

ABSTRACT

Title of Dissertation:

FROM ACADEMIC ENGLISH TO SCHOOL
DISCOURSES: RECONCEPTUALIZING
ACADEMIC LANGUAGE

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The widely accepted conceptualization of academic language (AL) as a unitary construct relies heavily on a claim of greater grammatical complexity of AL. This study empirically investigates that claim. It offers a conceptual framework for distinguishing AL from non-AL, supporting that framework with a survey in which 77 expert group participants (a) judged 42 language samples to be AL or non-AL and (b) optionally commented on their judgments. Survey participants' judgments are quantitatively analyzed to test the framework, and their comments are qualitatively analyzed to illuminate their conceptualizations of AL. The study then calculates the frequencies, in AL and non-AL language samples, of grammatical features claimed in AL research to enhance grammatical complexity. The language samples data (N=160, 100-standardized-unit for all) are balanced between AL writing, AL speech, non-AL writing, and non-AL speech samples. Additionally, writing and speech samples are balanced between edited/unedited and prepared/unprepared samples, respectively. A

three-factor model with AL/non-AL, written/spoken, and edited-prepared/unedited-unprepared as independent variables and twenty-six grammatical features as dependent variables compares expected log counts using negative binomial regression. No categorical and only modest frequency differences are found between the grammatical features of AL and non-AL language samples. These findings challenge the claim that AL has more complex grammar than non-AL, indicating more similarity than difference. It is concluded that, given the prominence of discourse features in AL scholarship, the unitary construct of academic language should be reconceptualized as non-unitary sets of school discourse practices. Implications for pedagogy and language-of instruction policy are addressed, and suggestions are made for further research.

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RECONCEPTUALIZING ACADEMIC LANGUAGE

by

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Rationale

This study is a critical theoretical investigation (Geuss, 1981; Bohman, 2005) of the constructs of academic language (AL) and its more recent outgrowth, academic English (AE), as well as of their pedagogical implications for American students. It is an attempt to engage in constructive, critical dialogue with progressive educators and educational researchers who endorse these two constructs and champion their utility as pedagogical tools.

The study challenges the idea that academic language can be legitimately conceptualized as a unitary entity. It makes this challenge by investigating the longstanding but never proven claim that academic language has more complex grammar than non-academic language. This claim plays a key role in legitimizing the conceptualization of academic language as a unitary entity, so if it is not valid, then, even to the exclusion of other important aspects of language, academic language cannot legitimately be deemed a unitary construct.

The rationale for the study is twofold. First, it addresses a matter of basic research interest. Second, it addresses a matter of relevance to language-of-instruction policy in U.S. public education. Both these matters are discussed below.

A matter of basic research interest

Mastering academic language has long been widely accepted as both a major goal of all U.S. students and a major challenge for English Language Learners (ELL) (Francis et al., 2006; Anstrom et al., 2010; Schlepppegrell, 2004; Snow & Uccelli, 2009). However, it has also long been questioned just what exactly academic

language itself is. When academic language was first introduced as the second half of Jim Cummins' (1979b) BICS/CALP distinction, which contrasted Basic Interpersonal Communicative Skills with Cognitive Academic Language Proficiency, it immediately became a highly influential yet highly controversial construct. The BICS/CALP distinction was widely used to good effect in aid of advocacy efforts on behalf of bilingual education programs and individual ELLs. However, it was also sharply criticized, both for being inadequately defined and for being a deficit theory of student failure (Edelsky et al., 1983).

The criticisms proliferated (Spolsky, 1984; Martin-Jones & Romaine, 1986; Edelsky, 1990; Wiley, 1996; MacSwan, 2000; MacSwan & Rolstad, 2003), and while deficit-theory accusations were a matter for argument, AL's proponents and critics alike agreed that the construct needed to be more clearly defined. In response, throughout the four decades since 1980, proponents of the construct of academic language have endeavored to define academic language as coherently, concisely, and meaningfully as possible (Chamot & O'Malley, 1987; Spanos et al., 1988; Hamayan & Perlman, 1990; O'Malley, 1992; Short, 1994; Solomon & Rhodes, 1995; Wong Fillmore & Snow, 2000; Schleppegrell, 2001, 2004; Scarcella, 2003; Bailey, 2007; Snow & Uccelli, 2009; Uccelli et al., 2015). Despite these efforts, as recently as 2014, in a major review of AL scholarship, DiCerbo and colleagues, themselves proponents of the construct, asserted that "the distinguishing characteristics of AE are still unclear" (DiCerbo et al., 2014, p. 2; for similar sentiments expressed over the decades, see Anstrom et al., 2010; Snow & Uccelli, 2009; Solomon & Rhodes, 1995). In 2015, Uccelli and colleagues, proponents as well, lamented that academic language

had still only been “imprecisely delineated” and “reductively defined” (Uccelli et al., 2015, p. 2).

Nevertheless, today, a consensus has developed around defining academic language as a unitary-yet-tripartite construct consisting of (1) specialized vocabulary, (2) complex grammar, and (3) special discourse features (Anstrom et al., 2010; DiCerbo et al., 2014). Academic language has weathered the storms of criticism so strongly that it is currently regularly invoked in educational research articles, K-12 teacher preparation and professional development programs, and educational policymaking circles (Rolstad, MacSwan, & Guzman, 2015). The fact remains, though, that none of the three elements of AL’s tripartite definition have ever been empirically proven to be true claims. And while all three components have intuitive appeal, they have also been called into question. MacSwan (2020) argued that when AL scholars claimed that AE is characterized by “conciseness,” while “colloquial language, or non-school language” was characterized by “wordiness” and “redundancy,” or when AL scholars claimed that academic language is grammatically more complex than non-academic language,

These contrasts do not emerge from empirical research on colloquial language, but on speculation and personal reflection on the part of AE researchers, generally based on the differences between published academic texts, which benefit from multiple reviews and proofing by a plurality of skilled editors, and the imagined informal spoken language used by non-academics in out-of-school contexts. (p. 32)

Considering this challenge, and setting aside the vocabulary and discourse components of AL's tripartite definition, this study is a preliminary investigation of the claim that academic language has more complex grammar than non-academic language. Based on claims made in AL research about the grammatical features that (a) are especially constitutive of academic language and (b) give it its grammatical complexity, it compares the grammatical features of AL and non-AL language samples to empirically determine whether there are grammatical differences between them. For such differences to exist would be a logical prerequisite for academic language to be grammatically more complex than non-academic language. Of course, for differences to exist would not mean that one was necessarily more grammatically complex than the other, but a potential avenue for establishing the superior grammatical complexity of academic language would remain open. If, on the other hand, differences do not exist—which is the hypothesis of this study—then regardless of the legitimacy of its vocabulary and discourse components, fully a third of AL's tripartite definition would be shown to be ill-founded. There is no way for one kind of language to be grammatically more complex than another if grammatically the two are fundamentally the same. Ultimately, if a third of AL's tripartite definition were found to be ill-founded, it would fundamentally call into question the legitimacy of the construct as a unitary entity, which would require, at minimum, its reconceptualization to retain its beneficial aspects while eschewing any detrimental aspects.

A matter of relevance to language-of-instruction policy

The second part of this study's rationale relates to language-of-instruction policy in U.S. public schools. There is a risk that the construct of AL, and more specifically its derivative, AE, may be inadvertently bulwarking English-only as opposed to multilingual approaches to educating America's public-school students. Although the construct of AL was originally developed to help promote bilingual education (Cummins, 1981), Edelsky et al. (1983) warned in the first major criticism of the construct that while the BICS-CALP distinction

has been a convenient weapon in the fight against cuts in support for bilingual education . . . those who use it in this way must beware. In the long run, progressive intentions of the authors and supporters notwithstanding, essential parts of the theory are likely to prove dangerous to the very children who are supposed to benefit from it. (pp. 1-2)

At that time, the children who were supposed to benefit from the BICS/CALP distinction were primarily ELLs, and the most prominent risk was that they would not receive sufficient home language instruction in school settings. This concern is still very real, as today around the United States students' home language assets are not nearly being fully utilized for the benefit of their education. Generally speaking, the best that can be hoped for is for ELLs to graduate high school as fluent, literate English speakers, but not as fully bilingual and biliterate in both English and their home language, as they should be. Unfortunately, by this time, the construct of AE has become a force serving to continue that limitation.

Today, the danger Edelsky et al. (1983) warned of applies to more than just ELLs. Because academic language occurs in standard English only, a focus on academic language reinforces incongruencies between the way students whose home languages are non-standard dialects of English use language at home and the way they are encouraged to use language to learn and express themselves at school. Ultimately, because the constructs of AL and AE harmonize so well with English-only approaches to schooling, the full potential hazard of AL has extended to all non-standard English speakers and even to all U.S. students, native “standard” English speakers included, who, despite the fact that America has perhaps the greatest wealth of language resources in the entire world, will not benefit from the experience of a multilingual education system that could graduate all its high school students fully fluent and literate in at least two languages and, thereby, better attuned to the cultural diversity of American life.

When the Supreme Court ruled in *Lau v. Nichols* (1974) that schools must make linguistic accommodations for non-native speakers of English to ensure that they received meaningful educations, it did not prescribe how such accommodations should be made. This fact triggered a heated debate over bilingual education that has lasted for over fifty years now. To couch the issue in terms of Ruiz’ (1984) basic orientations towards language and its role in society, supporters of bilingual education, who viewed the matter from language-as-right and/or a language-as-resource orientations, saw the Court’s decision as a mandate for more bilingual education programs with stronger and more sustained native language instruction. Opponents of bilingual education, meanwhile, who viewed the matter from a

language-as-problem orientation, interpreted the Court's decision as allowing an English-only response through the provision of increased English as a Second Language (ESL) support services to enable students to learn English quickly and effectively and then succeed in mainstream, English-only classrooms (Baker, 2011).

Over the decades, the debate over bilingual education played itself out on ideological, policy, and research levels. All three levels are considered below.

The ideological level

Ideologically, both sides of the debate were able to craft reasoned cases for their preferred method of instruction. Bilingual education proponents argued that first language instruction was necessary so that kids could keep up with content as they learned English and ultimately attain their highest levels of literacy. English-only proponents, meanwhile, argued that non-English speakers needed to learn English to get ahead in American society, and that the best way for them to learn English was to go to school in English.

The policy level

At the policy level, the fortunes of bilingual education rose and fell with the political tides. After a brief bump following *Lau v. Nichols* (1974) with the Lau remedies (Office of Civil Rights, 1975), which restricted the granting of Title VII funds exclusively to programs that included native-language instruction (Ramirez et al., 1991), the advent of the Reagan Administration turned the tide in favor of English-only education. Amendments to the Bilingual Education Act (BEA) in 1983 and 1988 weakened its support for native language instruction and promoted federal funding for English-only programs. The 1990s brought the Clinton administration,

which was more sympathetic to bilingual education, but they also witnessed the maturation of influential non-profit organizations like English First, English for the Children, and U.S. English, which decried bilingual education and strongly advocated for English-only education (Imhoff, 1990).

By the turn of the century, the English-only movement had scored major victories. The passage of Proposition 227 in California, Proposition 203 in Arizona, and Question 2 in Massachusetts severely limited the provision of bilingual education in those states. Restrictions in Arizona were particularly severe and strongly enforced (Mahoney et al., 2005). Perhaps most significantly, in 2002 the No Child Left Behind Act dealt a serious blow to the cause of bilingual education at the federal level, going so far as to officially rename the Bilingual Education Act the English Language Acquisition, Language Enhancement, and Academic Achievement Act (Baker, 2011).

