145 words)	To write a one-page (about 5–10 lines) summary from the set of texts that including the main ideas expressed in these texts.	Reading time; Comprehension questionnaire; Essays	<ul style="list-style-type: none"> • High <i>knowledge</i> students spent less time and better comprehension • <i>Argument task</i> brings about more connectives. • <i>Source-based content presentation</i> results in better macrostructure comprehension.
Britt & Aglinskas (2002)	Students' awareness of source information in multiple texts; impact of teaching sourcing skills to students	(1) 60 high school students and 24 undergraduates (2) 15 11th-grade students	History (1) Building a canal in Panama / 6 texts; (2) US-Vietnam war; 1892 at the Homestead Steelworks / 7 texts (Words: n/a)	To take notes while reading multiple-text in a limited time. After handing in those texts but keeping the notes, students are supposed to answer sourcing questions and two essay questions.	(1) Note taking; sourcing question; two essay question (2) two 35-min transfer tests (equivalent to procedure 1)	<ul style="list-style-type: none"> • Both undergraduate students and high school students lack of sourcing skills in multiple texts • Students who learn <i>sourcing skills</i> from Source Apprentice are better to identify source information of the multiple texts, than their control group of students.

Study	Focus	Participants	Texts	Task	Measures	Findings
Cerdán & Vidal-Abarca (2008)	Integration process in multiple texts; Effects of task on integrating information from multiple documents	56 undergraduate students in Spain	Biology (Bacteria resistance) / 3 short texts (Average 577 words)	Either to write an essay on a question requiring integration across texts or to answer shorter intratext questions (Half of the sample is to think aloud).	Time, think-aloud; sentence verification task, writing an essay	<ul style="list-style-type: none"> • While a <i>task</i> for deep integrating process from multiple documents (e.g., essay writing) help students perform better on a transfer task, there is little difference on comprehension of intratext processing. • Think-aloud prompts local processing (i.e., text-based reading) but might hinder deep understanding.
Maggioni, Fox & Alexander (2010)	Historical thinking, intertextual reading, and domain-specific epistemic beliefs	4 high school juniors and 1 history teacher	History (1) Captain Cook on Hawaii (2) Earth's shaping during Columbus' era) / 6 documents (Words: n/a)	To read texts and answer specific questions while thinking aloud. As structured interview, students are also asked to express opinions about items of the beliefs about history questionnaire.	Think-aloud protocol; constructed response task, beliefs about history questionnaire, students' essay, and field note	<ul style="list-style-type: none"> • Positively or negatively, students' <i>epistemic beliefs</i> and their <i>reading behaviors</i> influence on students' comprehension of multiple texts. • When comparing single text behaviors with intertextual text behavior, their intertextual reading is shallow, identifying gist information text by text as their "<i>majority rule</i>" despite individual differences. • <i>A teacher's belief and pedagogical instruction</i> can be one way to influence on students' intertextual reading behavior.

Study	Focus	Participants	Texts	Task	Measures	Findings
Hartman (1995)	Intertextual links readers make across passages	8 high school juniors and seniors – all proficient readers	Fiction and nonfiction (death and war) / 5 passages (Words: n/a)	To read five 5 passages by focusing on people, themes, and others in the. To think aloud while reading and to mark in the text.	Think-aloud protocol; interview questions.	<ul style="list-style-type: none"> • Textual resources are located in current reading (<i>primary endogenous</i>), between passages (<i>secondary endogenous</i>), or outside the task (<i>exogenous</i>). • Reader's discourse stance is represented as <i>logocentric</i>, <i>intertextual</i>, or <i>resistance</i>.
Kim & Millis (2006)	Influence of sourcing and relatedness on the integration of events in simple stories	162 undergraduate students	26 story pairs (Words: n/a)	After reading breaking news, participants are supposed to judge whether each sentence is in one of the news stories.	Recognition task, reading time, and sourcing-knowledge task	<ul style="list-style-type: none"> • When sourcing information is added, readers' integration of events might be decreased. • Both <i>sourcing information</i> (i.e., who said what) and <i>situational cues</i> (e.g., time, space, causality, contents) are independently impact on reader's integrating events.
Lacroix (1999)	Macro-structure construction and organization in the processing of multiple text passages	Undergraduate students (Experiment 1 = 80 students, experiment 2 = 160 students, and experiment 3 = 44 junior high school teachers)	Science related (fast food: e.g., feeding habits, food-related diseases) / 2-4 paragraphs (Average 250 words)	<p>(a) To select and underlie 2 or 3 important statements</p> <p>(b) To write a report outline based on reading the multiple passages</p>	Recall test (e.g., menu presentation order), correct number of of underlined statements, time (e.g., topic selection), and outline structure that comparing to the original sources	<ul style="list-style-type: none"> • In comprehension of multiple passages, there are two distinct levels of processing: (a) <i>macrostructural construction</i> (extracting important information within a passage) and (b) <i>macrostructural organization</i> (structuring selected information between passages into a coherent manner: e.g., building between-passage connection) • There are <i>several factors</i> that influence macrostrucrual construction and organization (e.g., <i>headings</i>, <i>presentation order</i>, <i>task requirement</i>)

Study	Focus	Participants	Texts	Task	Measures	Findings
Mannes (1994)	Integration of knowledge from different sources	(1) 45 undergraduate students ; (2) 20 undergraduate students	Science (Biology: bacteria) / 1 text and 2 outline-texts (Average 1,508 words)	(a) To summarize what to be learned; (b) to write down the first thing that came to minds after seeing a cue; or (c) to write in five circles the most importantly learned	Summary task, Rapid-serial-visual-presentation (RSVP); net-work task, cue-response task; semantic relatedness rating	<ul style="list-style-type: none"> • When the outline is the same as subsequent reading, readers use it as a model to understand the subsequent text. • However, if the outline is different from the subsequent reading, readers revise, adjust, or abandon the outline to understand the subsequent text coherently and to reduce contradiction.
Manning, Goldman et al. (2008)	Students' analysis of multiple sources for agreement and disagreement	66 5th and 6th grade students	History (Immigration to Chicago from 1830-1970) / 3 pairs of sources (Words: n/a)	To analyze the similarities (agreements) and differences (disagreements) between a set of two sources	Eliciting students' responses from the two prompts: agree and disagree	<ul style="list-style-type: none"> • Students can compare between two different sources. They find easily agreements than disagreements between sources. • Students show more various patterns to find disagreements than agreements.
Nokes, Dole, & Hacker (2007)	Impact of different types of instruction and texts on learning: history content and a set of heuristics	246 11 th grade students; 8 teachers	History (Daily life in the 1920s and 1930s) / Traditional textbook vs. multiple texts (average 1,307 words)	To write a 200-word essay explaining whether a picture portrays the event in the documents. To answer questions for the use of heuristics and content learning.	Observation, history content test, historic essay test (sourcing, corroboration, & contextualization)	<ul style="list-style-type: none"> • After 3-week instruction, students who learn in <i>multiple-texts conditions outperform</i> in both content and heuristic tests over students in textbook conditions, despite rarely using of contextualization for both groups.

Study	Focus	Participants	Texts	Task	Measures	Findings
Rouet, Britt, Mason, & Perfetti (1996)	Impact of presence of primary document on reasoning	24 college students (14 took no history classes, 8 took 1, and 2 took more than 2)	History (Panama Canal) / 7 document sets × 4 sessions (average 171 words)	To write a one-page essay about the controversy. Next, to evaluate documents according to their usefulness with a justification	Writing task (one page essay)	<ul style="list-style-type: none"> • Whether <i>primary documents</i> are included in given tasks have influenced on both students' rating of the documents (i.e., reasoning <i>about</i> document) and their ability to use document information (i.e., reasoning <i>with</i> document).
Rouet, Favart, Britt, & Perfetti (1997)	Effects of discipline expertise on understanding multiple documents in history	11 graduate students in psychology (history novices) and 8 graduate students in history	History (Panama Canal) / 7 document sets × 2 sessions (average 171 words)	To write a one-page essay about the controversy. Next, to evaluate documents according to their usefulness with a justification	Prior knowledge tests, essay writing, document evaluation (usefulness, trustworthiness)	<ul style="list-style-type: none"> • There is little difference across groups in their studying strategies • Yet, differences of the groups are founded in the (1) evaluation of the documents and (2) structuring essay writing (e.g., novices frequently preferred a specific opinion, while experts showed neutral stance toward the texts)
Rukavina & Daneman (1996)	Integration and its effect on acquiring knowledge between two conditions: integrated-text vs. separate-text format	122 high school students (44 10 th -grade, 38 12 th -grade); 40 undergraduates	Science (The problem of dinosaur extinction) / 2 texts, in case of separate-text condition (approximately 2,000 words)	To carefully read texts, to answer multiple-choice questions, and to write to the integrative short-essay questions	Tests: multiple-choice, short-essay questions, epistemic knowledge (5-point scale) and working memory span test	<ul style="list-style-type: none"> • There are differential effects of <i>text manipulation</i> on the students according to the <i>epistemic beliefs</i>. • Despite little effects of text manipulation on the students who have sophisticated epistemic beliefs, integrated-text format benefits students whose epistemic beliefs are naïve.

Study	Focus	Participants	Texts	Task	Measures	Findings
Stadtler & Bromme (2007)	Role of meta-cognition in the formation of document models	80 undergraduate students who had little knowledge of medicine	Science (medicine: to reduce cholesterol) / Participants' search among a set of 15 web sites (Words: n/a)	Answering a fictitious friends' request (how to reduce cholesterol) by searching web sites and writing an essay (with the help of a metacognitive tool— <i>met.a.ware</i>)	Tests of content knowledge and source knowledge; essay for measuring sourcing skills; justification of credibility judgment	<ul style="list-style-type: none"> • <i>Metacognition</i> serves a crucial role for readers who understand multiple documents. • <i>Not all</i> readers focus on all <i>source information</i>, while some do: laypersons may be satisfied with a “metonymic, i.e., partial understanding of concepts” • Readers seem to choose “<i>core arguments</i>” in multiple documents.
Stahl, Hynd, Britton, McNish, & Bosquet (1996)	Students' mental structure and process when they read multiple texts in history	44 high school sophomore students	History (Gulf of Tonkin) / Participant's choice among 11 texts (Words: n/a)	During read multiple texts, to take notes freely, to evaluate each text, and to final essay on the topic.	Texts relationship task; note-taking (optional); evaluation task; free recall; writing task	<ul style="list-style-type: none"> • Simply presenting multiple documents does not automatically enhance comprehension; • Students focus more carefully on <i>the first text</i> than others; multiple-texts comprehension processes are shown as <i>selection, processing, constructing & integrating</i>.
Strømsø, Bråten & Sameuls-teun (2003)	Students' strategic processing and their aspects of linking of multiple texts	Norwegian college students— all proficient readers	Law / 20 texts (average 3,039 words)	To bring along to each session one course text and any supporting literature that you are actually reading at the time	Think-aloud protocol (3 times as time goes)	<ul style="list-style-type: none"> • As time goes, students' strategic processing proceed from text-internal to text-external, in order for preparing law test, although there are individual differences. • Strategies of memorization and organization are more used as text-internal, whereas elaboration and monitoring are more used as text-external.

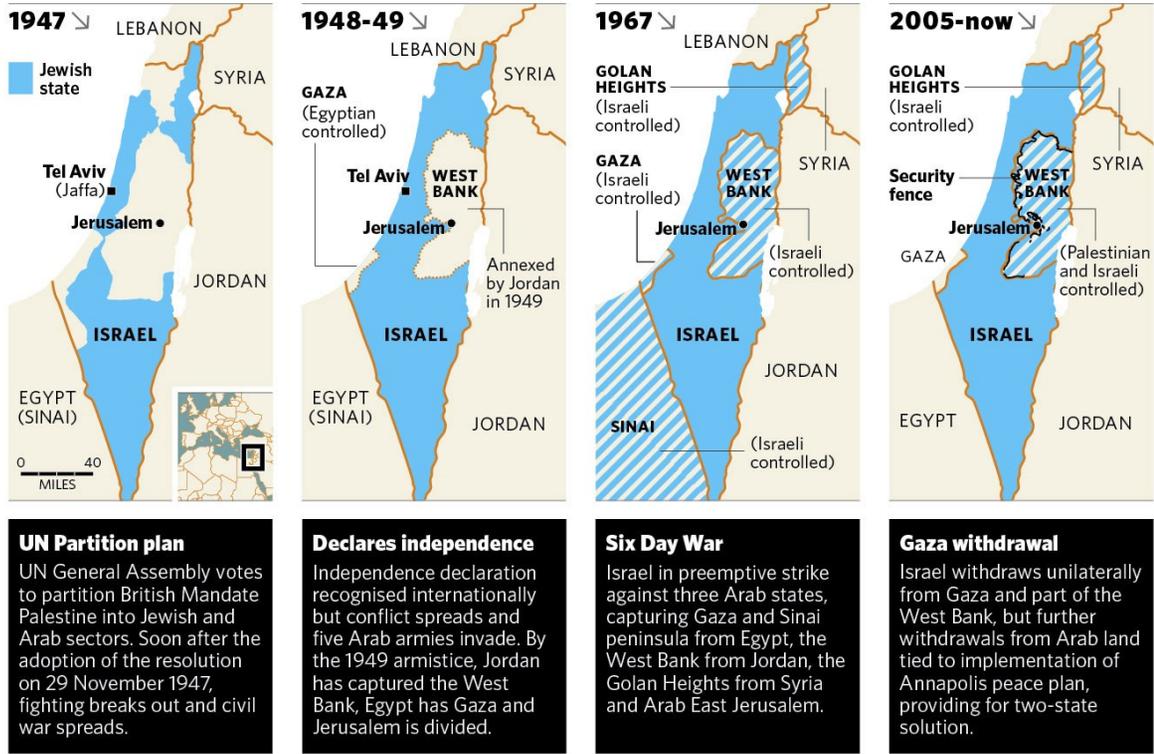
Study	Focus	Participants	Texts	Task	Measures	Findings
Strømsø & Bråten (2009)	Beliefs about knowledge and knowing and multiple-text comprehension	282 Norwegian high school students (18.6 yrs)	Science (climate change) / 7 separate texts (Average 286 words)	To write a brief summary report to other students how climate changes may influence life on Earth and what are the causes of climate change. (It is an imaginative task)	Measures of topic knowledge, topic interest, personal epistemology multiple-text understanding	<ul style="list-style-type: none"> • Students' beliefs about knowledge and knowing are associated to the reading of multiple-text: Justification beliefs (e.g., how one can justify that a claim is tentative, valid, or true,) are related to multiple-text comprehension, whereas certainty beliefs are not significantly related to such comprehension.
Strømsø, Bråten, & Britt (2010)	Relationship between memory for sources and text comprehension	233 Norwegian high school students (18.6yrs)	Science (climate change) / 7 separate texts (Average 286 words)	To write a brief summary report to other students as in Strømsø & Bråten (2009)	Measures of prior knowledge, topic interest, memory for sources, and multiple-text understanding	<ul style="list-style-type: none"> • Students' source awareness (memory for sources) is related to both intra- and across text comprehension. This suggests that a readers' perceived source information serves a unique role for multiple-text comprehension.
Van-Sledright (2002)	Impact of teaching history for fifth graders by using multiple texts	8 fifth graders	History (e.g., Battle at Lexington) / 4 texts (Average 149 words)	To think aloud during reading. By using given images, to prompt student to construct interpretation.	Teaching practice of the researcher; performance tasks, & interviews	<ul style="list-style-type: none"> • There are huge individual difference of reading, which in turn contributes for instructional gains between good readers and struggled readers. • Adequately planned history <i>instructions</i> are likely to help students analyze and reconstruct historical documents and images by evidence-based interpretations

Study	Focus	Participants	Texts	Task	Measures	Findings
Wiley & Voss (1999)	Impact of writing tasks on quality of writing, when using multiple sources	24 college students	History (Ireland between 1800 and 1850) / 8 documents	To take the role of historian and develop a narrative about what produced the significant changes in Ireland's population between 1846-1850	Writing task (argument, narrative, summary, or explanation)	<ul style="list-style-type: none"> • <i>Argument</i> writing tasks by using multiple texts sources help students write essays that include more transformation, integration, and causality than narrative writing task.
Wineburg (1991)	Difference between experts and novice when they read multiple documents	8 historians (experts) and 8 high school seniors (proficient readers)	History (Battle of Lexington) / 8 written and 3 pictorial texts (Average 225 words)	Think-aloud, presentation of the texts, picture evaluation, ranking task, and identifying of terms	Think-aloud protocol	<ul style="list-style-type: none"> • There is difference between experts and novice in reading history documents; Reading of multiple documents includes <i>corroboration</i>, <i>sourcing</i>, and <i>contextualization</i>.
Wineburg (1998)	Difference between experts of rich knowledge and expert of less knowledge	2 historians (1 expert on Lincoln but 1 not on Lincoln)	History (Lincoln) / 7 documents (Average 196 words)	To read the historical documents with the broad goal of “Understanding the light they shed on Lincoln’s views on race.”	Think-aloud protocol	<ul style="list-style-type: none"> • Despite lack of background knowledge, a historian can construct mental model like another historian with rich domain knowledge, after much cognitive trials.
Wolfe & Goldman (2005)	Relationship between text processing and reasoning	44 sixth-grade students (25 girls)	History (Fall of Rome) / 2 contradictory documents, one map, one list of facts (Average 206 words)	To read two contradictory texts explaining the Fall of Rome and thought out loud after each sentence, and to answer questions	Think-aloud protocol, prior knowledge measure, and post-reading interview	<ul style="list-style-type: none"> • Adolescents can read two conflicting sources of texts—making meaning <i>coherently</i> • There is relationship between students’ connections within/across texts and their effort of such connects and deep understanding

Appendix B. The Reading Material: Two Maps and Five Texts

Map 1.

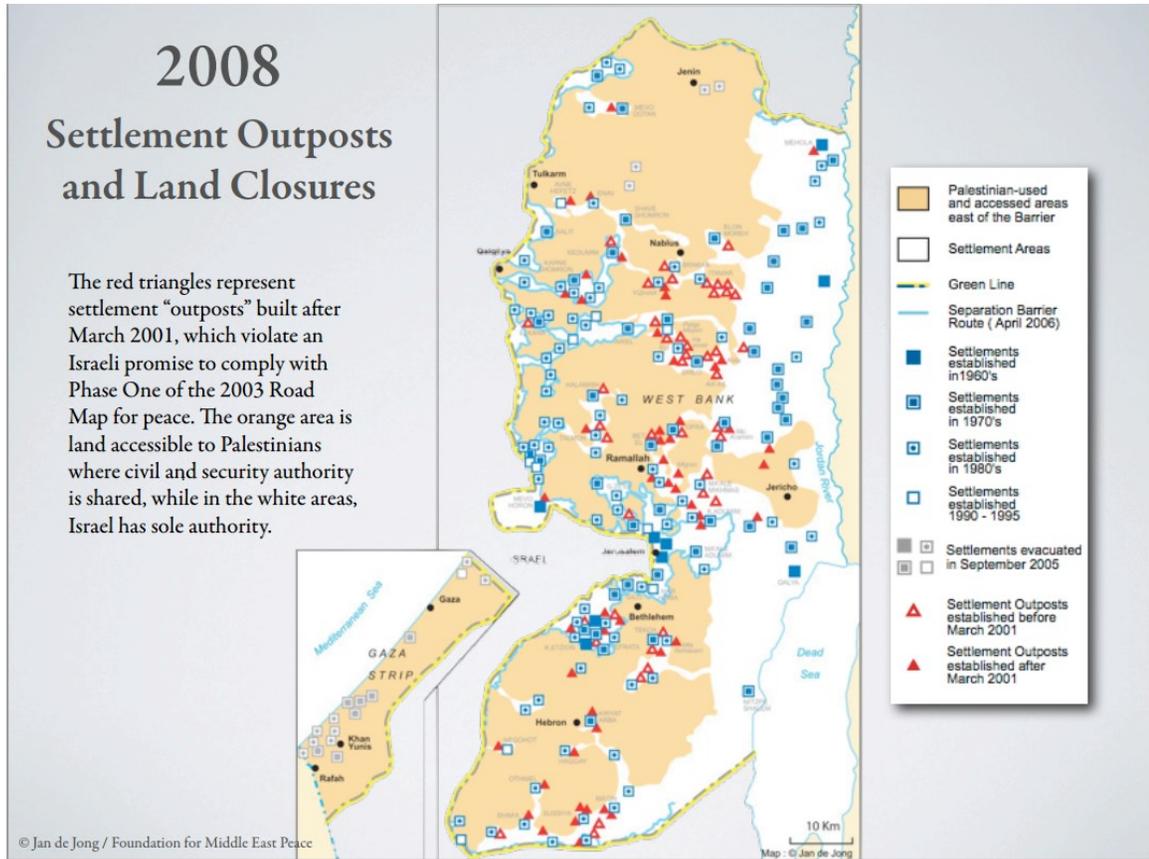
Origin and evolution of the Arab-Zionist conflicts (Giraldi, 2011)



Source: *Origins and Evolution of the Arab-Zionist Conflict, Israel: A History, The Question of Palestine and Graphic News*

Map 2.

Settlement Outposts and Land Closure (Foundation for Middle East Peace, 2012)



Text 1

Author: The editors of the Encyclopædia Britannica

Source: Britannica Online

Date: 2010

Title: West Bank

West Bank, area of the former British-mandated (1920–47) territory of Palestine west of the Jordan River, claimed from 1949 to 1988 as part of the Hashemite Kingdom of Jordan but occupied from 1967 by Israel. The territory, excluding East Jerusalem, is also known within Israel by its biblical names, Judaea and Samaria.

The approximately 2,270-square-mile area is the centre of contending Arab and Israeli aspirations in Palestine. Within its present boundaries, it represents the portion of the former mandate retained in 1948 by the Arab forces that entered Palestine after the departure of the British. The borders and status of the area were established by the Jordanian-Israeli armistice of April 3, 1949. Pop. (2006 est.) 2,697,000.

History

Upon the departure of the British occupying forces in May 1948 and the proclamation of the State of Israel, the armies of five Arab countries entered Palestine. In the ensuing conflict—the first of the Arab-Israeli wars—Israel expanded beyond the territory contemplated by the partition plan. The West Bank, as demarcated by the Jordanian-Israeli armistice of 1949, was broadly similar to (but smaller than) one of the zones designated as an Arab state by the United Nations (UN) partition plan for Palestine in 1947. According to that plan, Jerusalem was to have been an international zone. However, the city was instead divided into Israeli (west) and Jordanian (east) sectors. The Arab state whose creation was envisioned by the 1947 UN partition plan never came into being, and the West Bank was formally annexed by Jordan on April 24, 1950, although this annexation was recognized only by Great Britain and Pakistan.

From 1950 until it was occupied by Israel in the Six-Day War of 1967, the West Bank was governed as part of Jordan, though it was divided from the Jordanian population of the East Bank by the Jordan River. The relationship between the East and West banks was uneasy, both because of Palestinian suspicions of the Hashemite dynasty and because of the aspirations of Palestinians in the West Bank for a separate state. The web of relationships connecting the two

halves of Jordan grew during this period, however, and by 1967 the West Bank represented about 47 percent of Jordan's population and about 30 percent of its gross domestic product.

During the 1967 war, Israel occupied the West Bank and established a military administration throughout the area, except in East Jerusalem, which Israel incorporated into itself, extending Israeli citizenship, law, and civil administration to the area. During the first decade of Israeli occupation, there was comparatively little civil resistance to Israeli authorities and very little support among Arab residents of resistance activity.

Throughout the 1970s and '80s the issue of Israeli rule over the West Bank Palestinians remained unresolved. Israel regarded possession of the West Bank as vital to its security, and the growing number of Israeli settlements further stiffened Israeli unwillingness to relinquish control of the area. At the same time, the chief political representative of the West Bank Palestinians, the Palestine Liberation Organization (PLO), refused to negotiate with Israel and, until 1988, was unwilling to recognize Israel's right to exist; Israel refused to negotiate with or recognize the PLO for years after that date.

In 1988 Jordan's King Hussein renounced all administrative responsibility for the West Bank, thereby severing his country's remaining connections with the area. Meanwhile, anti-Israeli protests broke out among the Arabs of the West Bank in December 1987 and became virtually a permanent feature of West Bank life for the next few years, despite the Israeli army's continued attempts to suppress the disorders.