The No Child Left Behind Act established English for all children among the highest priorities of the U.S. educational system. Subsequently, the AL and AE constructs have become “deeply embedded in many of the language-related proposals following from the Common Core State Standards (CCSS)” (Wiley & Rolstad, 2014, p. 1). Today, after multiple Republican and Democrat presidential administrations, the debate over bilingual education is not even a second-tier national priority. School districts around the country are practicing modest forms of bilingual education, and, particularly at earlier grade levels, more and more are developing strong bilingual education programs with goals of developing full bilingualism and biliteracy for all students (Baker, 2011). By and large, however, the American public education system is still thoroughly English-only.

The research level

While on ideological and policy levels both sides of the bilingual education debate have had some claim to merit, on the level of research, there has been no such parity. The overwhelming consensus among educational researchers is that bilingual education leads to higher levels of English language acquisition and academic achievement among ELLs than does English-only education (Ramirez et al., 1991; Lindholm-Leary, 2001; Clark et al., 2002; Thomas & Collier, 2002; Slavin & Cheung, 2005; August & Shanahan, 2008; Goldenberg, 2008; Baker, 2011; McField & McField, 2014; Kim et al., 2015). However, unfortunately for bilingual education supporters, during the 1980s and 1990s, when public debate over language of instruction was in its heyday, two factors obscured just how clearly findings from research showed the superiority of bilingual programs over English-only programs. First, three high-profile narrative reviews of research studies were published (Baker & de Kanter, 1981/1983; Rossell & Baker, 1996; Rossell & Kuder, 2005) whose findings lent modest support to English-only approaches, and they were heavily cited by English-only advocates, though they have since been thoroughly discredited as poor examples of what Shulman (1981) calls *disciplined inquiry* (see Willig, 1985, 1987; Greene, 1997; Rolstad et al., 2005, 2008 for rebuttals of the narrative reviews).

Second, for the most part, until about the turn of the century, research studies compared English-only programs with weak forms of bilingual education, typically early-exit transitional bilingual education (TBE) programs, not with strong forms of bilingual education, such as dual language programs. Critically, English-only programs and weak bilingual education programs have the same ultimate goal for

students: English monolingualism and English monoliteracy, in contrast to strong bilingual education programs, whose goal for students is full bilingualism and biliteracy (Baker, 2011). English-only programs and weak bilingual education programs are, in that sense, more alike than they are different. When English-only programs were compared to strong bilingual education programs, the results more clearly favored bilingual programs (Lindholm-Leary, 2001; Rolstad et al., 2005, 2008; Baker, 2011). But by the time strong forms of bilingual education were gaining in popularity and setting new benchmarks for expectations of bilingual programs, public perception had already become fixed in a kind of research-battle stalemate.

Once the stalemate of perception had taken hold, a trend developed among educational researchers (e.g., August & Hakuta, 1997; August & Shanahan, 2008; Slavin et al., 2011; Sparrow et al., 2014) to view language of instruction as just one variable among many others (e.g., instructional methods, quality of teaching) that determine the quality of education that ELLs receive. This shift of focus had a secondary effect of promoting the discussion of issues pertaining to the literacy development of ELLs in exclusively English-only contexts. Within such contexts, the development of students' academic English becomes a central and sufficient concern for the U.S. school system when it comes to student literacy. The construct of AE, in that case, supports the English-only movement, distracting attention from the critical importance and massive educational benefit of home-language instruction for ELLs and strong forms of bilingual education for all Americans.

Theoretical considerations

To supplement this historical analysis of the research debate over language of instruction, there are some theoretical underpinnings of the construct that must be explored. When Jim Cummins developed the theoretical framework of language proficiency within which the BICS/CALP distinction was situated (Cummins, 1976, 1979a, 1979b, 1981), he did so from an educational psychological theoretical perspective, which tends to contemplate the sources of problems and seek their solutions primarily at the level of the individual. Therefore, he approached the problem of ELLs' disproportionate school failure from an autonomous orientation to literacy development, which "concentrates on formal mental properties of decoding and encoding text, and comprehending vocabulary, without consideration of how these processes are embedded within socio-cultural contexts. The success of the learner in becoming literate is studied from the perspective of individual psychological development" (Wiley & Rolstad, 2014, p. 39).

Via this autonomous orientation, responsibility for success or failure in academic performance comes to rest squarely on the shoulders of individual students. Students need to work hard to build the CALP they need to succeed in school. Some ELLs do, and some don't. Those who don't therefore fail because of a deficiency on their part. Whatever it was created for, then, the BICS/CALP distinction is also an explanation of the school failure of ELLs. Failing students possess basic communication skills, but they *lack* the academic language they need for school success. This apparent deficit orientation, compounded by early associations of CALP with Cummins' threshold hypothesis (MacSwan, 2000) and, worse, semilingualism

(Hansegard, 1968; Cummins, 1976), which is the debunked notion that language minority students may not be fluent in either English or their native language, led to the stigmatization of the CALP as a “a deficit, blame-the-victim theory” (Edelsky et al., 1983, p. 1).

Just as importantly, the direct association in CALP of cognitive advantages with academic language proficiency directly linked the construct to a longstanding effort among literacy researchers (e.g., Greenfield & Brewer, 1966; Goody, 1968, 1977; Olson, 1975, 1977) to argue “that literacy produces cognitive effects that make literates and literate societies more logical and analytical” (Wiley, 1996, p. 29). Wiley (1996) warned that this effort reflected a belief in “a *cognitive great divide* between literates and nonliterates, which results from the former having mastered the technology of print,” and, further, that that cognitive divide is serviceable to rationalize a “*socioeconomic great divide*” (p. 29) between rich and poor.

In contrast to Cummins’ educational psychological theoretical perspective, Edelsky et al.’s (1983) and Wiley’s (1996) criticisms hail from a sociolinguistic theoretical perspective, which tends to contemplate the sources of problems and seek their solutions not at the individual but the collective, or social, level. If the psychological perspective is undergirded by the autonomous orientation to literacy development, then the sociolinguistic perspective is undergirded by the social practices orientation to literacy development, in which

literacy is not first and foremost a mental possession of individuals. Rather, it is first and foremost a social relationship among people, their ways with words, deeds, and things, and institutions. Literacy is primarily and

fundamentally out in the social, historical, cultural and political world. It is only secondarily a set of cognitive skills, which subserves literacies as social acts in quite diverse ways in different contexts. (Gee, 2001, p. iv; cited in Wiley & Rolstad, 2014, p. 39)

The social practices orientation to literacy development is an essential element of ‘New Literacy Studies’ (NLS) (Gee, 1990, 2013; Street, 2006), what Street (2006) called “a new tradition in considering the nature of literacy, focusing not so much on literacy as a ‘technology of the mind’ (cf Goody, 1968, 1977) or a set of skills, but rather on what it means to think of literacy as a social practice (Street, 1984)” (p. 1). Street (1984) distinguished between ‘autonomous’ and ‘ideological’ models of literacy. According to Street (2006), the autonomous model

works from the assumption that literacy in itself – autonomously – will have effects on other social and cognitive practices. Introducing literacy to poor, ‘illiterate’ people, villages, urban youth, etc. will have the effect of enhancing their cognitive skills, improving their economic prospects, making them better citizens, regardless of the social and economic conditions that accounted for their ‘illiteracy’ in the first place. (p. 1),

Street (2006) then argued that the autonomous model

disguises the cultural and ideological assumptions that underpin it so that it can then be presented as though they are neutral and universal and that literacy as such will have these benign effects. . . . The autonomous approach is simply imposing western conceptions of literacy on to other cultures or within a country those of one class or cultural group onto others” (pp. 1-2).

Due to its reliance on an autonomous approach to literacy, this criticism extends to CALP as well.

Wiley (1996) expanded Street's binary of autonomous and ideological models of literacy to "three scholarly orientations of literacy": (1) the autonomous approach, (2) the social practices approach; and (3) the ideological approach. The social practices approach was added "to underscore the differences within [Street's] ideological model" (p. 30). In a sense, the social practices approach pertains to the pedagogical, while the ideological approach pertains to the political. In Wiley's (1996) framework, the social practices approach views literacy "as a set of socially organized practices" (p. 31) that go beyond the mere abilities to read and write to the application of those abilities for specific purposes in specific contexts, while the ideological approach "subsumes the social practices orientation and adds to it a more overt focus on the differential power relations between groups and social class differences in literacy practices" (p. 32).

Wiley (1996) provided a thorough background to the "Great Divide" Hypothesis and a clear application of it to Cummins' (1979b) BICS/CALP distinction and (1981) framework of communicative proficiency for U.S. bilingual education. He showed how scholars in the autonomous tradition subscribed to a series of dichotomies reflecting the Great Divide, including distinctions between mythic time and historical time (Goody & Watt, 1963), oral thinking and logical thinking (Goody & Watt, 1963), oral societies and literate societies (Ong, 1982), and concrete thought and abstract thought (Ong, 1982), arguing in each case that the former inhibited intellectual growth while the latter fostered cognitive advantages. To these

distinctions may be added the dichotomizations of savage vs. civilized cultures (Gee, 1986), primitive vs. civilized thought (Scribner & Cole, 1978), and primitive vs. modern societies, literate vs. non-literate societies, and logical vs. pre-logical thinking (Street, 2006; critiquing Goody, 1968, 1977). Wiley (1996) showed how Cummins' BICS/CALP distinction both derived from those dichotomies and itself constituted another dichotomy in the series.

Wiley (1996) also showed how certain elements of Cummins' constructs (for example, distinctions between decontextualized and contextualized language and between cognitively demanding and cognitively undemanding language) are not novel but have direct precedents in the autonomous orientation literature. Olson (1977) asserted that "oral language is more context embedded or context dependent than written" (Wiley, 1996, p. 38)—see also Scribner & Cole's (1978) discussion of Greenfield's (1966, 1972) work in Senegal, where Greenfield "suggested that oral language relies on context for the communication of messages and is, therefore, context-dependent language," as opposed to the language of literate societies that yields "decontextualized abstract thinking" (Scribner & Cole, 1978, p. 450). In sum, Wiley (1996) exposed these theoretical connections between CALP and the autonomous approach to literacy, explained how CALP, like the autonomous approach itself, is of little pedagogical value as a guide to pedagogy (see also Baker, 1993, pp. 142-144), and laid out four initial requirements for its rehabilitation.

Upon these tensions between the educational psychological and sociolinguistic theoretical perspectives and their surrogates, the autonomous and social practices approaches to literacy, there is a third theoretical binary that applies

to the controversy over academic language, namely the tension between classical prescriptivist and descriptivist philosophies of language. Classical prescriptivism, “in its most general sense, is the view that one or another language or variety of language has an inherently higher value than others and that it ought to be imposed on the whole of the speech community to maintain standards of communication” (MacSwan, 2000, p. 8). Descriptivism, meanwhile, is more simply the view that all languages are of equal value and equally capable of accomplishing any and all communicative needs.

A key component of classical prescriptivism is the notion of a “standard language,” a notion dubbed by Flores and Rosa (2015) to be popularly accepted if not empirically locatable. A standard language is precisely that variety of a language which is more highly valued and therefore exclusively sanctioned by mainstream societal institutions. Academic language is connected to standard language because AL scholars have openly declared AL to be a more complex form of language and to manifest itself exclusively in standard English (Wong Fillmore & Snow, 2000; Schleppegrell, 2001, 2009; Olsen, 2010). Academic language therefore partakes of *standard language ideology*, which is “the view that the language variety of socio-economic elites is intrinsically more complex than other varieties” (MacSwan, 2020, p. 29). In the United States, standard language ideology “positions the language of the educated classes, often called Academic English, as a more advanced and more complex version of varieties of English used in non-school settings” (MacSwan, 2020, p. 29).