As a result of secret negotiations begun in April 1993, Israel and the PLO reached agreement in September on a plan to gradually extend self-government to the Palestinians of the West Bank (and Gaza Strip) over a five-year period prior to a final settlement of the issue of Palestinian statehood. Under the plan, Israel's civilian and military administration would be dissolved and the Israeli army withdrawn from populous Arab areas. In the West Bank the plan's actual implementation began in May 1994 with the Israelis' withdrawal from the town of Jericho and its environs. By 2000 the Palestinian Authority (PA) controlled less than one-fifth of the West Bank, while Israeli occupation (in some areas, combined with PA local administration) continued in the remainder.

Text 2**Author: Council for European Palestinian Relations (CEPR)****Source: CEPR Website (thecepr.org/)****Date: Unknown****Title: Illegal Israeli settlement**

One of the major barriers to the creation of two contiguous, sovereign states for Palestinians and Israelis is the existence – and continuing growth – of illegal Israeli colonies (widely called "settlements") on land long recognized by the United Nations as part of Palestine. Despite a repeated international condemnation, including a UN General Assembly resolution and a ruling by the International Court of Justice, the population of these settlements, which currently number 121, has grown by an average of 5% annually since 2001. Further settlement construction threatens peace in the region.

Israel has repeatedly refused to dismantle these settlements in the West Bank, East Jerusalem and Golan Heights, and has repeatedly fudged and violated various moratoriums on "new" growth. As stated by Maria Viotti, Brazil's ambassador to the UN and the current rotating president of the Security Council, "Further settlement construction threatens peace in the region. Halting construction has been misrepresented as an Israeli concession while in fact international law requires it."

Settlements are the cause of great inequalities in access to natural resources between Israelis and Palestinians. Many settlements are built on prime agricultural land confiscated from Palestinians, or on key water resources such as the Western Aquifer basin, springs and wells. Israeli West Bank settlers consume an amazing 280 liters of water per day per person compared to 86 liters per day available for Palestinians in the West Bank - only 60 of which are considered potable. The World Health Organization recommends a minimum of 100 liters per day – meaning that settlers use far more than double the water required, while Palestinians do not even approach the minimum. The settlements are commonly positioned on hilltops overlooking Palestinian communities, and the wastewater is frequently discharged into nearby valleys without treatment. Moreover, solid waste generated in Israel is dumped without restriction in the occupied territories.

The psychology of settlements

Settlers living in the blocks surrounding Jerusalem largely identify themselves as 'economic settlers' - those who have been enticed to settle in occupied lands by the variety of public and private incentives offered by the government. While most government incentives for

settlers, such as grants and tax breaks, were eliminated under Prime Minister Sharon, Israelis can often still obtain more advantageous mortgages for homes in settlements.

In contrast, the settlers who have populated the area around East Jerusalem and Hebron, for example, are doing so based on extreme religious convictions. These settlers believe that Israel's success in the 1967 war was a sign of messianic redemption, and today they view the settler movement as the return of the Jewish people to their biblical homeland. "For religious settlers, Arabs are an alien element in the organic unity of Jews and their land," writes Gadi Taub, assistant professor of communications and public policy at Jerusalem's Hebrew University. "Although the occupation and the suspension of Palestinian rights are officially temporary, the right wing aspires to keep Arabs indefinitely in quasi-colonial status." These religious, or "ideological," settlers are relatively few — around 130,000 of the total half-a-million — but their actions have an outsized-impact. For example, the number of extremist religious Jews joining the Israeli army, and assuming leadership positions there, is currently on the rise. A number of extremist Rabbis have begun warning Israeli troops against the consequences of evacuating Jewish settlers from their homes, saying that performing such an act would be in violation of the Ten Commandments revealed to Prophet Moses from Almighty God.

Settlers often carry out violent attacks against Palestinians and their property with complete legal immunity, and often with more than implicit support from the military itself. In many cases, settler violence is used as a means to discourage Palestinians from harvesting their land. During August through October 2010, Palestinians in the West Bank reported a total of 277 cases of settler violence – ranging from arracks with knives, bats or fists; to arson; to the use of live ammunition.

In the most severe cases, settler expropriation has resulted in the loss of property and the eviction of the long-term Palestinian residents. Other humanitarian consequences include restrictions on public space and residential growth in areas already severely overcrowded and inadequate services. In addition, the close proximity of settler and Palestinian residents, with the added military presence that comes with sustained settler presence, magnifies the potential for tension and violence.

Text 3

Author: Dani Dayan (The chairman of the Yesah Jewish communities in the West Bank)

Source: Opinion page, *The New York Times*

Date: July 25, 2010

Title: Israel's settlers are here to stay

Whatever word you use to describe Israel's 1967 acquisition of Judea and Samaria (commonly referred to as the West Bank) will not change the historical facts. Arabs called for Israel's annihilation in 1967, and Israel legitimately seized the disputed territories of Judea and Samaria in self-defense. Israel's moral claim to these territories, and the right of Israelis to call them home today, is therefore unassailable. Giving up this land would mean rewarding those who've historically sought to destroy Israel, a manifestly immoral outcome. Of course, just because a policy is morally justified doesn't mean it's wise. However, our four-decade-long settlement endeavor is both. The insertion of an independent Palestinian state between Israel and Jordan would be a recipe for disaster.

The influx of hundreds of thousands of Palestinian refugees from Syria, Lebanon, Jordan and elsewhere would convert the new state into a hotbed of extremism. And any peace agreement would collapse the moment Hamas inevitably took power by ballot or by gun. Moreover, the Palestinians have repeatedly refused to implement a negotiated two-state solution. The American government and its European allies should abandon this failed formula once and for all and accept that the Jewish residents of Judea and Samaria are not going anywhere.

On the contrary, we aim to expand the existing Jewish settlements in Judea and Samaria, and create new ones. This is not a theological adventure but is rather a combination of inalienable rights and realpolitik. Even now, and despite the severe constraints imposed by international pressure, more than 350,000 Israelis live in Judea and Samaria. With an annual growth rate of 5 percent, we can expect to reach 400,000 by 2014 — and that excludes the almost 200,000 Israelis living in Jerusalem's newer neighborhoods. Taking Jerusalem into account, about 1 in every 10 Israeli Jews resides beyond the 1967 border. Approximately 160,000 Jews live in communities outside the settlement blocs that proponents of the two-state solution believe could be easily incorporated into Israel. But uprooting them would be exponentially more difficult than the evacuation of the Gaza Strip's 8,000 settlers in 2005.

The attempts by members of the Israeli left to induce Israelis to abandon their homes in Judea and Samaria by offering them monetary compensation are pathetic. This checkbook policy has failed in the past, as it will in the future. In the areas targeted for evacuation most of us are

ideologically motivated and do not live here for economic reasons. Property prices in the area are steep and settlers who want to relocate could sell their property on the free market. But they do not.

Our presence in all of Judea and Samaria — not just in the so-called settlement blocs — is an irreversible fact. Trying to stop settlement expansion is futile, and neglecting this fact in diplomatic talks will not change the reality on the ground; it only makes the negotiations more likely to fail.

Given the irreversibility of the huge Israeli civilian presence in Judea and Samaria and continuing Palestinian rejectionism, Western governments must reassess their approach to resolving the Israeli-Palestinian conflict. And consequently, instead of lamenting that the status quo is not sustainable, the international community should work together with the parties to improve it where possible and make it more viable.

While the status quo is not anyone's ideal, it is immeasurably better than any other feasible alternative. And there is room for improvement. Checkpoints are a necessity only if terror exists; otherwise, there should be full freedom of movement. And the fact that the great-grandchildren of the original Palestinian refugees still live in squalid camps after 64 years is a disgrace that should be corrected by improving their living conditions.

Yossi Beilin, a former Israeli minister, wrote a telling article a few months ago. A veteran American diplomat touring the area had told Mr. Beilin he'd left frightened because he found everyone — Israel, the Palestinian Authority, Jordan and Saudi Arabia — content with the current situation. Mr. Beilin finds this widespread satisfaction disturbing, too.

I think it is wonderful news. If the international community relinquished its vain attempts to attain the unattainable two-state solution, and replaced them with intense efforts to improve and maintain the current reality on the ground, it would be even better. The settlements of Judea and Samaria are not the problem — they are part of the solution.

Text 4**Author: Madeleine Morgenstern (An assistant editor at The Blaze)****Source: The Blaze****Date: January 31, 2013****Title: United Nations report says Israel's settlements violates Palestinians' human rights**

The United Nations' first report on Israel's overall settlement policy describes it as a "creeping annexation" of territory that clearly violates the human rights of Palestinians, and calls for Israel to immediately stop further such construction. The report's conclusions are not legally binding, but they further inflame tensions between the U.N. Human Rights Council and Israel, and between Israel and the Palestinians. Israeli officials immediately denounced the report, while Palestinians pointed to it as "proof of Israel's policy of ethnic cleansing" and its desire to undermine the possibility of a Palestinian state.

In its report to the 47-nation council, a panel of investigators said Israel is violating international humanitarian law under the Fourth Geneva Convention, one of the treaties that establish the ground rules for what is considered humane during wartime. This was the first thematic report on Israel's settlements with an historical look at the government's policy since 1967, U.N. officials said.

The Israeli government persists in building settlements in occupied territories claimed by Palestinians for a future state, including east Jerusalem and the West Bank, "despite all the pertinent United Nations resolutions declaring that the existence of the settlements is illegal and calling for their cessation," the report said. The settlements are "a mesh of construction and infrastructure leading to a creeping annexation that prevents the establishment of a contiguous and viable Palestinian State and undermines the right of the Palestinian people to self-determination," the report concludes. More than 500,000 Israelis already live in settlements that dot the West Bank and ring east Jerusalem, the Palestinians' hoped-for capital. Israel annexed east Jerusalem, with its Palestinian population, immediately after capturing the territory from Jordan in 1967 and has built housing developments for Jews there, but the annexation has not been recognized internationally.

At U.N. headquarters in New York, Secretary-General Ban Ki-moon's office released a statement saying that he "has repeatedly made his views on Israeli settlements clear. All settlement activity in the occupied Palestinian territory, including east Jerusalem, is illegal under international law. It also runs contrary to Israel's obligations under the Road Map" for a Middle East peace settlement.

The Israeli Foreign Ministry accused the council of taking a systematically one-sided and biased approach towards Israel, with the report being merely “another unfortunate reminder” of that bias.

French judge Christine Chanet, who led the panel, said Israel never cooperated with the probe, which the council ordered last March. Because it was not authorized to investigate within Israel, Chanet said, the panel had to travel to Jordan to interview more than 50 people who spoke of the impact of the settlements, such as violence by Jewish settlers, confiscation of land and damage to olive trees that help support Palestinian families. The report also references legal opinions, other reports and a number of articles in the Israeli press. Another panel member, Pakistani lawyer Asma Jahangir, said the settlements “seriously impinge on the self-determination of the Palestinian people,” an offense under international humanitarian law.

The Palestine Liberation Organization appeared to suggest it might seek such action, in a statement that called the report’s legal framework a clear indictment of Israeli policy and practice. “All the Israeli settlement activities are illegal and considered to be war crimes according to the International Criminal Court’s Rome Statute as well as the Fourth Geneva Convention. This means that Israel is liable to prosecution,” said PLO executive committee member Hanan Ashrawi. The settlements, she added, are “clearly a form of forced transfer and a proof of Israel’s policy of ethnic cleansing.”

The Geneva-based U.N. Human Rights Council was set up in 2006 to replace a 60-year-old commission that was widely discredited as a forum dominated by nations with poor rights records. The United States finally joined the council in 2009, and U.S. State Department spokeswoman Victoria Nuland said that while all countries should appear for their review “we also consistently registered our opposition to the council’s consistent anti-Israel bias.”

The council, which could have proceeded with the review or canceled it, said its agreement to defer would set precedent for how to deal with any future cases of “non-cooperation.” All 193 U.N. member nations are required to submit to such a review every four years, and council diplomats said they worried that if a nation were let off the hook that could undermine the process.

Text 5

Author: Avi Bell (a Professor of Law at the University of San Diego/ Bar-Ilan University)

Source: The Begin-Sadat (BESA) center for strategic studies
[\(http://www.biu.ac.il/\)](http://www.biu.ac.il/)

Date: July 31, 2012

Title: The Levy report: Reinvigorating the discussion of Israel's rights in the West Bank.