Wiley (1996) described the classroom effects of standard language ideology on speakers of nonstandard varieties of English:

At least since the 1890s, educators have viewed nonstandard language as a less than logical means of or conveying rational thought than standard language. The model for the standard has largely been academic written language (Street, 1984; Stubbs, 1980). As a result, many have assumed that until students have mastered the correct forms of standard academic English, they should not advance their opinions. This emphasis has put speakers of nonstandard varieties of English and speakers of other languages at a considerable disadvantage because more attention is placed on the form of their language than on its content. (p. 36)

The end result of standard language ideology on classroom settings is clear. It obstructs and can even be used as a weapon against students' learning. It creates a much more meaningful great divide, that between students' home languages and the language they are expected to speak and write at school. That kind of oppositional relationship, however benignly it is maintained, is bound to be noticed and subconsciously processed by kids. It creates antagonisms in classrooms that are not beneficial to anyone.

Unfortunately, as MacSwan (2020) warned, for decades now, The field of language teaching and teacher education has moved more strongly toward a deficit perspective on children's home language, especially in the context of race- and socioeconomically-related language differences, and farther away from an asset-based perspective. While there are no doubt

many mechanisms that have supported this trend, an important influence on teachers' beliefs about children's home language has been an over-emphasis in teaching and teacher education curricula on the nature of school language, generally called Standard English or Academic English, and an inadequate focus on the nature of children's home language as a linguistic asset. (p. 29)

Bulwarking the assumption that success in school can only be accomplished through standard English, the construct of academic language has played a significant theoretical role in undermining asset-based views of students' home languages. In this way, the construct becomes an object of relevance to researchers operating from a raciolinguistic perspective, which "seeks to understand the interplay of language and race within the historical production of nation-state/colonial governmentality, and the ways that colonial distinctions within and between nation-state borders continue to shape contemporary linguistic and racial formations" (Rosa & Flores, 2017, p. 3).

Fortunately, under the auspices of culturally sustaining pedagogies and the raciolinguistic perspective, there is a growing movement (Paris, 2012; Paris & Alim, 2014; Alim, Rickford & Ball, 2016; Martinez, Morales & Aldana, 2017; Paris and Alim, 2017) for "asset-based pedagogies, which seeks to draw out and emphasize community- and home-based knowledge, culture, and language as part of the school curriculum, permitting these to form a bridge to school-based teaching and learning for non-dominant groups just as they do for dominant groups" (MacSwan, 2020, p. 29). An important example of work in this vein is Hankerson (2016), who applied critical language awareness pedagogy to improving African American Language (ALL)-speaking students' writing. Hankerson's study drew insight from the prolific

hip-hop group Boogie Down Productions' theory of "You Must Learn," a track from their (1989) album *Ghetto Music: The Blueprint of Hip Hop*. Another song on that album, "Why Is That?", asks a question of direct relevance to academic English and the more asset-based alternative of encouraging speakers of "nonstandard" dialects of English, Spanish, French, Portuguese, etc., to write, discuss, and present in those "nonstandard" home languages:

We're not here for glamor or fashion

But here's the question I'm askin'

Why isn't young black kids taught Black?

They're only taught how to read, write and act

It's like teachin' a dog to be a cat

You don't teach white kids to be black

Why is that? Is it because we're the minority?

Well black kids follow me

The answer to KRS-One's last question, it would seem, would be yes, and doubly so when one considers the raciolinguistic perspective of a co-naturalization of language and race. For practical and policy reasons, then, efforts on behalf of asset-based pedagogy need the support of a reconceptualization of the construct academic English.

Conclusion

For the many ideological, policy, research and theoretical reasons discussed in this section, the constructs of AL and AE are hazards to the promotion of home-language instruction in school settings, for both ELLs and speakers of non-standard

dialects of English, and ultimately to the overall literacy development of all American students. It is true that language of instruction is just one variable among many that influence the quality of education that ELLs and speakers of “nonstandard” English receive, but it may also be true that it is a fountainhead variable which directly influences, rather than merely exists alongside, all other variables. At the very least, it should be distressing to many consumers of the AL construct that the construct may be undergirding a paradigm shift from bilingual education to English-only instruction. It therefore behooves us to ensure that this seemingly ubiquitous construct actually is what it claims to be.

Literature Review

This literature review investigates the origin and development of the constructs of academic language (AL) and its more recent outgrowth, academic English (AE). The construct of AL dates back to the late 1970s, when Jim Cummins developed a theory of language proficiency applicable to the contexts of bilingualism and bilingual education in the United States. One of the principal elements of that theory is Cognitive Academic Language Proficiency, which is the precursor to today's AL. Meanwhile, the construct of AE, a derivative of AL, has become increasingly popular in the years since the No Child Left Behind (NCLB) legislation of 2001 (Scarcella, 2003; Bailey, 2007) and has taken on its own significance in the context of American public education.

Since their respective inceptions, AL and AE have had significant influence on the education of English Language Learners (ELLs) in the United States (Cummins, 2000a). Francis et al. (2006) declared that “mastery of academic language is arguably the single most important determinant of academic success for individual students” (p. 7), and Anstrom et al. (2010) noted that AE “has been increasingly cited as a reason for gaps in achievement between ELLs and English-proficient students. It has also been the focus of professional development for teachers, the topic of numerous articles on and guides to instruction, and is beginning to appear in ELL teaching standards, and in teacher preparation, accreditation, and credentialing documents” (p. iv).

While AL and AE are clearly important, current constructs in American education, there remains a recognized need for “a deeper and more thorough

conceptualization of AE” (Anstrom et al., 2010, p. iv). Snow and Uccelli (2009) pointed out that although there had been “advances in delineating academic language, a conceptualization of academic language within a consensual analytical framework that could guide educationally relevant research is still lacking” (p. 113). Some scholars have even fundamentally questioned its legitimacy as a unitary construct (Edelsky et al., 1983; Halliday & Martin, 1993; Gee, 2005; Rolstad, 2005). To address these concerns, this literature review investigates the construct of AL by exploring and evaluating the ways it has been conceptualized, defined, and operationalized over the years.

The review progresses as follows. First, it introduces Cummins’ theory of language proficiency, focusing on the construct of CALP and the scholarly criticism it has received. Next, it describes early efforts to conceptualize and operationalize AL beyond what was offered in Cummins’ work. Last, it turns to the development of AL in the years following the passage of NCLB, first considering four seminal works on AL (Scarcella, 2003; Schleppegrell, 2001; Snow & Uccelli, 2009; Bailey, 2007) and then discussing scholarship that has been done from critical and uncritical perspectives of AL.

While this literature review covers large portions of the AL research, it is not exhaustive, and it does include an exclusion. As it focuses on AL as a unitary construct, it does not include work done in the field of English for Academic Purposes (EAP), which predates Cummins’ work by about fifteen years. According to Flowerdew and Peacock (2001),

EAP is normally considered to be one of two branches of English for Special Purposes (ESP), the other being EOP (English for Occupational Purposes). Each of these major branches is then sub-divided according to the disciplines or occupations with which it is concerned. Thus, EAP may be separated into English for Biology, English for Mathematics, English for Economics, etc. and EOP branches out into English for Pilots, English for Doctors, English for Bank Employees, etc. (p. 11)

The ESP field was born from the geopolitical reality of colonialism and the pursuant spread of English around the globe. According to Halliday, McIntosh and Stevens (1964),

Only the merest fraction of investigation has yet been carried out into just what parts of a conventional course in English are needed by, let us say, power station engineers in India, or police inspectors in Nigeria; even less is known about precisely what extra specialized material is required.

This is one of the tasks for which linguistics must be called in. Every one of these specialized needs requires, before it can be met by appropriate teaching materials, detailed studies of restricted languages and special registers carried out on the basis of large samples of the language used by the particular persons concerned. It is perfectly possible to find out just what English is used in the operation of power stations in India; once this has been observed, recorded and analysed, a teaching course to impart such language behavior can at least be devised with confidence and certainty. (pp. 189-190)

Halliday and colleagues' primary concern was to facilitate the improvement of English teaching by focusing on the various language demands of different societal contexts. This concern motivated Halliday's work developing Systemic Functional Linguistics (SFL) (Halliday & Matthiessen, 2004), which would become a major theoretical guide of AL scholars (e.g., Schleppegrell, 2004). However, because EAP scholars do not focus on AL as a unitary construct, that substantial body of literature is excluded from this review.¹

Cummins' theory of language proficiency

Between 1976 and 1981, Jim Cummins published a series of papers (Cummins, 1976, 1979a, 1979b, 1980a, 1980b, 1981) which have been highly influential in the fields of Bilingual Education and English as a Second Language (ESL). In the papers, Cummins proposed what amounts to a theory of linguistic proficiency. The theory consists of (a) two hypotheses: the threshold hypothesis and the developmental interdependence hypothesis; (b) two distinctions: the first between Cognitive Academic Language Proficiency (CALP) and Basic Interpersonal Communicative Skills (BICS), and the second between Common Underlying Proficiency (CUP) and Separate Underlying Proficiency (SUP); and (c) a "theoretical framework of communicative proficiency relevant to bilingual education in the United States" (Cummins, 1981, p. 11), which consists of two overlapping continua,

¹ Exceptions to this exclusion include Biber & Gray (2016), Lemke (1991), and some works authored or co-authored by M.A.K. Halliday. Though written from an EAP perspective, Biber & Gray's (2016) book, *The Grammatical Complexity of Academic English*, makes explicit use of the construct of AE. Meanwhile, though they do not make specific reference to AL or Cummins' work, Lemke (1990) and Halliday's large body of work have significantly influenced AL scholars.

one ranging from *context-embedded* to *context-reduced* language and the other ranging from *cognitively undemanding* to *cognitively demanding* language.

The initial development of Cummins' theory

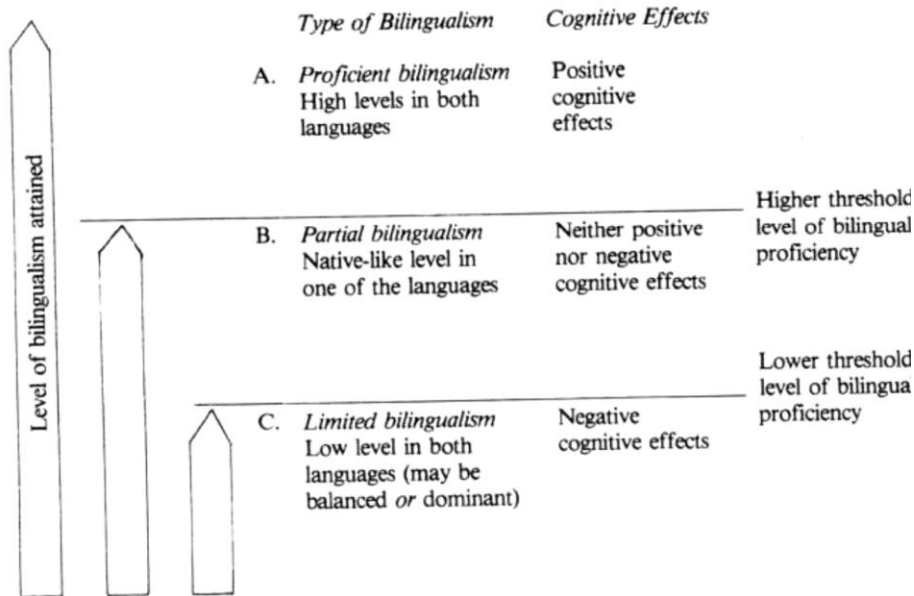
Cummins (1976) addressed a contradiction between the findings of earlier research, which had reported “that bilingualism might adversely affect cognitive and scholastic progress,” and the “results of recent studies which have reported that bilingualism is associated with positive cognitive consequences” (p. 2). A central idea of the paper was that the more recent studies had been conducted with balanced bilinguals in what Lambert (1973) had recently described as *additive* contexts, where learners add new languages to their existing linguistic repertoires without dropping or replacing their first languages, whereas the older studies had been conducted in *subtractive* contexts, which are typically reserved for the education of linguistic minority populations, and where “the learning of the second language [*does* portend] the dropping or the replacement of the other” (Lambert, 1973, p. 25, emphasis added). Cummins believed that bilingual education in additive contexts was leading to both cognitive and academic advantages, whereas bilingual education in subtractive contexts was leading to both cognitive and academic disadvantages.