Prime Minister Netanyahu was presented with the report of the Commission to Examine the Status of Building in Judea and Samaria, headed by former Supreme Court Justice Edmond Levy (the "Levy report"). The report has drawn a flurry of overwrought criticism due to its inclusion of a section concerning the lawfulness of Israeli settlement activity.

The report does little more than endorse the traditional official Israeli position that the Fourth Geneva Convention does not apply *de jure* to the West Bank, and in any event does not bar Israeli settlements. While the report's analysis is far from comprehensive, it is more detailed and more persuasive than that usually offered by anti-settlement activists.

The Levy report adduces one of two fairly compelling reasons for concluding that the laws of belligerent occupation do not apply *de jure* to Israel's presence in the West Bank. One of the *sine quibus non* of belligerent occupation, as reaffirmed recently in an expert conference organized by the International Committee of the Red Cross, is that the occupation take place on foreign territory. While recent years have seen some debate on the meaning of foreign territory, considerable state practice supports the traditional view that captured territory is "foreign" only when another state has sovereignty. The Levy Commission is on solid ground in observing that neither Jordan nor any other foreign state had territorial sovereignty over the West Bank in 1967 and that the territory cannot therefore be "foreign" for purposes of the law of belligerent occupation. Indeed, had the Levy Commission chosen to so argue, it could have argued cogently that Israel itself was already the lawful sovereign over the West Bank in 1967.

Unmentioned by the report, Israel's peace agreement with Jordan constitutes a second reason for questioning the *de jure* application of the laws of belligerent occupation to the West Bank. As Dinstein wrote, the rules of belligerent occupation cannot be applied to Israel's presence in the West Bank "in light of the combined effect of ... the Jordanian-Israeli Treaty of Peace of 1994 and the series of agreements with the Palestinians. There is simply no room for belligerent occupation in the absence of belligerence, namely, war."

On settlements, the Levy report likewise adduces several strong arguments to the effect that even if the laws of belligerent occupation applied to Israel's presence in the West Bank, the

Fourth Geneva Convention poses no bar to the kinds of actions that are subsumed under the term “settlement activities.” The Fourth Geneva Convention forbids “transfers” and “deportations” by the occupying state of parts of its population into occupied territory, but not “settlements.”

Officials of the state of Israel have provided services to settlers and sometimes encouraged them, but the state of Israel has not transferred any Israeli to the West Bank against his or her will. In fact, as even anti-settlement activists like Sasson acknowledge, “there was never a considered, ordered decision by the state of Israel, by any Israeli government” on settlements. While some governments of Israel have favored the physical expansion of settlements or the increase of their population, settlement growth has been driven by the preferences of private citizens. There is no precedent for any other state being adjudged to have violated the Fourth Geneva Convention simply on the basis of permitting or facilitating private preferences in the way Israel has done.

The Levy Commission notes that even if facilitating private Jewish residential preferences in the West Bank were otherwise suspect “transfers,” sui generis rules apply to the area. Article 6 of the Mandate of Palestine demands “encourage[ment], in cooperation with the Jewish Agency ... [of] close settlement by Jews on the land, including State lands...” As Eugene Rostow, one-time dean of Yale Law School, noted, this command is preserved by article 80 of the U.N. Charter, and, if the West Bank is under belligerent occupation, by article 43 of the Hague Regulations. Additionally, if, as Israel’s critics contend, the International Covenant on Civil and Political Rights applies to Israeli actions in the West Bank, articles 3, 12 and 26 of the Covenant lend urgency to Israeli efforts to protect Jewish housing rights in the West Bank in light of the Palestinian Authority death penalty for land sales to Jews coupled with senior Palestinian officials’ open call for a Jew-free state of Palestine.

Appendix C. The iMTC Environment

0. Background

- The application is for the research on analyzing multi-text comprehension.
- The application is implemented in Java and its final product is an executable file on Windows in order for users to easily run it.
- *Users* indicate those who will participate in our experiment using the tool.
-

1. Run program



Figure C1. File structure

- Put the executable file (i.e., *Analyzer-Multi-Text-Comprehension.exe*) with *doc* and *summary* -the names cannot be changed - directory, and run it.
- The *doc* directory is intended for input documents.
- The *summary* directory is intended for summary files generated by users. The directory is created automatically unless it exists.

2. Application Layout

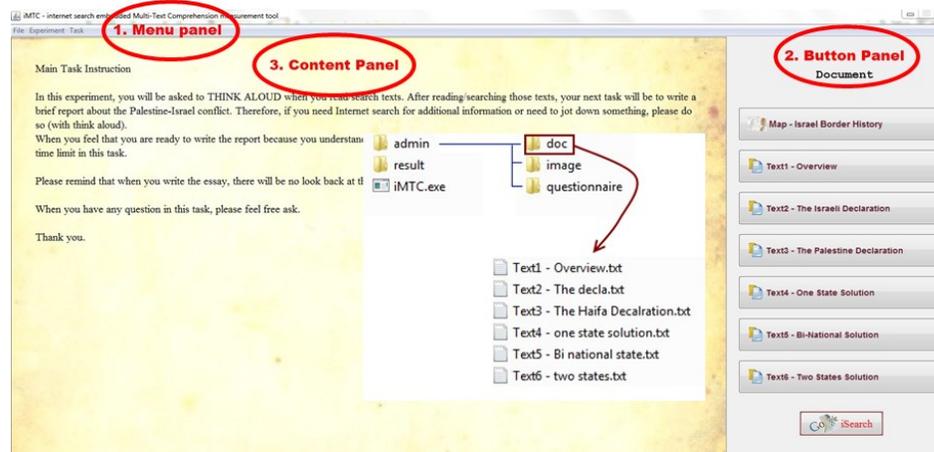


Figure C2. Application Layout

- The application consists of three parts: 1) menu, 2) content, and 3) document list panes.
- The *menu* pane has *File*, *Practice*, *Experiment* menus. In *File* menu, users can open the previous projects, save the current work or exit the program. Second, in *Practice* menu, users take a look at how to use the program with instructions, if needed, before actual tests. Finally, the tool records information about readers' behaviors such as running time and navigating order in three different conditions – four-text, five-text, and Internet search settings – found in *Experiment* menu.

- The *content* pane shows what users will read in the document they select in the *document list* pane, in which the application draws a list of text documents (file extension is *txt*) stored in *doc* directory.

3. Output: Mandy's Case

- Results (of research participants' answers to the questionnaires) are generated in Text file and HTML version with color-coded

User: MANDY Date & Time: Nov 21, 2011 2:16 PM

Question	Ans #	Answer
1. Most things worth knowing are easy to understand.	3	Uncertain
2. What is true is a matter of opinion.	4	Agree
3. Students who learn things quickly are the most successful.	2	Disagree
4. People should always obey the law.	4	Agree
5. People's intellectual potential is fixed at birth.	2	Disagree
6. Absolute moral truth does not exist.	4	Agree
7. Parents should teach their children all there is to know about life.	2	Disagree
8. Really smart students don't have to work as hard to do well in school.	4	Agree
9. If a person tries too hard to understand a problem, they will most likely end up being confused.	2	Disagree
10. Too many theories just complicate things.	4	Agree

Figure C3: Data recording and classification

- As an output, the program automatically captures the order of texts read by the user and its duration. It also makes a track of internet search.

User: MANDY Date & Time: Nov 21, 2011 2:16 PM

Action	Time	Description
START	2:16:15 PM	Open the main application
Reading Document #1	2:20:04 PM	Start to read the document "Text1 - Overview"
Start Internet Search	2:21:13 PM	Open the Internet Browser
Browse the webpage	2:21:27 PM	http://dic.naver.com/
Browse the webpage	2:21:35 PM	http://endic.naver.com/enkEntry.nhn?jsessionid=311BB4118B2F9A3EEB3E
Browse the webpage	2:21:54 PM	http://endic.naver.com/enkEntry.nhn?
End Internet Search	2:22:02 PM	Close the Internet Browser
Reading Document #2	2:33:30 PM	Start to read the document "Text2 - The Israeli Declaration"
Start Internet Search	2:35:59 PM	Open the Internet Browser
Browse the webpage	2:36:00 PM	http://www.google.com/
Browse the webpage	2:36:17 PM	http://www.google.com/#client=psy-
⋮		
Reading Document #3	2:51:23 PM	Start to read the document "Text3 - The Palestine Declaration"
Start Internet Search	2:55:33 PM	Open the Internet Browser
Browse the webpage	2:55:35 PM	http://www.google.com/
Browse the webpage	2:55:44 PM	http://www.google.com/#hl=en&cp=6&gs_id=&xhr=t&q=NAKBA+day&pf
Browse the webpage	2:55:49 PM	http://en.wikipedia.org/wiki/Nakba_Day
End Internet Search	2:58:48 PM	Close the Internet Browser
Reading Document #4	3:07:49 PM	Start to read the document "Text4 - One State Solution"

After the instruction, Mandy goes to the Text1-Overview

During reading Text 3, Mandy searched a term, "Nakba" on the Internet for about 3 minutes.

Figure C4: Mandy's reading log output

Appendix D. Think-Aloud Task Instruction

In this experiment, you will be asked to THINK ALOUD when you read the given texts, and when you search information on the Internet. I encourage you to spontaneously verbalize what you are thinking as you are aware of it. Although there are no limitations in verbalizing your thoughts, I am interested in the strategies you use when reading texts from different perspective, and when you search for more information on the Internet. Again, please do not hesitate to say any thoughts in your mind! You will practice thinking aloud before the actual experiment. If you have any question during this practice, please feel free to ask me.

A Practice Text for Think-Aloud Practice

It is legitimate to further characterize the broadpoint appearance as a major archeological horizon marker for the eastern seaboard. ■ In the terms of Willey and Phillips, a horizon is “a primarily spatial continuity represented by cultural traits and assemblages whose nature and mode of occurrence permit the assumption of a broad and rapid spread.” ■ That a quick expansion of the broadpoint-using peoples took place is indicated by the narrow range of available radiocarbon dates, along with a correspondingly wide areal distribution of components. ■ Once established, the broadpoint horizon developed as a “whole cultural pattern or tradition” in its own right by persisting and evolving over an expansive region for 500 to 1000 years.

Appendix E. Pre-Reading Interview

Thank you for participating in this study. As the research begins, I am interested in your prior knowledge, attitude and beliefs about Palestine-Israel conflicts.

1. Could you remember any historical facts, events, and/or current issues about the Palestine and Israel conflicts? [Prior knowledge]

2. Thinking generally about **Israelis/Israel government**, would you say that your views are very favorable, fairly favorable, neither favorable nor unfavorable, fairly unfavorable, or very unfavorable? [Topic beliefs]

	Very favorable	Fairly favorable	Neither favorable nor unfavorable	Fairly unfavorable	Very unfavorable
Israelis					
Israel Government					

• Why do you think/believe so?

3. Thinking generally about **Palestinians/Palestine government**, would you say that your views are very favorable, fairly favorable, neither favorable nor unfavorable, fairly unfavorable, or very unfavorable? [Topic beliefs]

	Very favorable	Fairly favorable	Neither favorable nor unfavorable	Fairly unfavorable	Very unfavorable
Palestinians					
Palestine Government					

• Why do you think/believe so?

4. Do you have additional thoughts, beliefs, and opinions about the causes and solutions of the Palestine-Israel conflicts? [Other thoughts]

Appendix F. Post-Reading Interview

I ask you again your attitude and belief of the Palestinian and Israel conflict as I did in the pre-reading Interview. In addition, I ask you several questions about this research including self-reflection of your verbalizing thoughts, and reading and searching of controversial texts. Feel free to answer to these questions.

1. Thinking generally about **Israelis/Israel government**, would you say that your views are very favorable, fairly favorable, neither favorable nor unfavorable, fairly unfavorable, or very unfavorable?

	Very favorable	Fairly favorable	Neither favorable nor unfavorable	Fairly unfavorable	Very unfavorable
Israelis					
Israel Government					

• Why do you think/believe so?

2. Thinking generally about **Palestinians/Palestine government**, would you say that your views are very favorable, fairly favorable, neither favorable nor unfavorable, fairly unfavorable, or very unfavorable?

	Very favorable	Fairly favorable	Neither favorable nor unfavorable	Fairly unfavorable	Very unfavorable
Palestinians					
Palestine Government					

• Why do you think/believe so?

3. Did your stance on the issue of Israeli settlements in the West Bank change after reading the multiple documents and Internet searching? Could you please explain how this happened, based on your reading experience? [Change of topic beliefs]

4. Do you think that your prior attitudes and beliefs about a topic influence your comprehension of the controversial topic in the Palestine-Israel conflict? [Reflection]

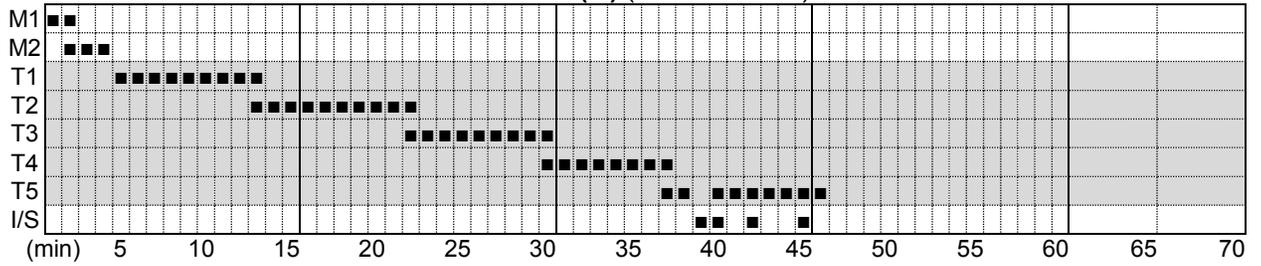
- When you read the texts:
- When you search for information on the Internet:
- When you evaluate texts:

Appendix G. Amount of Reading Time (Unit: Minutes)

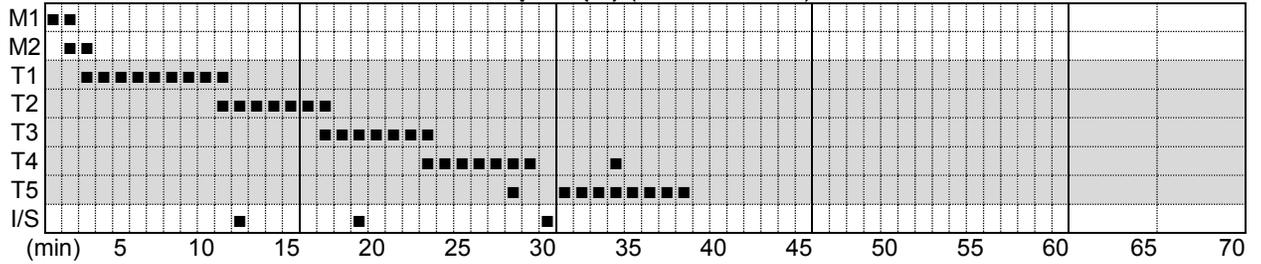
	Map 1	Map 2	Text 1	Text 2	Text 3	Text 4	Text 5	Internet	Total
I1	1.93	1.85	9.25	9.12	7.53	7.65	8.03	0.90	46.26
I2	1.49	1.22	9.38	4.98	5.65	6.25	8.15	0.9	38.02
I3	4.18	1.83	10.67	12.28	9.23	9.65	7.92	1.52	57.28
I4	2.15	1.57	13.05	9.08	9.57	9.28	11.10	5.20	61.00
I5	1.25	1.33	7.08	6.87	8.50	10.22	12.43	7.30	54.98
P1	1.80	1.70	7.63	8.35	7.65	7.13	9.42	7.93	51.62
P2	2.85	1.08	11.65	14.48	10.85	10.42	8.47	5.17	64.97
P3	3.58	1.68	6.48	5.30	6.40	5.50	5.35	0.00	34.29
P4	4.58	1.67	19.75	15.90	10.50	7.52	7.05	1.42	68.38
P5	1.30	0.77	5.88	4.38	3.57	3.75	4.07	0.00	23.72
N1	1.48	0.70	10.90	12.07	9.98	9.50	10.62	0.00	55.25
N2	5.30	2.53	11.78	13.95	12.55	10.27	13.73	6.05	76.17
N3	1.52	1.82	7.22	6.72	6.98	6.38	9.28	1.47	41.38
N4	3.57	0.95	13.13	9.78	9.82	11.18	10.12	0.72	59.27
N5	3.28	0.58	13.68	6.72	5.73	8.83	4.60	0.42	43.85
Mean	2.68	1.42	10.50	9.33	8.30	8.24	8.69	2.60	51.76

Appendix H. Reading Order Graphs

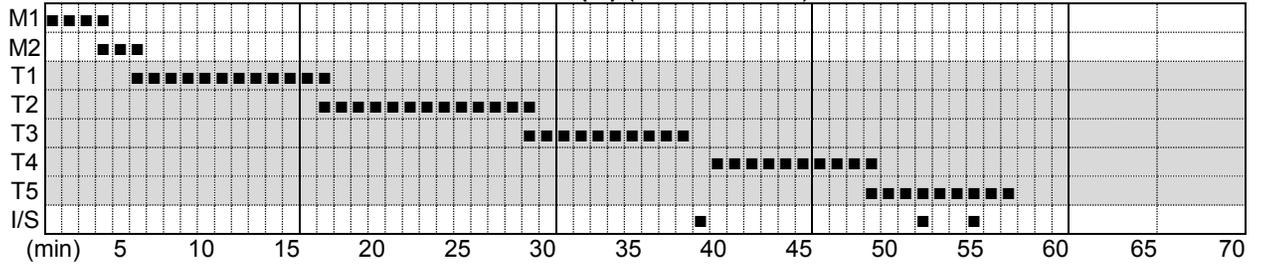
Pro-Israel: Jacob (I1) (46.26 minutes)



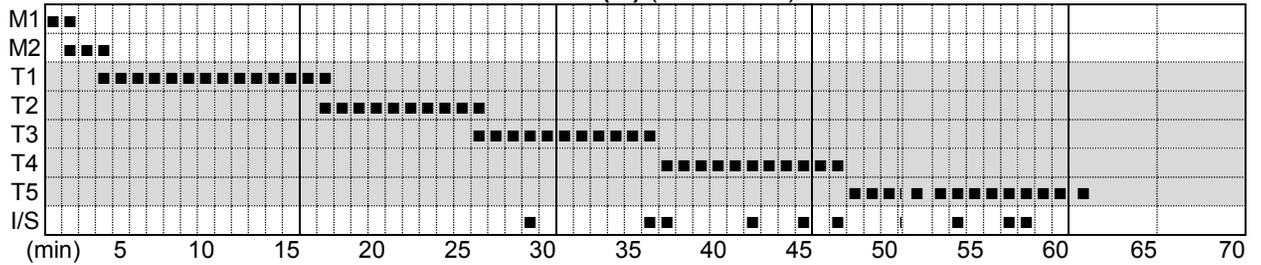
Pro-Israel: Sophia (I2) (38.02 minutes)



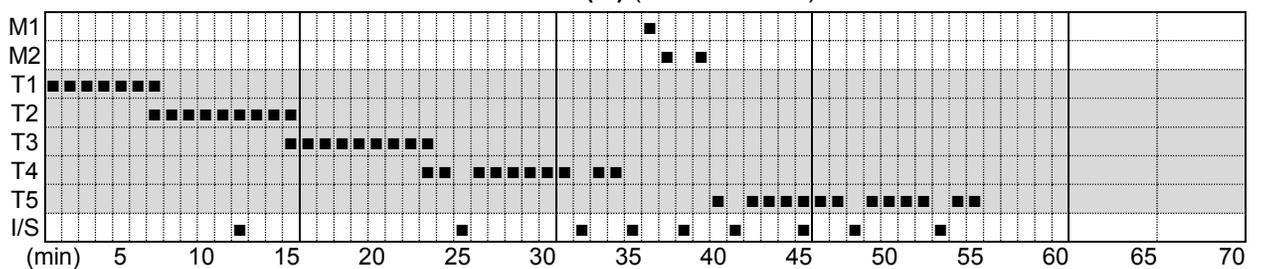
Pro-Israel: Mason (I3) (57.28 minutes)

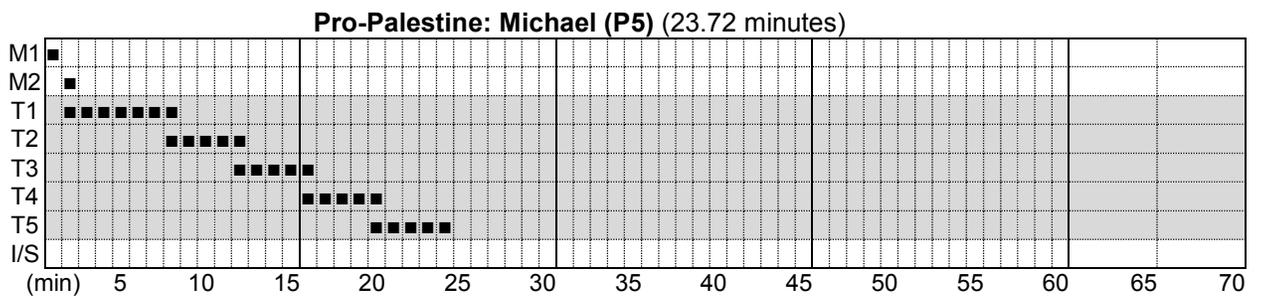
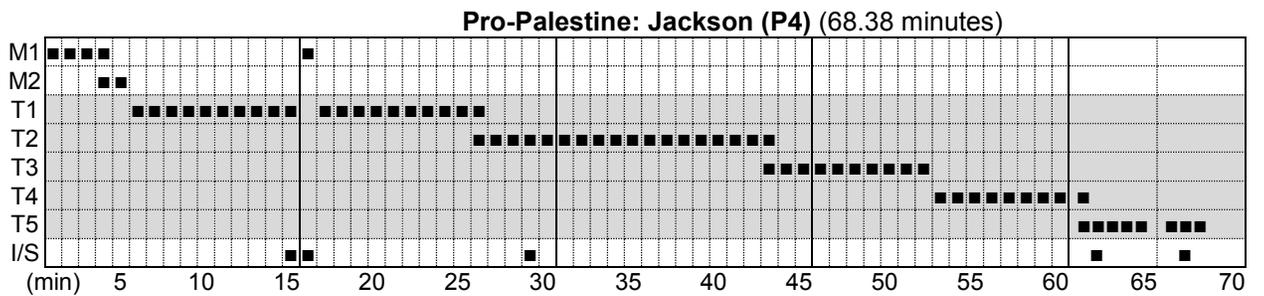
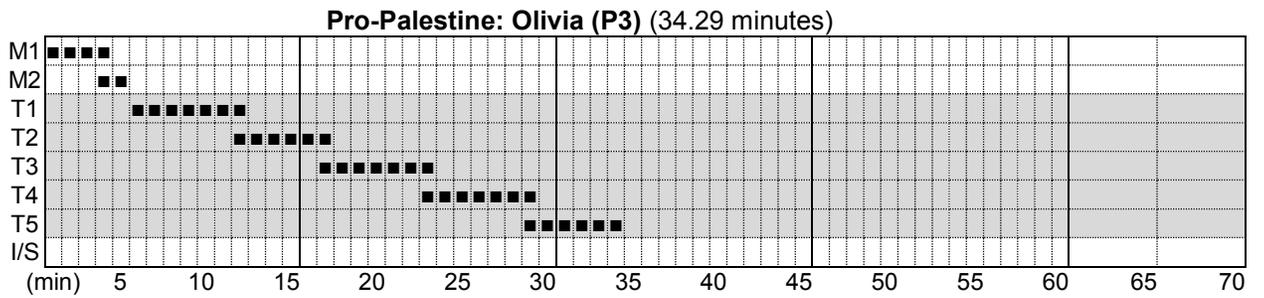
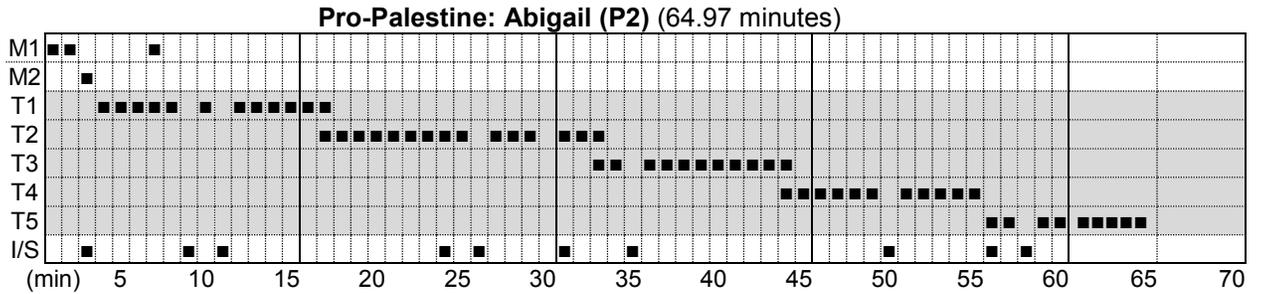
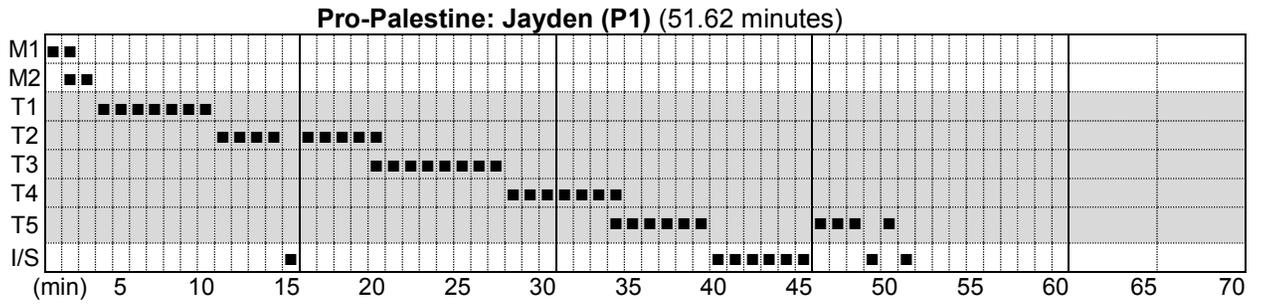