To explain this contradiction, Cummins (1976) proposed the threshold hypothesis (Figure 1), which crystallized in Cummins (1979a) as positing “that there may be threshold levels of linguistic competence which a bilingual child must attain both in order to avoid cognitive disadvantages and allow the potentially beneficial aspects of bilingualism to influence his cognitive and academic functioning” (p. 222). As part of his theoretical rationalization for the threshold hypothesis, Cummins

Figure 1

The threshold hypothesis (Cummins, 1981, p. 39)

COGNITIVE EFFECTS OF DIFFERENT TYPES OF BILINGUALISM



*Adapted from Toukomaa and Skutnabb-Kangas, 1977, p. 29.

(1976) explicitly linked the subtractive end of Lambert's (1973) additive-subtractive distinction to notions of a *balance effect* and *semilingualism*. The balance effect (Macnamara, 1966) maintains that as language minority groups improve their L2 skills, they commensurately lose their L1 skills. Semilingualism, meanwhile, "refers to the linguistic competence, or lack of it, of individuals who have had contact with two languages without adequate training or stimulation in either. Consequently, these individuals know two languages poorly and do not attain the same levels as native speakers in either language" (Cummins, 1976, p. 21).

Cummins envisioned these consequences as products of miseducation, believing that inappropriate educational programs (in terms of language of

instruction) were ultimately to blame for instigating a “well-known pattern of pedagogically-induced cumulative deficit” (Cummins & Swain, 1983, p. 39).

However, the association of students’ inability to succeed in school and lack of CALP with subtractive educational contexts and semilingualism provided the impetus for deficit theory criticisms of Cummins’ work.

Cummins (1979a) introduced the developmental interdependence hypothesis, which proposed that “the development of competence in a second language (L2) is partially a function of the type of competence already developed in L1 at the time when intensive exposure to L2 begins” (p. 222). Different from scholars who were explaining the disparate educational results of bilingual programs for students of different social and language groups in terms of “socio-cultural and attitudinal factors such as socioeconomic status (SES), community support for the school program, relative prestige of L1 and L2, teacher expectations, etc.,” Cummins (1979a) sought explanation in linguistic factors, assigning “a central role to the *interaction* between socio-cultural, linguistic and school program factors” (p. 223) and focusing on the implications of various child-input factors for proper educational treatments. An ardent supporter of bilingual education, Cummins was committed to the idea that first language development for language minority students was the optimal path for their academic achievement, and that knowledge and skills that students developed or already possessed in their first language transferred to the second language and facilitated its development.

Cummins (1979b) introduced the term “‘cognitive/academic language proficiency’ (CALP)” (p. 198), which was relevant to both the threshold hypothesis

and the developmental interdependence hypothesis. Cummins (1979b) developed CALP in response to Oller's (1978) belief that "there exists a global language proficiency factor which accounts for the bulk of the reliable variance in a wide variety of language proficiency measures" (Cummins, 1979b, p. 198). While Cummins (1979b) objected to a "*strong* form of Oller's arguments," he distinguished a "convincing *weak* form" (p. 198, emphases added), which held "that there exists a dimension of language proficiency which can be assessed by a variety of reading, writing, listening and speaking tests and which is strongly related both to general cognitive skills (Spearman's "g") and to academic achievement" (p. 198). This "dimension of language proficiency" was CALP. Unlike BICS, which everyone develops, not everybody develops CALP. Thus Cummins (1979b) posited a binary instead of Oller's unitary global factor, deeming CALP to be the half of the binary that was relevant to cognitive skills and academic achievement.

Maintaining that BICS and CALP are independent of each other, Cummins (1979b) defined BICS "only in a negative sense as those aspects of communicative proficiency which can be empirically distinguished from CALP" (p. 202). As such, BICS was not considered to be its own "unitary dimension" (Cummins, 1979b, p. 202). Cummins (1979b) named as examples of BICS accent, oral fluency, listening comprehension, and phonology/pronunciation. Cummins (1980a) added to that list "sociolinguistic competence in both first and second languages (L1 and L2)" (p. 175). Cummins (1980b) described BICS as "cognitively undemanding manifestations of language proficiency in interpersonal situations" (p. 28), adding "sensitivity to paralinguistic cues" to the list of BICS and noting that "it is important to stress the

‘B’ in BICS. Only cognitively undemanding or ‘everyday’ aspects of communicative skills are included in the construct” (Cummins, 1980b, p. 31).

CALP, on the other hand, *is* a unitary dimension, operative in, and interdependent across, people’s various languages. CALP therefore supported the developmental interdependence hypothesis, because it was CALP in the L1 that catalyzes L2 success. CALP also both harmonized with and provided theoretical depth to the threshold hypothesis, because reaching the second threshold was essentially synonymous with attaining a satisfactory level of CALP. As examples of CALP, Cummins (1979b) named “range of vocabulary” and “knowledge of complex syntax” (p. 202), mentioned morphology, and alluded to the cognitive/academic types of L2 skills measured by conventional standardized tests. Cummins (1980a), meanwhile, defined CALP as “those aspects of language proficiency which are closely related to the development of literacy skills in L1 and L2” (p. 177). Cummins (1980a) did not offer any further detail about what exactly ‘those aspects of language proficiency’ were, but did note that CALP “is likely to be more readily assessed by linguistic manipulation tasks (oral or written cloze, repetition etc.)” than by “*natural communication tasks*” (p. 177, emphasis in original). Lastly, Cummins (1980b) described CALP “as a reliable dimension of individual differences in decontextualized literacy-related functions of language which appears to be distinct from interpersonal communicative skills in L1 and L2” (p. 39), adding metalinguistic awareness as one of its “specialized aspect[s]” (p. 30).

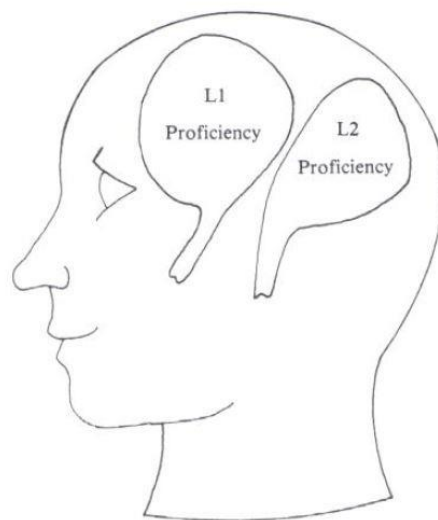
Cummins (1980b) introduced the distinction between Common Underlying Proficiency (CUP) and Separate Underlying Proficiency (SUP) as an evolution of the

developmental interdependence hypothesis. Figure 2 reproduces Cummins' (1981) depiction of the CUP-SUP distinction. The SUP model conceives of a bilingual's two

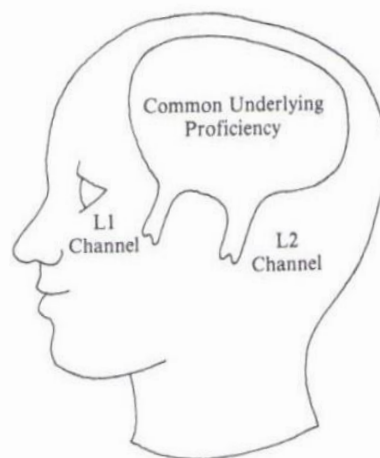
Figure 2

CUP vs. SUP (Cummins, 1981, pp. 23-24)

**THE SEPARATE UNDERLYING PROFICIENCY (SUP) MODEL
OF BILINGUAL PROFICIENCY**



**THE COMMON UNDERLYING PROFICIENCY MODEL (CUP)
OF BILINGUAL PROFICIENCY**



languages as residing separately within the brain. It was favored by advocates of English-only instruction and quick-exit transitional bilingual education models. The CUP model conceives of a bilingual's two languages as residing together, such that "experience with either language can, theoretically, promote the development of the proficiency underlying both languages" (Cummins, 1980b, p. 52). The CUP-SUP distinction undergirds the concept of transfer, through which knowledge and skills developed by a bilingual child in his or her first language (e.g., Spanish) both become accessible in and facilitate the development of a target language (e.g., English).

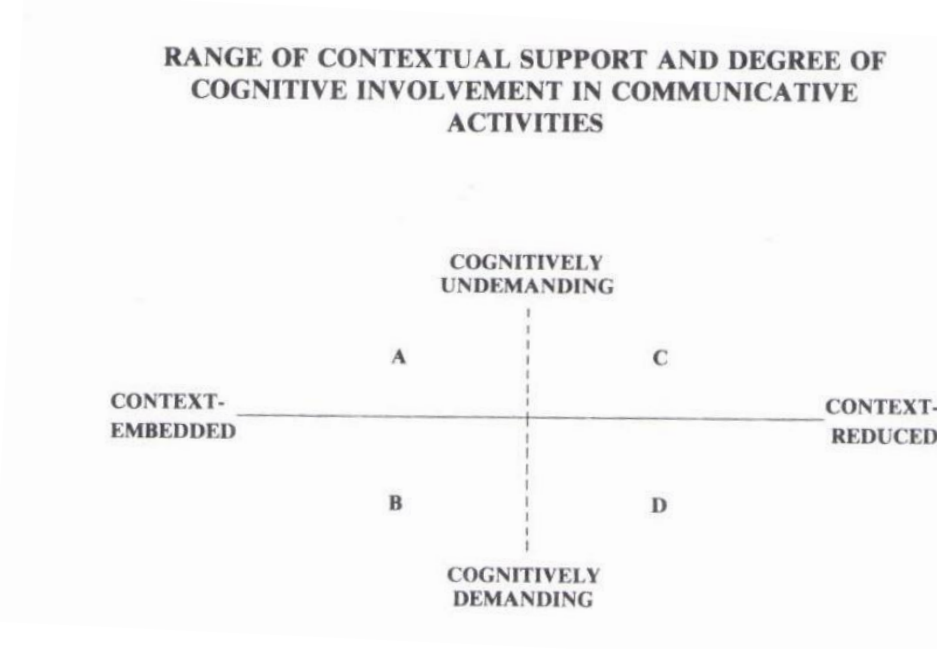
Though avoiding any reference to BICS or CALP, Cummins (1981) did discuss the term "the 'species minimum' [which involves] the phonological, syntactic, and semantic skills that most native speakers have acquired by age six" (p. 8), and which aligns with BICS. He contrasted this "species minimum" with "other aspects of language proficiency," like "literacy-related language skills such as reading comprehension, writing ability, and vocabulary/concept knowledge," which "continue to develop throughout the school years and beyond" (Cummins, 1981, p. 8). These aspects of language proficiency align with CALP. Cummins (1981) also situated the BICS/CALP distinction in "a broader theoretical framework so that it can be used to examine the developmental relationships between L1 and L2 proficiency within bilingual education programs" (p. 10).

Cummins' (1981) theoretical framework conceptualized communicative proficiency along two overlapping continua (Figure 3). The horizontal continuum relates to "the range of contextual support available" and has 'context-embedded' and 'context-reduced' communication at its two extremes. The vertical continuum

involves “the degree of active cognitive involvement in the task or activity” and has ‘cognitively undemanding’ and ‘cognitively demanding’ communication at its two extremes (Cummins, 1981, pp. 11-12). The framework entails a sort of reconceptualization of CALP as cognitively demanding, context-reduced language (quadrant D). According to Cummins (1981), a major advantage of the framework was that it “incorporate[s] a developmental perspective” (p. 12), because as people

Figure 3

Cummins' (1981, p. 12) framework of communicative proficiency for U.S. bilingual education



develop mastery of skills, whether linguistic or conceptual/practical, tasks go from being cognitively demanding to being cognitively undemanding.

Cummins (1981) argued that his theoretical framework was an improvement over other models of communicative competence because its developmental perspective (a) allowed it to distinguish between the attainment of BICS and the development of CALP; (b) permitted “differences between the linguistic demands of

school [i.e., CALP] and those of interpersonal contexts outside the school [i.e., BICS] to be described”; and (c) allowed “for the developmental relationships between L1 and L2 proficiency to be described” (p. 11). Drawing on this framework, Cummins (1980b, 1981) argued (a) that assessment and instruction of ELLs should progress from context-embedded, cognitively undemanding tasks to context-reduced, cognitively demanding tasks, and (b) that entrance- and exit-criteria for bilingual programs should be based on development of CALP, not BICS.

While all the elements of Cummins’ theory of language proficiency have become well known and influential, the most popular, enduring and impactful of them has been the BICS/CALP distinction. Because it highlights the fact that ELLs may have “surface fluency” in English but still lack the language proficiency needed to succeed at grade-level academic tasks, the distinction had practical relevance to the work of teachers of ELLs. It helped them resist undue pressure to ‘quick-exit’ students from bilingual programs into mainstream, all-English classrooms, and it helped them challenge misdiagnoses of ELLs as being learning disabled when really the obstacles the students were experiencing were language-related. The BICS/CALP distinction thus enabled practitioners to prevent the educational mistreatment of ELLs by advocating more effectively on their behalf.

The scholarly controversy over Cummins’ theory

Although Cummins’ theory and its BICS/CALP distinction have been widely used to benefit linguistic minority students (Cummins & Swain, 1983; Cummins, 2000a), they have also been subjected to strong and enduring scholarly criticism from sociolinguistic quarters. Criticisms began at least as early as 1981, when concerns

were expressed at a language proficiency assessment symposium “about possible misinterpretation of the meanings of the CALP-BICS acronyms and their implications” (Cummins & Swain, 1983, p. 36). This criticism led to the publication of the Proficiency Assessment Symposium (Rivera, 1984), which Cummins (1984a, 1984b) bookended, introducing his theoretical framework and then responding to intervening, constructive sociolinguistic critiques by Genesee (1984), Canale (1984), Spolsky (1984), Troike (1984), and Wald (1984). These critiques called attention to issues including problems regarding the tests that would be used to measure CALP (Wald, 1984; Genesee, 1984); insufficient attention to social factors in the theory (Genesee, 1984; Wald, 1984; Troike 1984); and a concern that CALP reflects “degree of acculturation” to school conditions and “acculturative approximations to middle-class Western cultural norms and behaviors” (Troike, 1984, pp. 49-51).

While Rivera (1984) was the earliest conceived criticism of Cummins’ theory, the first published criticism was Edelsky et al. (1983), which is better described as scathing than constructive, and to which Cummins and Swain (1983) responded in the very next article of the same volume of the journal *Applied Linguistics*. Edelsky et al. (1983) opened their critique by asserting that, as it was expressed through CALP, Cummins had a fundamentally flawed conceptualization of literacy. Insisting that CALP equated reading ability to “the ability to perform well on a reading achievement test” and writing ability to “the ability to do work-sheet type exercises on mechanics, vocabulary, synonyms, analogies, etc.,” Edelsky et al. (1983) argued that what Cummins called cognitive/academic language proficiency actually merely amounted to a mastery of “out-of-context, irrelevant nonsense” (pp. 4 & 9). Cummins

and Swain (1983) responded that Edelsky et al.'s (1983) criticisms were largely a “vigorous indictment of the way in which many teachers and school programs impede the acquisition of literacy and language skills by taking the message out of the medium” and then took strong issue with Edelsky et al.'s (1983) claim that Cummins' ideas “endorse and logically imply such inappropriate practices” (Cummins & Swain, 1983, pp. 23-24).

The second element of Edelsky et al.'s (1983) critique was that Cummins was “wrong in relying primarily on data from tests and test settings” (p. 1), a concern echoed by Genesee (1984). Cummins (1976, 1979a, 1979b, 1980a, 1981) had relied largely on data collected through the experimental method, and to Edelsky et al. (1983), the tests conducted to collect data in that method

at best only tangentially reflect ability to use language like a native, understand what one reads, put one's own thoughts into print, learn new subject matter concepts, etc. . . . We believe it is more accurate to call it test-wiseness, an ability that incorporates a desire to do well on artificial (as opposed to real-world) tests in the first place. (p. 6)

While acknowledging the limitations of data obtained from test settings and “not endorsing the widespread use of standardized tests,” Cummins and Swain (1983) argued that a “universal condemnation of all formal test situations is simplistic and unsupported” (p. 29). Their response notwithstanding, the belief that Cummins' data reflect test performance ability as opposed to genuine literacy persisted (see Martin-Jones & Romaine, 1986; Edelsky 1990/2006; Wiley 1996/2005; Valadez, MacSwan & Martínez, 2000).

The third element of Edelsky et al.'s (1983) criticism of Cummins' theory was that, despite good intentions, it was a deficit theory of language minority student school failure. Deeming semilingualism "central" to Cummins' theory, Edelsky et al. (1983) argued that Cummins' misconceptualization of literacy forced him to "[establish] a spurious language proficiency dichotomy" in order to "[blame] the learner, the teacher, the language of instruction, the materials, etc.—*anything* but examining the validity of how literacy (or language proficiency or learning) was conceptualized in the first place" (3-4, emphasis in original). Edelsky et al. (1983) argued that Cummins "[uses] these hypotheses and constructs, taken together, to blame school failure on an interaction between the 'cognitive academic' aspect of the child's language proficiency and the school's choice of language of instruction" (p. 3). In response, Cummins and Swain (1983) pointed out that they had never discussed CALP "as an isolated causal factor (as Edelsky *et al.* consistently depict it) but rather as *one of a number* of individual learner attributes which are determined by societal influences and which interact with educational treatment factors in affecting academic progress" (p. 31, emphasis in original).

Edelsky et al.'s (1983) deficit theory accusation has been echoed by several scholars in the decades since (Martin-Jones & Romaine, 1986; Edelsky, 1990/2006; Wiley, 1996/2005; MacSwan, 2000; MacSwan & Rolstad, 2003, 2010; Faltis, 2013; Rolstad, 2015). MacSwan (2000) bases his deficit theory accusation not just on the theory's reliance on semilingualism but also on classical prescriptivism. From a classical prescriptivist perspective, CALP is the preferred, prescriptively approved

variety of English, while non-academic language is a lesser, demeaned variety. As MacSwan and Rolstad (2010) put it,

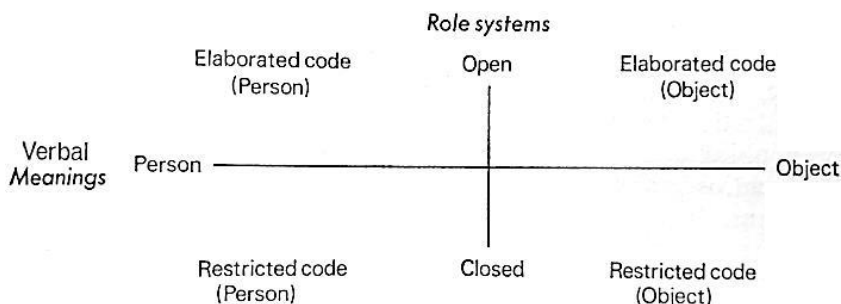
Cummins' view entails that schooling has the effect of improving our language, and that the language of the educated classes is, in certain respects, intrinsically richer than—or an improved version of—the language of the unschooled or working class, a view we reject. Furthermore, we argue that because the BICS/CALP distinction is applied in the context of native-language development—not just second language—it is conceptually indistinguishable from prescriptivism and related deficit views of working-class language. (p. 185)

MacSwan (2000) also linked the BICS/CALP distinction to other dichotomies of language proficiency that have been associated with a deficit perspective of minority student failure, including Schatzmann and Strauss (1955), Bereiter and Englemann (1966), Bereiter et al. (1966), and Bernstein (1971). In fact, the overlapping continua of Cummins' framework of communicative proficiency for U.S. bilingual education look strikingly similar to Bernstein's (1971) figure depicting role systems, reproduced here as Figure 4.

For his part, Cummins (1999, 2000a, 2003, 2008, 2013) always adamantly denied deficit theory accusations and defended his theories against them. In fact, motivated by the sociocultural and sociopolitical implications of the sociolinguistic critique, Cummins situated his theoretical framework in a broader, critical, sociocultural and sociopolitical framework of American education (Cummins, 1986, 2000b). He never, though, abandoned his conviction that the sociolinguistic concerns

Figure 4

Bernstein's (1971, p. 149) role systems



“can be incorporated in more detail than has been the case up to now without relinquishing the parsimony of two basic dimensions [i.e., BICS and CALP]” (Cummins, 1984b, p. 73). As a result, because of its reliance on the autonomous orientation to literacy development, at a pedagogical level the BICS/CALP distinction was never able to shake the criticism that it “largely ignores the historical and sociopolitical contexts in which individuals live and differences in power and resources among groups” (Wiley, 2005, p. 33).

Beyond these themes, scholars have criticized (1) Cummins’ claim that CALP makes greater use of decontextualized language and (2) his conjoining of cognitive and linguistic proficiencies within CALP.

Cummins believed that a major challenge for students was dealing with the decontextualization of language in academic contexts. According to Cummins (1981), in context-embedded communication,

The participants can actively negotiate meanings (e.g., by providing feedback that the message has not been understood) and the language is supported by a wide range of meaningful paralinguistic (gestures, intonation, etc.) and

situational cues; context-reduced communication, on the other hand, relies primarily (or at the extreme of the continuum, exclusively) on linguistic cues to meaning and may, in some cases, involve suspending knowledge of the “real” world in order to interpret (or manipulate) the logic of communication appropriately. (p. 11)

Insisting that “a major pedagogical principle for both L1 and L2 teaching is that language skills in context-reduced situation can be most successfully developed on the basis of initial instruction which maximizes the degree of context-embeddedness,” Cummins (1981) argued that if the instruction of language minority students prematurely “emphasized context-reduced communication” (pp. 14-15), and if teachers didn’t understand and recognize indications that they may not be ready for such communication, then their school programs would inflict academic deficits upon them.

Addressing Cummins’ incorporation of context into his theory, Wald (1984) pointed out that “most of Cummins’ discussion of context is addressed to a very specific element of context which he labels ‘shared reality’” (p. 63). In other words, Cummins’ conception of contextualization was limited to the paralinguistic advantages of shared physical presence with an interlocutor but lacked the dimension of context represented by “shared knowledge,” which is “cumulative” (Wald, 1984, p. 63). Cummins (1984b) accepted the point, though in Cummins (2000a) the description of context-embedded vs. context-reduced continued to espouse the limited scope of “contextual or interpersonal cues” (p. 57). After the turn of the century, Cummins (2003, 2008, 2013) considered context in the broader sense. Cummins

(2013) pointed out that his framework utilizes the term *context-reduced* as opposed to *decontextualized*, implying that the framework acknowledged that all language is contextualized but still accounted for the loss of paralinguistic aids to language comprehension.