Pro-Israel: William (I4) (61 minutes)

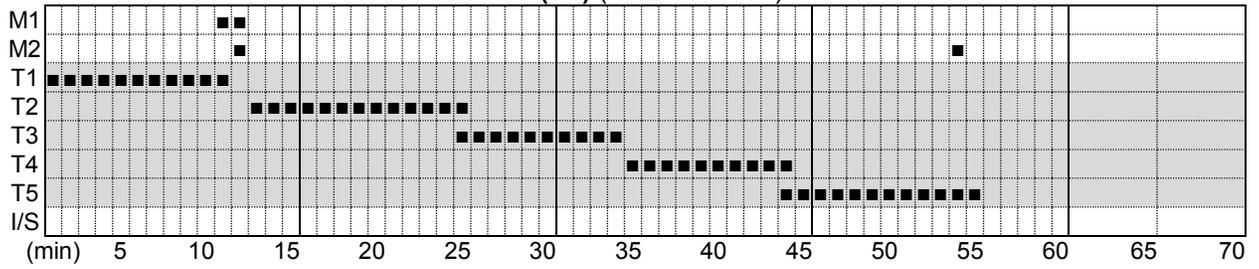


Pro-Israel: Isabella (I5) (54.98 minutes)

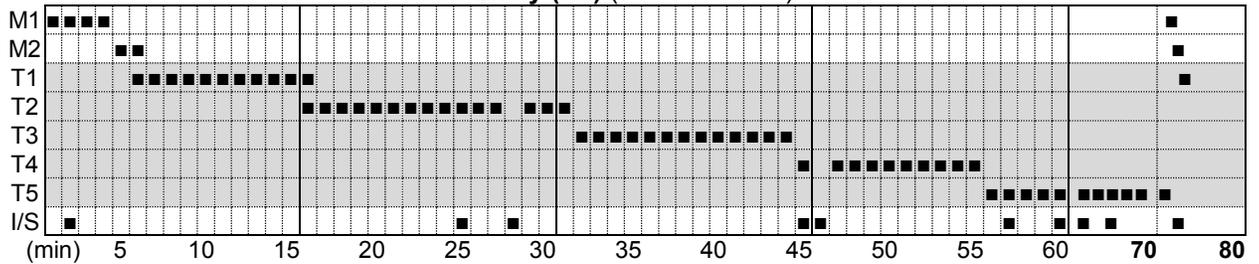




Neutral: Ava (N1) (55.25 minutes)

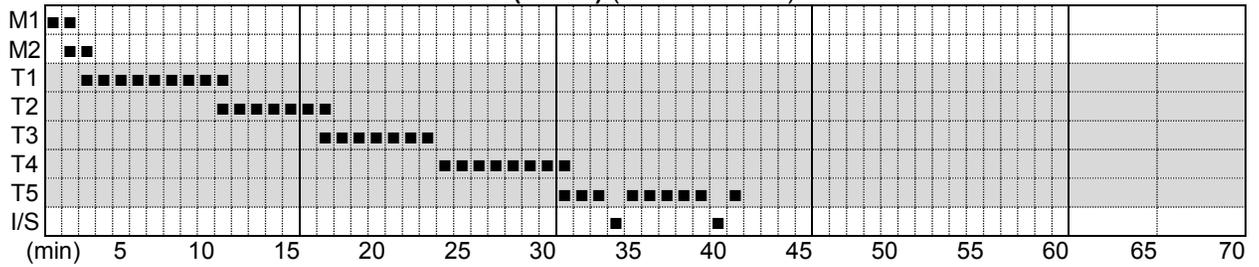


Neutral: Emily (N2) (76.17 minutes)

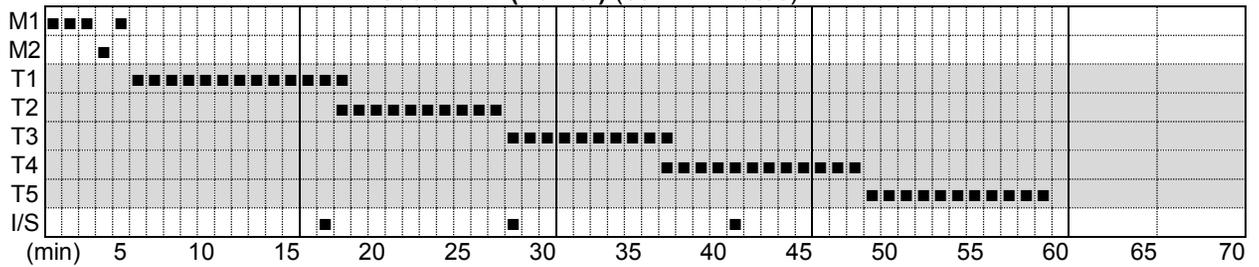


*note: A scale of the last column was adjusted in order to represent the big data size of N2.

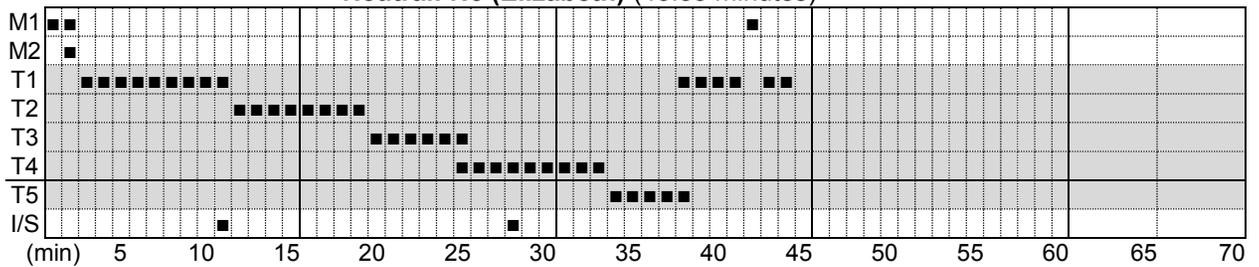
Neutral: N3 (Ethan) (41.38 minutes)



Neutral: N4 (Daniel) (59.27 minutes)



Neutral: N5 (Elizabeth) (43.85 minutes)



Appendix J. Frequency of Participants' Strategy Use for Each Text

		<i>Pro-Israel group</i>	<i>Pro-Palestine group</i>	<i>Neutral group</i>	<i>total</i>
TEXT 1	C	61	38	56	155
	A	11	12	2	25
	R	3	10	0	13
	M	3	10	13	26
	E	4	7	4	15
	IS	15	15	6	36
	Total	97	92	81	270
TEXT 2	C	38	9	47	94
	A	13	59	14	86
	R	27	2	1	30
	M	1	1	4	6
	E	5	6	13	24
	IS	8	3	4	15
	Total	92	80	83	255
TEXT 3	C	43	11	32	86
	A	31	5	6	42
	R	1	41	8	50
	M	1	0	4	5
	E	14	16	16	46
	IS	8	3	4	15
	Total	98	76	70	244
TEXT 4	C	27	19	39	85
	A	3	35	4	42
	R	30	5	5	40
	M	2	3	6	11
	E	13	7	8	28
	IS	15	4	6	25
	Total	90	73	68	231
TEXT 5	C	35	20	32	87
	A	18	2	0	20
	R	1	21	3	25
	M	7	2	8	17
	E	11	10	12	33
	IS	26	11	16	53
	Total	98	66	71	235

*Note: NA (Not Answered) and NI (Not Inferable) was not counted in this table.

Appendix K. Raw Data of Participants Internet Search Words and Types

	Word meaning	Concepts	Source
I1	de jure, sine qua non, adduces, renounce, sui generis	n/a	n/a
I2	concession	Samaria [image], Belligerent occupation	n/a
I3	de jure, sui generis	UN resolutions against Israel	n/a
I4	realpolitik, sine quibus non, sui generis	The Road Map Peace Plan, Rome Statue, Jordanian Israeli peace treaty 1994, Sasson Israeli Palestinian	the Blaze Morganstern, theblaze.com, Glenn Beck,
I5	sine quibus non, definition of quasi colonial status	Fourth Geneva Convention, Road map for peace, Belligerent occupation, Article 80 of the UN charter	The Blaze
P1	n/a	Israeli settlements water hilltop, Levy report, the Goldstone report, Organization of Middle East peace	Foundation for middle east peace, Merle Thorpe, Jr., theblaze.com
P2	annexed, quasi, expropriation, de jure, sine quibus	What is a settlement outpost, Middle east map Jordan and Israel[image], Prime minister Sharon, Hamas Palestine, Road Map for Middle East	n/a
P3	n/a	n/a	n/a
P4	annex, moratorium, de jure, sine quibus non, sui generis	East Bank Jordan	
P5	n/a	n/a	n/a
N1	n/a	n/a	n/a
N2	armistice, Messianic, sine quibus non, cogently, sui generis, ten commandments	Prime minister Sharon, Annapolis Peace Plan	the Blaze, The Begin-Sadat Center for Strategic Studies
N3	sine quibus non, sui generis, de jure	n/a	n/a
N4	environs, unassailable, annexed	n/a	n/a
N5	renounce, annexed	n/a	n/a

Appendix L. Participants' Topic Beliefs in the Pre-Reading and Post-Reading Sessions

Participant	<u>Topic belief in the pre-reading session</u>		<u>Topic belief in the post-reading session</u>		
	<i>About Israel</i>	<i>About Palestine</i>	<i>About Israel</i>	<i>About Palestine</i>	
<i>Pro-Israel Group</i>	Jacob	The Israelis [are] cool to be around other Jews but they're kind of pushy... The State of Israel; I'm very favorable... [I]t's the United States' biggest ally in the Middle East.	I definitely believe [Palestinians] are entitled to their own state. As for the [Palestinian government] neither favorable [n]or unfavorable... growing up in a Jewish household you kind of learn about the terrorist attacks that occurred.	I'm kind of in the middle. Well actually, still very favorable honestly, because it did say it was the citizens and not the state that was really trying to oppose the settlement.	Still, definitely both of them kind of like in the middle, like favorable and unfavorable, you know? Very good, because they're still people
	Sophia	I would say what influences my beliefs about the state of Israel is my religion. So, I believe that it should be a Jewish state based on our history and the relationship I have with the Jewish people.	I think that it should be the state of Israel and not Palestine, and I agree more with the Jewish people more than the Palestinians.	So I think that I still believe that the state of Israel should exist and not the state of Palestine but I think that it's hard for me to say that I am very favorable with the Israelis.	I don't agree with the Palestinians I don't think I agree with any other their actions because I don't think that the state of Palestine should exist.
	Mason	The Israelis, the people themselves are very nice, they are mostly all Jewish, I have a connection with them... The state of Israel; there's some stuff that I don't agree with... [B]eing Jewish, how can you deny your people's right as a religion in order to be politically correct?	Most of [Palestinians] are very good, there's the radicals that believe that the <i>Intifada</i> ... The state of Palestine itself worries me... That's why I'm slightly unfavorable because I just don't know and there's too much risk to safety and the citizens.	Once again, the Israelis; very favorable. And the state of Israel, fairly favorable... Israeli people [are] just kids, even younger than me. Therefore they have to go [to defend Israel] because Israel's so small.	Once again, the Palestinians neither unfavorable nor favorable. And the state of Palestine, fairly unfavorable, because I've explained, it's not very unfavorable because I don't know.
	William	So personally, my religion is Judaism, which has a strong tie to the nation of Israel and the country. I actually have Israeli	I believe as people they do have the right to the land, they're obviously, I mean the refugee's situation is very dire	I was actually the same, I was still very favorable for the Israelis and the state of Israel, partly because them seem to-	Again, Palestinians, very favorable view, the state of Palestine, very favorable and that I don't agree that it should

		<p>citizenship... I have family members [and] a lot of friends who live there ... and I've always kind of grown with like a tie to the country itself.</p>	<p>at the moment. At the same time, I'm kind of bias based on what I've previously said and I do believe that the tie to the land is more the Israelis then the Palestinians.</p>	<p>actually the state of Israel doesn't necessarily support the settlements that have been coming up, and they also give some proofs for the settlements.</p>	<p>be in this territory. Especially based on the what they quoted in considering the fact that it isn't foreign territory as well as... and they're still going back to the original U.N. idea for a two-state solution.</p>
	Isabella	<p>I feel that the education that I have gotten so far about the issue is, definitely biased, a course that was about Israeli politics. [T]he article we are reading and written from the Israelis, so how they feel about the conflict is usually pro-Israel and that's most of the education I got, which shaped my beliefs.</p>	<p>I would say Palestinians, fairly favorable for the state of the Palestine I would say fairly unfavorable, because of what I've learned in the attacks that have been going on for past few years.</p>	<p>When I think about the nation of Israel and Israelis, I'm still very favorable. Though, these articles as I did feel may have pointed ask to reasons why I shouldn't look favorably upon their actions, but I still feel like where I started.</p>	<p>I think I'm in the same boat of fairly favorable for Palestinian. I don't feel like all the issues sent from the Palestinians think that they could find an issue and think about the people who lived together in Jerusalem...I personally feel very unfavorable for it; I feel like they are cleaning land that is not theirs.</p>
Pro-Palestine Group	Jayden	<p>I don't really have a favorable or unfavorable yield toward individuals and people... But the government itself is, the military is ... and the ideas of racism and this colonial ideology is what's really dangerous.</p>	<p>For Palestinians, I basically have the same, you know. And a state of Palestine doesn't exist right now.</p>	<p>Nothing has changed.</p>	<p>Yeah, nothing's going to change.</p>
	Abigail	<p>I don't really have a problem with the people, [but] the state of Israel is fairly unfavorable. And my influences about my beliefs is like the bombings that they do towards the Palestinians and just how the</p>	<p>So I'm a say very favorable for the Palestinians um, cause I have some Palestinian friends and then very favorable for the state of Palestine.</p>	<p>Okay so now, specific Israelis I can't hate on anybody because there might be good but now my feelings for the state of Israel is very unfavorable.</p>	<p>The state of Palestine is very favorable and Palestinians very favorable.</p>

	Palestinians are like the underdogs and get a lot of hate.			
Olivia	I wouldn't say Israelis are bad [b]ecause you can have bad people in any ethnicity and religion. .And as for the state of Israel, though, I would say that they're pretty unfair, if you go into territory of Palestine and Israel; Palestine is more in the poor area and Israel has a lot more money...	I do believe that Palestine deserves that land because it's their land from the very beginning but as for the people, there are good people and bad people.	Again, I don't think that all Israelis are bad; I mean, they also, I know, it goes for any country, you know... And as for the state of Israel; very unfavorable. That's beyond ridiculous. I mean, I was aware of some things that were going on, like although I didn't state facts earlier, but after reading this, it did confirm a lot of things that were set.	I mean, it originally belonged to them, and even international laws recognized that it belonged to them. Why shouldn't they have a say in their land? Why should they have people occupy their lands and that wasn't theirs to begin with. And as for Palestinians, I'm not going to say that I favor them more than the other, because [of] extremists.
Jackson	Israeli people, I don't really have a big issue with them... As far as the state goes, I don't like their policies on dealing with the Palestinians... I'm not favorable with how they're continuing to make settlements and drive Palestinian people out of their homes.	I know more Palestinian people than I know Israelis. So I guess that's why I said more favorable to them, maybe that's how I've grown up, maybe I have a bias or whatever it is. Then the state of Palestine, I don't like it and I don't dislike it either. I don't know much about Hamas and their policies...	For Israel, I'm still unfavorable.	For Palestinians; favorable. The state of Palestine; I'd give them fairly favorable because the PLO has made some from what I read... They were making the effort to try and do things according to what's right and not just violence by itself but it didn't talk much about violence in there, so
Michael	I have a favorable view of Israelis because there are also Israelis that go into Palestine and help Palestinians who are being massacred...The state of Israel, currently, I don't have a favorable view of them because of the current government that's there right now. And the	To Palestine; well I like Palestinians so I have a very favorable view of Palestinians because I know them...The state of Palestine, yeah, I'd say neither favorable nor unfavorable because I feel like they kind of do stupid things and stupid policies that hurt	Israelis, nothing wrong with them at all, very favorable. The state of Israel I say "unfavorable" just because of the government and with the policies that they have implemented in the past 60 years	Palestinians, I have a favorable view of them. The state of Palestine, like I said before, they have some hideous karma [inaudible] and can't get anything done and they're not negotiating well. Some would say "racist" and anti-Semitic

		conservative party, Benjamin Netanyahu, I don't really think he's a good person because...	themselves and hurt the people and there's corruption		things and just keep hurting them and hurting the people.
Neutral Group	Ava	I don't know. I don't pay much attention to world news that often, but I would assume, like if they were doing something threatening to the United States, then I would feel obligated to dislike them.	And it's the same; if they were to threaten- the fact that I was at harm, or like threatening our country or something like that, I would feel a dislike towards them.	My answer changed because after reading the texts, I felt that Israel was being very unfair and selfish. They seemed to not abide by rules and just do what they wanted and let the people settle in the land that was occupied by the Palestinians.	My answer changed for empathetic reasons. I felt that the Palestinians were wronged and were not receiving fair treatment from the Israelis and to me, it seemed like they were being disrespected. Prior to reading the texts, I knew fairly little of the Israeli-Palestinian conflict so reading the texts educated me of the problem.
	Emily	I guess what influences your beliefs about Israel, [is] just different news sources and talking to people cause I see a lot of people in college who go on the different trips and stuff and come back and tell you all these wonderful things about Israel.	Um, I guess the same the thing sort of news from different sources about what's happening, but I feel like there's less news from the Palestinian side. Just hanging out with people around school and sort of have different opinions and kind of talk about it and stuff, so yeah.	Then the state of Israel, would probably fairly unfavorable just because I just after reading and the positions and reasoning for why they're just going to keep expanding. So I think that the people themselves, they think that they're able to because the state is sort of giving them the right .	So for the people as well I would say it's, um, fairly favorable... So I will still be neither favorable nor unfavorable [about Palestine government] because, I mean like they're doing what they can and it's, but it's still, it's not the best way to go about things.
	Ethan	I think they are a vital ally for the United States in the Middle East because we really don't have many friends there right now. And they also are very strong military, which is large in part thanks to the United States but also... United States needs a strong ally.	I want the Palestinians to have a place of their own but it relies a lot on the cooperation of the Israelis... But ideally I think, there needs to be a strong cooperation and tolerance there. So I would like to see them be happy and have a place.	I moved it to "neither unfavorable nor favorable" on both because despite my, like my kind of frustrations with Israel... I still think they are an important ally, especially today with the things that are going on with the Middle East, Egypt, and Yemen.	So I put fairly favorable for Palestinians and very favorable for the state of Palestine because I do think that they will be pretty happy if they get their own state and I definitely think that that is a key part of... talks that they are doing, so I'm for it.

Daniel	I guess I'm mutual. I believe it's best not to past judgment before knowing what's going on. So, I have no influences of my belief of Israel so far.	Same thing. Because I don't know much.	From the article, it seems like Israel has better argument from this information alone.	And from this information alone mean that Palestinian does not have very favorable argument.
Elizabeth	I'd say "neither favorable nor unfavorable" just because I don't have that much background knowledge on the subject.	Again, I have to say "neither favorable nor unfavorable" because I don't have that much background knowledge.	I thought to say for number one, um, neither favorable nor unfavorable. No change.	Probably, still neither favorable nor unfavorable. I think, um, In terms of this, I want to do more research to see what kind of side.

Appendix M. Participants' Self-Reflection: Influence of Topic Belief on Comprehension

Question: Do you think that your prior attitudes and beliefs about a topic influence your comprehension of the controversial topic in the Palestine-Israel conflict?

- When you read the texts:
- When you search for information on the Internet:
- When you evaluate texts:
- Others:

Pro-Israel Group

Pro-Israel: Jacob (I1)

I think it does in a good way. I think these are just terms that I'm more familiar with; from just being aware of this. So I mean, with the exception of like you saw, with the things that I need to search up were Latin words. And most of the other stuff, I was familiar with the terminology they used. So, you know, prior attitudes and beliefs definitely helped my comprehension of the topic, and most of the stuff I didn't understand was the very technical, legal stuff that a law student might know or something. Do you want me to elaborate on it? Yeah, I definitely think that- knowing from before about the bias of the UN definitely kind of made me look at that less, you know, or more objectively thinking like "I'm going to scrutinize this a lot because I've heard that they're very biased. And as such, at the same time, well kind of knowing that the Dayan guy was head of the settlements, you know, he's been in the news a few times because he is so powerful, theoretically that you know just from that that it's going to be very bias so just looking at and analyzing it a lot more, kind of looking for the bias in that. So I would say that- but only those. I mean, the other texts, I didn't know the source at all. And I'm not all-knowing, so when they said something, I wasn't quick to say "Well this is wrong and right". But you know, if it went contrary to what I had learned, I was definitely a little more skeptical. But really, I try to be like- if they've said something and they prove it to me, then that's that, you know.

Pro-Israel: Sophia (I2)

Yeah, definitely I think that my attitudes and my beliefs when I read the texts and when I evaluate the texts because I'm kind of thinking about it in like. Ok, I support Israel, like I'm kind of still sympathizing with the Israelis through all these articles, and it's kind of like, ok it's a little bit of a shock when I think like- oh, Israelis, like people like me, are kind of violating the rules. So when I'm reading something like the pro-Palestinians piece, I mean, the only information that I thought to search on the Internet was really for just like a general idea. So it really wasn't like- you know, like had to do with my attitudes or beliefs, but just to get a better understanding of a word and how it fit into context. But I think that my prior attitudes and beliefs, just because of my religion and like, the connection that I feel to the state of Israel is definitely- it definitely influences my belief before and after and like how I evaluated the different texts and how I- what I find the most useful and what I find it to be credible as well.

I think so, just because of the values that I have been raised with. I think it like has some sort of influence, I don't think that like all of my opinions on like whether it has to do with gun

laws, or abortion, or anything like that, like any big issues; it's like completely guided by those beliefs of the religion, but I think that it does play a big part.