In concord with Cummins, Snow (1983) stressed the importance of decontextualized language in literacy development, calling “full-blown adult literacy . . . the ultimate decontextualized skill” (p. 175). Similarly to Wald (1984), though, Snow (1983) distinguished between “physical context” and “historical context,” meaning by the latter “children’s previous experience with some event, place, word, or text, which can support their current interpretation or reaction” (p. 175). This distinction being made, though, Snow (1983) still asserted that “the process of education consists largely of training in decontextualized language use” (p. 183).

Operating from an SFL perspective, meanwhile, Schleppegrell (2004) deemed decontextualization inadequate to characterize “the real challenges of the language through which schooling is realized” (p. 5). The real challenge of academic language, she argued, was linguistic and context-specific:

To call the kind of texts that students need to work with at school *decontextualized* suggests that these texts are somehow outside of any particular context. But school-based texts are difficult for many students precisely because they emerge from discourse contexts that require different ways of using language than students experience outside of school. . . .

Written texts . . . reflect the contexts from which writers proceed, requiring different kinds of contextualizing features for understanding. The point is not

that written language is decontextualized, but that it typically draws on different lexical and grammatical resources and genre conventions than informal spoken interaction because it generally realizes different situational contexts. (Schleppegrell, 2004, p. 9)

Instead of ascribing undue influence to an impoverished notion of contextualization versus de-contextualization of language, Schleppegrell (2004) argued that what was actually important was helping students “gain social experience with the ways of using language that are expected at school” (p. 16).

Also writing from an SFL perspective, Gee (2014) posited the existence of ‘social languages,’ which he equated to the SFL construct of register. He distinguished between vernacular and non-vernacular styles, the vernacular being the style in which people use their native languages “initially and throughout their lives . . . when they are speaking as ‘everyday’ people,” and the non-vernacular being styles that different social groups use for “special purposes, such as religion, work (e.g., a craft), government, or academic specialties” (p. 12). Thus Gee (2014) accepted the notion that there exist different ‘languages’ that people use in different contexts—in other words, different *kinds*, *varieties*, or *registers* of language, conceptualized as discrete entities.

However, because Gee (2014) was strongly influenced by the area of New Literacies Studies, he severely criticized what he called “the ‘decontextualized’ answer” to the question of why “children from some minority groups and children living in poverty do poorly in school when compared with white, middle-class children” (pp. 9-10). The decontextualized answer that Gee (2014) refuted was that

All children get lots and lots of practice at home and in their communities with contextualized language. However, some children, in their homes and communities, experience many more models of, and get a lot more practice with, decontextualized language than do other children. This is because they are surrounded by adults and older peers who, thanks to their allegiance to and success in schools, themselves have good control over decontextualized forms of language and use such language in a variety of different social practices (within and in front of, [sic] their children at an early age). Since so much of schooling is centered around decontextualized language, these children are heavily advantaged in school. (Gee, 2014, pp. 10-11)

Gee (2014) argued that “this widely influential answer is wrong and misleading, because it is based on a poor theory of how human language works” (p. 9). The greatest flaw in the “decontextualized language story” was that

it fails to tell us why schools do not or cannot teach disadvantaged children decontextualized language (and the variety of practices in which it is recruited) and why it does not or cannot catch them up with their more advantaged peers, despite the home and community support such children have. (Gee, 2014, p. 11)

Key to the logic of this criticism is that fact that every “non-vernacular social language . . . builds on the grammatical resources of one’s vernacular” (Gee, 2014, p. 12), so any child should be able, under the right social circumstances, to acquire any non-vernacular social language. The fact that despite years of schooling so many children do not develop the kinds of language habits that result in their school success

indicates that there are issues at play that go beyond the need for adequate socialization.

Regarding the relationship between language and cognition, as an educational psychologist, Cummins closely linked language proficiency with cognition. Cummins (1976) explicitly sought to elucidate the “conditions under which bilingual learning experiences are likely to retard or, alternatively, accelerate aspects of cognitive growth” (p. 11). Considering the empirical reality of minority language student failure and the tendency of scholars to offer social or political explanations for it, Cummins (1976) felt that “one problem with these socio-cultural factors in resolving contradictory research findings is that they are too distant from the actual process of cognitive development” (p. 19).

Cummins (1981) operationalized cognitive demand as “the amount of information that must be processed simultaneously or in close succession by the individual in order to carry out the activity” (pp. 12-13). This conceptualization, however, was quickly critiqued. Edelsky et al. (1983) cast doubt on the data Cummins uses “as evidence of cognitive advantage or disadvantage,” arguing that “almost none [of the measures used] investigates cognitive functioning from a broad theoretical framework of cognition” (p. 7). Troike (1984) warned that the “contribution of native endowment still remains to be isolated and identified” (p. 46). Wald (1984) granted that some things are more cognitively demanding than others, but insisted that “serious work remains to be done in clarifying and operationalizing the current underpinnings of the framework with its constructs of context and cognitive demand” (p. 67). Martin-Jones and Romaine (1986) warned that “Cummins appears to be

equating semantic development with cognitive development. . . . The relationship between language and thought processes is by no means as straightforward as he suggests” (p. 29).

From a different perspective, some scholars have worked to develop the link between language development and enhanced cognition. An early attempt to operationalize the cognitive element of CALP was the Cognitive Academic Language Learning Approach (CALLA; Chamot & O’Malley, 1986, 1987, 1994, 1996, 2009; Chamot, 1995; <http://calla.ws/>), in which “students are taught to use learning strategies derived from a cognitive model of learning to assist their comprehension and retention of both language skills and concepts in the content areas” (Chamot & O’Malley, 1987, p. 227). CALLA was theoretically grounded in the cognitive theory proposed by Anderson (1981, 1983, 1985), in which “information is stored in memory in two forms: *declarative* knowledge, or what we know about a given topic, and *procedural knowledge*, or what we know how to do” (Chamot & O’Malley, 1987, p. 231). The content component of CALLA represents declarative knowledge; the language development component represents procedural knowledge; and “the learning strategies component . . . builds on Anderson’s theory and suggests ways in which teachers can foster autonomy in their students” (Chamot & O’Malley, 1987, p. 234).

Diaz (1985) conducted a longitudinal experiment which focused on ELLs of different proficiency levels and, following up on a number of studies since Peal and Lambert (1962) that had found cognitive advantages for balanced bilinguals, sought to determine whether bilingualism caused cognitive advantages or cognitive

advantages caused more successful bilingualism. Diaz (1985) found (1) that “degree of bilingualism is slightly confounded with socioeconomic status”; (2) that “degree of bilingualism is a strong predictor of cognitive variability for children of relatively low second-language proficiency” but that that strength “diminished for high second-language ability students”; and (3) that “two sets of statistical analysis” supported the notion that bilingualism caused cognitive advantage as opposed to cognitive advantage causing improved bilingualism (p. 1384). According to Diaz (1985), the second finding “directly challenged” (p. 1386) Cummins’ threshold hypothesis, which would have predicted cognitive advantage to be associated with high L2 proficiency, not with low L2 proficiency. As a result, Diaz (1985) offered a ‘new threshold hypothesis’ that accorded with his findings.

Hawson (1996) cast doubt on both “the data upon which the Threshold Hypothesis was founded” (p. 106) and the data that Diaz (1985) used. The key issue, according to Hawson (1996), was

the problem of “cognition”: How is it defined? What does it mean to say that a child is “cognitively” advantaged or disadvantaged? Are these “cognitive” advantages general or specific to a particular task? Neither Cummins nor any of the other researchers talking of such variables defines what it is they are discussing, at least, not in any of the papers I have read. Certainly, they give details of the tests they are using to measure it: Reynolds (1991), who, like MacNab (1979), questioned what was being considered under the rubric of the “dependent variable” in many of these studies, has collated a sampling of no less than fifteen intelligence tests, three divergent thinking tests, six visual-

spatial tests, and twelve “other” tests (1991, 160). The very existence of such a large and diverse group of measures provides evidence of the lack of consensus in the research community as to how cognitive performance can best be gauged. . . . What I am suggesting, of course, is that the observed cognitive advantages are evidenced because of how cognition and advantage have been defined by the test, and are therefore circular in their conception and unhelpful in their explanatory power. (pp. 106 & 117)

While acknowledging the sociolinguistic critique of Cummins’ ideas, Hawson (1996) nonetheless urged “the incorporation of information emerging from neuroscientific research . . . into educational thinking” (p. 119). She advocated a “connectionist” approach that could genuinely account for students’ different information-processing needs, abilities, and styles.

Perhaps in response to these criticisms, from 2000 forward, while retaining the acronym, Cummins (2000a, 2008) dropped the “cognitive” from CALP and started speaking about just ‘academic language proficiency’. Cummins (2000a) also began referring to academic language as a ‘register’, signaling a nod to Halliday and the SFL perspective on academic language. Cummins (2000a) did, however, make sure to stress the importance of the cognitive element of the original BICS/CALP distinction, even though the section on “cognitive and contextual demands” focused mainly on context. As part of his response to Wiley’s (1996) criticism that the BICS/CALP distinction reflected an ‘autonomous’ as opposed to ‘ideological’ orientation to literacy, Cummins (2000a) warned that to see literacy development purely ideologically would amount to “[consigning] any question regarding how

language and cognition intersect (in either monolingual or multilingual individuals) to the garbage heap of scientific inquiry” (p. 77), which he was not willing to do.

To deny that language and cognition interact, Cummins (2000a) argued, would do the cause of bilingual education a disservice, because it would rule out the use of good scientific evidence supporting bilingual education that was based on cognitive premises. Instead, his critics needed realize that linguistic interactions “take place within a sociocultural and sociopolitical context, but their effects are still linguistic, academic, and cognitive” (Cummins, 2000a, p. 77).

Functions and features: Early efforts to define academic language

The final element of Edelsky et al.’s (1983) criticism of Cummins’ theory was that it generally failed “to reveal how dependent variables were conceptualized and then operationalized” (p. 4). Cummins and Swain (1983) dismissed this criticism: “Contrary to Edelsky et al., our conceptualization of CALP as literacy-related language skills involves no intrinsic dependence on any particular operationalization of those skills” (p. 29). This dismissal, however, did not suffice for scholars who supported and sought to utilize the BICS/CALP distinction. As a result, addressing the challenge of conceptualizing and operationalizing AL became a central focus of proponents of the construct (Bailey, 2007; Anstrom et al., 2010; Snow & Uccelli, 2009; Bailey & Huang, 2011).

Solomon and Rhodes (1995) provided an early effort to define AL with more detail than Cummins offered. While noting that “there is general agreement among educators and researchers that the distinct type of English that is used in classrooms, referred to as *academic language*, is a variable that often hinders the academic

achievement of some language minority students,” Solomon and Rhodes (1995) acknowledged that “despite this consensus . . . there are conflicting views regarding what constitutes academic language” (p. 1). They suggest that there were “two distinct hypotheses” about what academic language was. One was Cummins’ theory of language proficiency, including the BICS/CALP distinction and theoretical framework with its overlapping context-embedded/context-reduced and cognitively undemanding/cognitively demanding continua. The other “proposes that academic language is a compilation of unique language functions and structures that are difficult for minority students to master” (p. 1). Solomon and Rhodes (1995) critiqued both hypotheses and offered their own reconceptualization of academic language.

It is not clear that Cummins would have objected to a language-function approach to defining academic language, since, as noted above, he was not committed to any single operationalization of CALP. Scholars were merely building upon Cummins’ model by defining it in terms of the language functions that comprise it. Among others, Solomon and Rhodes (1995) singled out Hamayan and Perlman (1990), Chamot and O’Malley (1986, 1987) and O’Malley (1992), Spanos *et al.* (1988), Short (1994) and Lemke (1990) as works that took a language-functions approach to defining AL.

Himayan and Perlman (1990) stated that, as students progressed through elementary school, increased literacy demands necessitated “a command of cognitively demanding academic language skills” (p. 1). Their guide for mainstream classroom teachers faced with the challenge of teaching ELLs listed twenty-six language functions distributed across the four modes of listening, speaking, reading

and writing, along with tick boxes for Science, Math, and Social Studies to indicate if that language function occurs in the respective subject matter. The language functions ranged from understanding explanations and answering questions to understanding specialized vocabulary and writing “answers to questions,” “reports,” and “verbal input numerically” (Himayan & Perlman, 1990, p. 3).

O’Malley (1992) acknowledged that “academic language can be defined in terms of the vocabulary and conventions specific to any content area” but argued that it “can be understood most clearly in terms of the language functions needed for authentic academic content. Academic language functions are essential tasks that language users must be able to perform in the different content areas, and they are what makes the task simple or complex” (p. 176). Noting that he had developed the CALLA model with Anna Chamot “while relying on Cummins’ definition of CALP,” O’Malley (1992) explained that they “realized early on that the definition had limitations precisely because the nature of the academic task requirements that lead to cognitive complexity were incompletely specified” (p. 176).

O'Malley (1992) and Chamot and O'Malley (1987) enumerated the language functions of AL as listed in Table 1. In addition to the language functions listed in Table 1, Chamot and O'Malley (1987) list (a) “[developing] the specialized vocabulary and technical terms of each content area” (i.e., academic vocabulary

Table 1

Academic language functions from Chamot & O'Malley (1987) and O'Malley (1992)

| Chamot & O'Malley 1987 | O'Malley 1992 |
|---------------------------|---------------------|
| Informing | Informing |
| Evaluating | Evaluating |
| Classifying | Classifying |
| Explaining | Seeking information |
| Describing | Comparing |
| | Predicting |
| | Analyzing |
| | Hypothesizing |
| | Justifying |
| | Persuading |
| | Solving problems |
| | Synthesizing |

development); (b) “[comprehending] and [using] the language structures and discourse features found in different subject areas” (i.e., development of grammatical and discursive competency); and (c) “using the language skills needed in the content classroom, such as listening to explanations, reading for information, participating in academic discussions, and writing reports” (i.e., practice using the four language modalities) as essential elements of AL (p. 239).

Investigating the linguistic features of the mathematics register, Spanos et al. (1988) provided a detailed conceptualization of academic language, divided into (1)

syntactic features (a- comparatives, b- prepositions, c- passive voice, d- reversal errors, and e- logical connectors); (2) semantic features (a- lexical features, with subheadings for new technical vocabulary, *natural language* vocabulary which has a different meaning in mathematics (emphasis added), complex strings of words or phrases, synonymous words and phrases, and symbols and mathematical notation as “vocabulary”; b- referential features, with subheadings for articles/pre-modifiers and variables; c- vagueness in problems and directions; and d- similar terms, different functions); and (3) pragmatic features (a- epistemological issues, with subheadings for lack of experience or knowledge, restricted experience or knowledge, conflicting experience or knowledge, and contradictory experience or knowledge; and b- textual issues, with subheadings for lack of real life objects or activities (realia) in math curricula and lack of natural interaction). Spanos et al.’s (1988) table detailing the syntactic, semantic and pragmatic features of the mathematics register is reproduced here as Table 2.

Table 2

Spanos et al.'s (1988, pp. 226-227) Syntactic, Semantic and Pragmatic Features of the Mathematics Register

Syntactic, Semantic and Pragmatic Features of the Mathematics Register

SYNTACTIC FEATURES

I. COMPARATIVES

| | | |
|------------------------|-------|---|
| greater than/less than | as in | all numbers greater than 4 |
| n times as much as | as in | Hilda earns six times as much as I do. Hilda earns \$40,000 a year. What do I earn? |
| as . . . as | as in | Wendy is as old as Jack. Jack is three years older than Frank. Frank is 25. How old is Wendy? |

II. PREPOSITIONS

| | | |
|--------------|-------|--|
| divided into | as in | four (divided) into nine ($9/4$ or $9 \div 4$) |
| divided by | as in | four divided by nine ($4/9$ or $4 \div 9$) |
| by | as in | two is multiplied by itself three times (multiplication) |
| | | vs. |
| | | x exceeds two by seven (addition) |

III. PASSIVE VOICE

| |
|---|
| as in x is defined to be greater than or equal to zero. |
| When 15 is added to a number, the result is 21. What is the number? |

IV. REVERSAL ERRORS

| |
|---|
| Examples: The number a is five less than the number b . |
| correct equation: $a = b - 5$ |
| incorrect equation: $a = 5 - b$ or $a - 5 = b$ |

| |
|--|
| There are five times as many students as professors in the mathematics department. |
| correct equation: $5p = s$ |
| incorrect equation: $5s = p$ |

V. LOGICAL

CONNECTORS

| | | |
|----------------|-------|---|
| if . . . then | as in | If a is positive then $-a$ is negative. |
| if and only if | as in | $a + b = c$ if and only if $b + a = c$. |
| given that | as in | Given that $a = 0$, $a \times b = 0$. |

SEMANTIC FEATURES

I. LEXICAL

A. NEW TECHNICAL VOCABULARY

| | | |
|------------------|-------------|-------------|
| additive inverse | coefficient | denominator |
| binomial | monomial | polynomial |

B. NATURAL LANGUAGE VOCABULARY WHICH HAS A DIFFERENT MEANING IN MATHEMATICS

| | | |
|--------|----------|------------|
| square | rational | irrational |
| power | equality | inequality |

C. COMPLEX STRINGS OF WORDS OR PHRASES

| |
|---------------------------------|
| least common denominator |
| negative exponent |
| the quantity, $y + 3$, squared |

(Continued)

D. SYNONYMOUS WORDS AND PHRASES

For addition: add, plus, combine, sum,
more than, and increase by

For subtraction: subtract, minus, differ(ence),
less than, and decreased by

E. SYMBOLS AND MATHEMATICAL NOTATION AS "VOCABULARY"

| | | | |
|---|---|---|-----|
| = | > | ≥ | () |
| ~ | < | ≤ | [] |

II. REFERENTIAL

A. ARTICLES/PRE-MODIFIERS

a number. . .the number as in Five times a number is two more than ten times the number.

one number. . .another number as in One number is ten times another number. If the first number is 7, find the second number.

B. VARIABLES

Example: There are five times as many apples as bananas in the fruit bowl.

correct equation: $5b = a$, where b refers to the *number* of bananas and a refers to the *number* of apples

III. VAGUENESS IN PROBLEMS AND DIRECTIONS

Example: Food expenses take 26% of the average family's income. A family makes \$700 a month. How much is spent on food?

(That month? In a year? What is being asked for??)

IV. SIMILAR TERMS, DIFFERENT FUNCTIONS

| | | |
|-------------|-----|-----------------|
| less | vs. | less than |
| the square | vs. | the square root |
| divided by | vs. | divided into |
| multiply by | vs. | increased by |

PRAGMATIC FEATURES

I. EPISTEMOLOGICAL

A. Lack of Experience or Knowledge

e.g., market-place concepts, e.g., discounts, cost, selling price, markup, wholesale, retail, sales tax rates

B. Restricted Experience or Knowledge

e.g., attempt to substitute known quantities like local tax rates for tax rates referred to in word problems

C. Conflicting Experience or Knowledge

e.g., inability to solve for tax rate because in practical experience this is a given fact

D. Contradictory Experience or Knowledge

e.g., discrepancy between the way sales tax is rounded off on actual sales tax charts and the way it is rounded off conventionally

II. TEXTUAL

A. Lack of Real Life Objects or Activities (Realia) in Math Curricula

B. Lack of Natural Interaction

Short (1994) described a project of the National Center for Research on Cultural Diversity and Second Language Learning, the goal of which was “to identify the academic language and culture demands of social studies in U.S. middle schools and the instructional strategies and techniques that lead to student success” (p. 583). Table 3 lists the language functions and syntactic features named by Short (1994) to characterize AL in social studies.

Table 3

Short’s (1994) Academic language functions and features (social studies)

| <u>Language functions</u> | <u>Syntax</u> |
|---------------------------|--------------------|
| Explaining | Simple past |
| Describing | Historical present |
| Defining | Sequence words |
| Justifying | Active voice |
| Giving examples | Temporal signs |
| Sequencing | Causative signals |
| Comparing | |
| Evaluating | |

Writing from a social semiotic perspective and heavily influenced by the work of Halliday, Lemke (1990) focused on helping kids learn to “*talk science*” (p. 1). Table 4 lists most of the language functions Lemke (1990) cited as being involved in *talking science*. Lemke (1990) never used the term ‘academic language’ per se, and did not cite Cummins once, but did assert that students “have to talk and write and reason in phrases, clauses, sentences, and paragraphs of scientific language” (p. 12). The affinity of the term *scientific language* to the term *academic language* led to the quick absorption of Lemke’s work by AL scholars (e.g., Scarcella, 2003; Schleppegrell, 2004). Also, Lemke’s work’s connection to SFL portended the huge influence that Halliday’s work would have on post-NCLB AL scholarship. It is worth

Table 4

Lemke's (1990) Language Functions of Talking Science

| | |
|---------------|--------------|
| Describing | Arguing |
| Comparing | Judging |
| Classifying | Evaluating |
| Analyzing | Deciding |
| Discussing | Concluding |
| Hypothesizing | Generalizing |
| Questioning | Reporting |
| Challenging | Writing |

noting, though, that Lemke's (1990) work *in and of itself* is best characterized as a treatise on scientific discourse.

Considering academic English from a teacher training and professional development perspective, Wong Fillmore and Snow (2000) argued that U.S. teachers were ill-prepared to teach ELLs and speakers of "vernacular dialects of English" (p. 3) because they themselves did not have sufficient knowledge of the English language. They believed that teachers needed to develop their own metalinguistic awareness to be able to help students develop the AE that was critical to success in school and the professional world. Table 5 lists the language functions that Wong Fillmore and Snow (2000) claimed to embody academic English.

Post-NCLB developments: AL in the era of accountability

The years following the No Child Left Behind (NCLB) legislation saw renewed interest in the constructs of AL and AE. Building off the work by scholars during the functions and features era of AL scholarship, scholars since the turn of the century have worked (a) to develop more sophisticated conceptual frameworks within which to situate academic language, and (b) to operationalize the construct for practical instructional and assessment purposes. Though with respect to particulars different researchers have defined academic language differently, a consensus has

Table 5

Wong Fillmore and Snow's (2000, p. 21) language functions of Academic English

Summarize texts, using linguistic cues to interpret and infer the writer's intentions and messages

Analyze texts, assessing the writer's use of language for rhetorical and aesthetic purposes and to express perspective and mood

Extract meaning from texts and relate it to other ideas and information

Evaluate evidence and arguments presented in texts and critique the logic of arguments made in them

Recognize and analyze textual conventions used in various genres for special effect to trigger background knowledge or for perlocutionary effect

Recognize ungrammatical and infelicitous usage in written language and make necessary corrections to grammar, punctuation, and capitalization

Use grammatical devices for combining sentences into concise and more effective new ones, and use various devices to combine sentences into coherent and cohesive texts

Compose and write an extended, reasoned text that is well developed and supported with evidence and details

Interpret word problems recognizing that in such texts, ordinary words may have specialized meanings (e.g., that share equally among them means to divide a whole into equal parts)

Extract precise information from a written text and devise an appropriate strategy for solving the problem based on information provided in the text.

developed that academic language is a tripartite construct comprised of lexical, grammatical, and discourse features (Anstrom et al., 2010; DiCerbo et al., 2014).