Pro-Israel: Mason (I3)

I knew most of the stuff so I didn't have to search the events in it. But what I evaluate when I read the texts, absolutely. I have an idea of what I believe are facts and what I believe is correct. And that's how I interpreted all the articles. I think my prior attitudes and beliefs, of course, yeah they had an influence. I had an idea, and it's very hard to change when you have a strong feeling. So when I read the articles, yes I read it as I believe, as I thought about it, which was with my strong connection to Israel and the country. Yes, based on my knowledge. Yeah, because I'm not going- how else would you want me to interpret it? Everyone interprets something based on who they are. Gun control? Then I might be more slightly towards the middle. But I still- every controversial topic, everyone has a stand. Everyone feels a certain way about gun control. While it's a United States', in their constitution, everyone has the right to bear arms. And sometimes it can be used for self-defense, a lot of times it's used for self-defense. But then you look at what happened and then you have those people, once again, extremist people like those kids or adults who just shoot up people, and that isn't right. And then you may wonder about gun control. So I would think of it in a way, or I see both sides. I see the Palestinians' side. I understand it but I've grown up believing in one side and feeling a strong connection to one side. And I've seen the other side and I agree with the Israeli side.

Pro-Israel: William (I4)

Yes, when I read the texts, yes. When you search for information of the Internet, yes. When you evaluate the texts, for sure. Like, I definitely think I'm bias about my prior attitudes. So when I was reading the text I was definitely critical for the anti-settlement texts. Every time there was a statement made I was sure that I would specifically figure out what exactly they were talking about and make sure it agreed with their previous argument, and I think I found conflicts in the second document. Whichever document was saying that East Jerusalem was specifically a religious battle versus the ideological, I was looking for very contradicting statements, and I think that was solely based on my prior attitudes and beliefs. So I'm definitely more critical when I read the texts, and I'm looking for anything that could kind of counter their own argument. When I search up information on the Internet, I was- honestly I wasn't looking people up like I might want to; I was just looking up the major legal documents and stuff, I was actually more bias towards the U.S; the things that occurred in the United States, for example, the Geneva Convention, I was familiar with it and I didn't look it up. And when it was talking about the U.N.'s findings, I wasn't really as quick to look up anything from the U.N. as it might have occurred in the U.S. When I evaluated the texts, same thing. I was obviously scrutinizing the pro-Palestinian texts more closely though I did try to throw some scrutiny on the Israeli texts.

Interesting question: I just thought that was useless because it wasn't really much of an academic source; it was- they literally interviewed a citizen- it would be like going to someone's house and saying, "Can I take your house from you?" and you would say, "no", and his argument wasn't based on logic so much, it was more like "we're here so deal with it"

Yes, it is close to my beliefs, exactly; I think, I could easily have said, "Yes, he's right" and yet I do understand that there is fault with this.

How do usually evaluate source information? So date, I definitely check, especially if you're comparing two sources, you need to check that they agree chronologically as in, there could have been findings from one of the two events that make one of them irrelevant.

Authors, I think they're very important in that people always have bias and you never why they're trying to write, for example, the Blaze article, it was writing from a conservative website. And it was also an opinion website, so I don't understand how that's a valid source, so much. Um, also the source itself- it's both author and source are important in that sometimes the source will tell you, kind of like, what you're trying to get out of it. Like, the Encyclopædia Britannica is a renounced source, and they're known for – I mean, it should be pretty objective.

Pro-Israel: Isabella (I5)

Yes, I definitely do exactly what I was just saying to you. I already knew how I felt about the issue, so when I was reading, I was just looking for the support to find the support that would back-up my own argument and I intended to do that in research a lot of people do.

So when I re-texted like the most interesting parts either going to be a one that's a completely supporting my argument or completely poking a direct hole on my argument when I search for information on the internet. I was doing a lot of searching for very like definition based things, like much based opinions.

When I evaluate a text, it has a lot to do with my prior strategy because it's reading comprehension can confuse, especially the topic that is like- sometimes it can be dense I'm going to look for the point that I already understand. So, I said that I really didn't understand the border, so when I look at the map, I spent like 2 minutes looking at the map instead of 10 minutes that I would- spent reading on article that felt like supported what I was interested in looking at.

I was just doing what I would honestly do, if I didn't find it, I would just move on even though I should continually pursue, and but I based my decision on name, the title of the article and—(I didn't fully do my research but that is a standard of a student who doesn't) I had a feeling that it was probably an international website. I didn't really think too much in to it.

(The Blaze article) I think it was a phrasing/wording that they were using. That's a pretty serious. It's a very strong. It wasn't saying any of the other articles. I think that they were saying "creeping annexation"? which I said fine, I could see that being a justifiable term for what Palestine believe that Israeli creeping on their land. But ethnic cleansing? What are they doing to ethnically cleanse? They are not doing anything. They are not taking out Palestinians. They are living on land hopefully, peacefully.

Pro-Palestine Group

Pro-Palestine: Jayden (P1)

Yeah, when I read the text you can hear me audible it, yeah it does. So being an actor I have: you get to know the players involved and you know why certain organizations feel a certain way and you know who funds the information they told you. And a lot of the information is intentionally trying to mislead you for some type of greater cause that's funded by a lot of money. For instance there's "A-pack" which is the American Political Action Committee, which is super right-wing, powerful pack that has funded the lobbyist committee to go to war against Iraq and done some terrible things and it really has this far right-wing agenda and their talking points are repeated is repeated in a lot of form of media. So I think when I read the text, I've fallen out the right-wing political structure, and so I had this idea that you allow the people who are being oppressed to speak their mind and don't- if you are as a person who are not part of Palestinians speaking for them, know your limitations and know that you really at the end can't speak for them because you aren't a Palestinian. Saying

what's good for them is inherently maternalistic and wrong. So, when I read these articles and read these texts, I look for who's writing them, what's their goal, what's their vision, who's funding them, and so yeah. When I search information on the Internet, same thing applies; there's a lot of sources I like, sources that are funded by corporate in honorance (inaudible) like ABC, CBS, CNN, FOX or whatever. They're funded by commercials and by corporations they and so they have this: Their interest really isn't journalism as much as just making money; it's surviving. Where you have other forms of journalism which are funded through public donations, publicly funded or donations from individuals as opposed to corporations. They must be trustworthy and they give voice to Palestinians and voice to the oppressed. They're much more trustworthy source of information and I like those things a lot. When I evaluate the text I look at language. I look at the language whether the language is colonial language as I discussed earlier already. Like, is this a language referred to all Palestinians, group them into Arabs? Or if it's a Palestinian text that's very right-wing and jumbles together Zions and Jews as one entity because they're not. Zion and Jews are not one entity and to say they are can be anti-Semitic and offensive to me, so same thing. And some language, let's see what else. When I evaluate text, there's more to it. I'd leave it like that.

Pro-Palestine: Abigail (P2)

Um, my prior attitudes [pauses] yeah. Oh, when I read the text, I think my prior attitude [Re-reads question] Oh yeah, yeah, um when you read over, when I read over the texts yeah my prior attitudes uh did influence um my reading. When I searched for information on the internet, I was really just defining the things on the internet so not really. When I evaluated the texts definitely yeah because I already had an idea in my head and um, when I was reading I was kind of looking to satisfy that uh attitude and belief; and now I don't have anything to share [laughs].

Pro-Palestine: Olivia (P3)

I mean, it probably has, I mean, regardless of, you know, whether you may think that it influences you or not. I guess, knowing what I did know, it did keep in- I just kept myself in check with it just because it's something that I believed in. Probably, it probably did influence it but if these are facts being stated you can't change facts. So regardless of whether it influences you are not, they're facts. Yeah, I mean I can analyze the facts and you know, I can either have an opinion on what the fact is but it won't change it. When I evaluate texts, I normally do actually think out loud. If there's a certain thing that bothers me or that I disagree, I usually say it out loud. So like, I don't know, evaluating texts, it depends on- let's say that I would read this- politics get really complicated. But if I were to read something that's in science; I would probably evaluate it the way that I would evaluate it something that someone tells me, in one person. So like, "Okay, so, this is something to take into consideration". They're different, it's very different on how- because science is something that you're like, "okay, this is someone's research and you know it's very well did and can be changed or not". But then when you have politics, you have a certain set that you know, this is what you believe in. And most of the time what you believe in, it doesn't change necessarily. But with science it's like, "Oh, this is someone's opinion", you know that. But when you see politics it's something that you believe as firmly right or wrong.

Pro-Palestine: Jackson (P4)

Yes, I think that my prior attitudes and beliefs influenced my comprehension on this topic. When I read the texts, I'm thinking more for the Palestinian people and how they have suffered and things like that but I'm trying my best as an American not to be biased. I mean, we learn that in school, not to be biased and it makes sense; you need to view things from as

much of an unbiased opinion as possible in order to let justice come out of it. Then when I search for information on the Internet; no not too much. I just needed really things that I didn't know, words that I didn't know especially legal words. I'm not too good with legal things; I haven't taken Latin so. When I evaluate texts, yeah, it's going to, my prior attitudes and beliefs are going to influence it because when I evaluate texts that seem to be biased towards Palestinians, I'm going to be unfavoring toward those texts and I'm going to think that they're not as credible; that they are less credible and as opposed to somebody else who might favor, have favorable attitudes toward the Israeli state. They might look at those sources being really favorable regardless of whether or not they have facts on them or not, that's what it is.

Pro-Palestine: Michael (P5)

When I read texts, yeah. Internet, yeah because for me it's a lot of attitude and opinion and beliefs because having Palestinian friends and setting us apart so. When I evaluate texts, yeah I do think a lot of my- this is- I would say yes for all of them. So when I read the texts, I definitely think of my prior attitudes and beliefs because I remember reading all the articles I used to read. Searching information on the Internet, yeah, because when you search, you're always like, you search so much so um, it's uh- yeah, because all the websites I search are pretty opinionated toward my opinion. When I evaluate texts, yeah, because when I look at a text I see that it's a conservative website or I'll see that the author is an Arab or Jew or Israeli person or, I feel like it's going to be very opinionated so I'm like, "I'm not going to read this because this is going to be very opinionated. And I hate opinionated articles. Others, yeah, because this is very opinionated of this situation, so it's kind of who you sympathize with, Palestine or Israel, who you like more in a way so.

Neutral Group

Neutral: Ava (N1)

Seeing that I knew very little about the topic, I don't think that my prior attitudes and beliefs influenced by comprehension of the topic. When I read the texts, I just tried to understand what the issue was at hand. As I continued to read more texts, my attitudes started changing. When I searched for information on the Internet, I was more focused on finding information to help me understand the situation better so I'm not sure that my attitudes were influenced there. As for when I was evaluating the texts, my attitudes were definitely changing in favor for the Palestinians while I was still trying to process all the information yet try to see both sides of the conflict.

Neutral: Emily (N2)

So when you read the texts, um, yes it did cause it was, it made things, made a little more sense, was able to make that connections from having that discussion in like a year and a half ago. So there was, um, that kind of shift in my mind more towards sympathizing in the Palestinian side. When you search for information on the Internet. I don't know if it did so much just because, I mean I was looking up like words and sometimes people to kind of get a better understanding for it and when you evaluate texts, um, [pause]. I don't think it was so much about the topic itself but just understanding the, where it comes from and then other I guess sort when we were doing the opening, kind of, before the texts, um, just knowing very little and stuff is an influence on it, um, but yeah.

Neutral: Ethan (N3)

Yeah, I mean, since I read a little about it before and I've built a little of my opinion since some of this like, concept isn't new to me. So yes, I already had I think my prior attitudes and beliefs, I definitely did influence- influence a little bit my like, interpretation of these articles- I mean, I can see that- But I don't think I'm heavily biased of terms when I search for information on the Internet or you know, I'm not looking for points to like, you know, and be a stickler and throw it back to the Israelis. I mean, I'd like to look more at points that are like mutual and that kind of encourage cooperation. And that's why that education idea is definitely not new; that's something that's been used and proposed I'm sure for Israel but also for other nations and conflict, and I know that helps. So to answer the question I do think I was, my prior beliefs did some what influence my comprehension but I also think that it was enough to like, bias my answer like heavily. So yeah.

Neutral: Daniel (N4)

I think not, because I had such a low knowledge about this issue. And I was not against anybody here, so I actually read the source with almost and complete unbiased view. I think that I will be more biased right now than I used to be, because I know more about the topic.

Neutral: Elizabeth (N5)

Um. It's definitely open my eyes to a problem that's in the world, you know, I didn't really take the close look at before. And I think if I definitely knew about this before in this reading, I would have probably different opinion than now.

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