Four seminal works on AL

Four seminal works on AL are Scarcella's (2003) *Academic English: A Conceptual Framework*, Schleppegrell's (2001) *Linguistic features of the language of schooling*, Snow and Uccelli's (2009) *The Challenge of Academic Language*, and Bailey's (2007) *The Language Demands of School: Putting Academic English to the Test*. The essential elements of each are presented below.

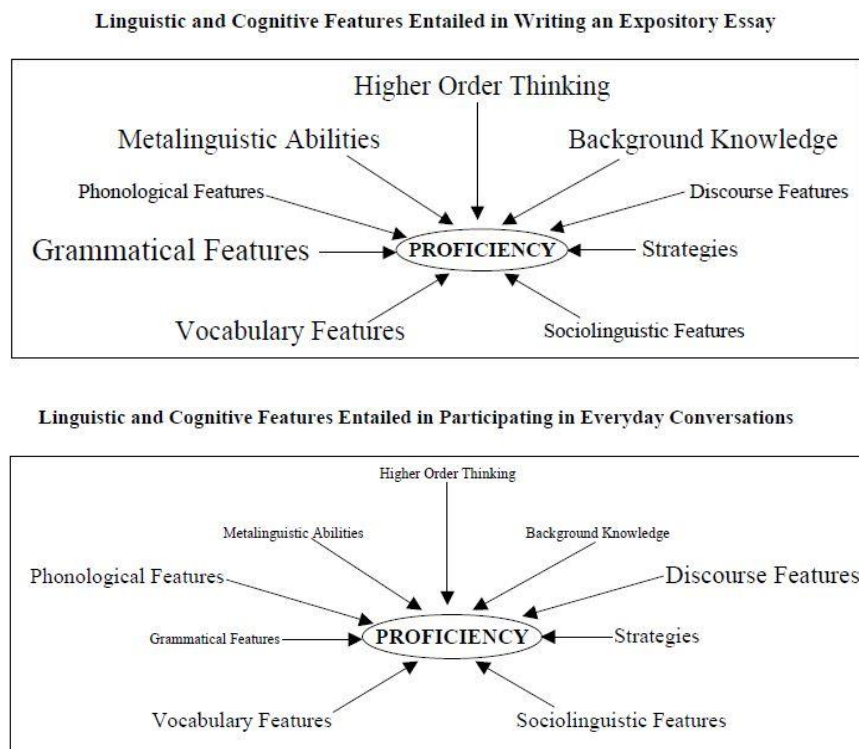
Scarcella's (2003) Academic English: A Conceptual Framework. Scarcella (2003) offered a conceptual framework of AL that is essentially a fusion of earlier

work by Canale and Swain (1980) and Kern (2000). Scarcella (2003) combines Canale and Swain's (1980) theoretical framework for communicative competence—a historical competitor of Cummins' theory (see Canale, 1984)—with Kern's (2000) notion that *academic literacy* consists of three different dimensions: linguistic, cognitive, and sociocultural/psychological.

Scarcella (2003) visually represented most of her conceptual framework (minus the sociocultural/psychological dimension) in two figures by which she compared the linguistic and cognitive features entailed in writing an expository essay to those of participating in everyday conversation. Those two figures, reproduced here as Figure 5, indicated by the font size of their words the relative contributions of

Figure 5

Scarcella's (2003, pp. 26-27) Linguistic and Cognitive Features Entailed in Writing an Expository Essay vs. Participating in Everyday Conversations



the different features to academic language (through the expository essay) and non-academic language (through everyday conversation). Grammatical features is notably larger in the expository essay than in everyday conversation.

The cognitive dimension of Scarcella's (2003) framework relied on schema theory and, like Anderson's (1981, 1983, 1985) cognitive theory, distinguished between declarative and procedural knowledge. For its rationalization, the sociocultural/psychological dimension drew on Vygotskian theory (Vygotsky, 1978) and Gee's (1996) conception of primary (home) and secondary (school, the public sphere) discourses. The linguistic dimension of Scarcella's (2003) framework consisted of five components (1- phonological, 2- lexical, 3- grammatical, 4- sociolinguistic, and 5- discourse), each of which entailed different features. Table 6 reproduces Scarcella's (2003) table contrasting the features of "Ordinary English" and "Academic English" across all five of these components.

Table 6

Scarcella's (2003, p. 12) Linguistic Components of Academic English

A Description of the Linguistic Components of Academic English and Their Associated Features Used in Everyday Situations and in Academic Situations

| Linguistic Components of Ordinary English | Linguistic Components of Academic English |
|--|--|
| <u>1. The Phonological Component</u> | |
| knowledge of everyday English sounds and the ways sounds are combined, stress and intonation, graphemes, and spelling | knowledge of the phonological features of academic English, including stress, intonation, and sound patterns. |
| Examples: <i>ship</i> versus <i>sheep</i> /I/ - /i/ <i>sheet</i> versus <i>cheat</i> /sh/ - /ch/ | Examples: <i>demography</i> , <i>demographic</i> , <i>cadence</i> , <i>généric</i> , <i>casualty</i> , and <i>celerity</i> |
| <u>2. The Lexical Component</u> | |
| knowledge of the forms and meanings of words occurring in everyday situations; <i>knowledge</i> of the ways words are formed with prefixes, roots, suffixes, the parts of speech of words, and the grammatical constraints governing words | knowledge of the forms and meanings of words that are used across academic disciplines (as well as in everyday situations outside of academic settings); knowledge of the ways academic words are formed with prefixes, roots, and suffixes, the parts of speech of academic words, and the grammatical constraints governing academic words |
| Example: <i>find out</i> | Example: <i>investigate</i> |
| <u>3. The Grammatical Component</u> | |
| knowledge of morphemes entailing semantic, syntactic, relational, phonological, and distributional properties; <i>knowledge</i> of syntax; <i>knowledge</i> of simple rules of punctuation | knowledge that enables ELs to make sense out of and use the grammatical features (morphological and syntactic) associated with argumentative composition, procedural description, analysis, definition, procedural description, and analysis; knowledge of the grammatical co-occurrence restrictions governing words; knowledge of grammatical metaphor; knowledge of more complex rules of punctuation |
| <u>4. The Sociolinguistic Component</u> | |
| knowledge that enables ELs to understand the extent to which sentences are produced and understood appropriately; <i>knowledge</i> of frequently occurring functions and genres | knowledge of an increased number of language functions. The functions include the general ones of ordinary English such as apologizing, complaining, and making requests as well as ones that are common to all academic fields; knowledge of an increased number of genres, including expository and argumentative text |
| <u>5. The Discourse Component</u> | |
| knowledge of the basic discourse devices used, for instance, to introduce topics and keep the talk going and for beginning and ending informal types of writing, such as letters and lists | knowledge of the discourse features used in specific academic genres including such devices as transitions and other organizational signals that, in reading, aid in gaining perspectives on what is read, in seeing relationships, and in following logical lines of thought; in writing, these discourse features help ELs develop their theses and provide smooth transitions between ideas |

The value that Scarcella (2003) added to our understanding of AL was her situation of the elements, features, and functions of AL in a more detailed framework. Instead of the two-dimensional BICS/CALP distinction, Scarcella's (2003) framework consisted of a sophisticated interaction of dimensions and components. It

did not ultimately break the mold of the language-function-based definition of AL, though, and some of the grammatical features it highlighted, such as the notions that the future tense is not a part of AL and that the present perfect is more common in AL than non-AL, were dubious at best. Nonetheless, through its integration and reimagining of the contributions of prominent researchers of bilingualism and bilingual education, Scarcella's (2003) framework represented a step toward a more thorough and convincing articulation of the AL construct than had been offered in the 20th century.

Schleppegrell's (2001) Linguistic Features of the Language of Schooling.

Compared to Scarcella (2003), Schleppegrell (2001) offered a grammatically more sophisticated attempt at defining AL. Because Schleppegrell (2001) worked from a systemic functional linguistic perspective (Halliday & Matthiessen, 2004), her description of AL benefited from the nearly fifty years of theoretical development of SFL by scholars like Michael Halliday, Ruqaiya Hasan, James Martin, and others. Systemic Functional Linguistics operates on the principle that "texts produced for different purposes in different contexts have different features. For any text type, these features can be described in terms of the lexical and grammatical features and the organizational structure found in that text type" (Schleppegrell, 2001, p. 432). Schleppegrell (2001) was particularly interested in "[describing] the lexical choices and strategies for clause structuring that are typical of the school-based registers" (p. 432).

In SFL, every social context on earth, from the auto mechanic's shop to the school, both inspires and is instantiated by the lexicogrammatical choices that people

make when using language in those contexts. Therefore, it is simply a matter of empirical fact that language materially differs in different social contexts in terms of the words and grammatical structures that are deployed. SFL researchers have thus produced voluminous work describing the collocation of lexicogrammatical features in various social and professional settings. In academic contexts, SFL researchers have investigated different subject matters (e.g., science, mathematics, social studies) and genres (e.g., sharing time narratives, recounts, descriptions, definitions, expository essays, research reports). Schleppegrell (2001) applied this line of inquiry to AL writ large.

Rather than directly contrasting AL with ordinary or everyday language, Schleppegrell (2001) contrasted ‘school-based texts’ and ‘spoken interaction’. Acknowledging that these two mediums crossed the obvious written/read-spoken/heard divide, Schleppegrell (2001) maintained that the extreme contrast of comparing a passage from a seventh-grade science textbook (a school-based text) to a casual, nonacademic conversation among third-grade students (a spoken interaction) served well to illustrate the construct of AL by displaying features that have been shown, through analyses of large language corpora, “to occur in academic texts with a higher probability than in ordinary conversation” (Schleppegrell, 2001, p. 436).

Schleppegrell (2001) offered a more sophisticated articulation of the lexicogrammatical features of AL than did Scarcella (2003). She did so by more thoroughly expounding on the grammatical options made available at the syntactic level through clause structuring and linking. Table 7 presents Schleppegrell’s (2001) conceptualization of the “relevant features” (p. 437) of the language of schooling.

Table 7

Schleppegrell (2001, p. 438) Register features of Spoken Interaction and School-Based Texts

| | <i>Spoken interaction</i> | <i>School-based texts</i> |
|---|---|--|
| <i>Lexical features</i> | | |
| Lexical choices | generic | specific, technical |
| Lexical density | sparse | dense, elaboration of noun phrases through modifiers, relative clauses, and prepositional phrases |
| Subjects | pronominal, present or known participants | lexical, nominalizations, and expanded NPs |
| <i>Grammatical strategies</i> | | |
| Segmentation | prosodic segmentation: structure indicated prosodically | sentence structure: structure indicated syntactically |
| Mood | varied, attitude conveyed prosodically | mainly declarative, attitude conveyed lexically |
| Clause linkage and conjunction strategies | clause chaining with conjunctions, information added in finite segments, use of many conjunctions with generalized meanings | clause-combining strategies of embedding, use of verbs, prepositions, and nouns to make logical links, conjunctions have core (narrow) meanings |
| Organizational strategies | emergent structure, clause themes include conjunctive and discourse markers that segment and link part of text | hierarchical structure, using nominalization, logical links indicated through nominal, verbal, and adverbial expressions, and thematic elements that structure discourse |

Snow and Uccelli's (2009) The Challenge of Academic Language. Snow and Uccelli (2009) specifically addressed the need for “a conceptualization of academic language within a consensual analytical framework that could guide educationally relevant research” (p. 113). Viewing AL as challenging to students, Snow & Uccelli (2009) asserted that “failure to understand the academic language of . . . texts can be a serious obstacle in their accessing information” (p. 112) and reinforced that “academic language skills are widely cited as the obstacle to

achievement for struggling readers in general” (p. 113). These opening sentiments evoked the language-as-problem orientation (Ruiz, 1984) that was common among AL researchers (e.g., Solomon & Rhodes, 1995).

Snow and Uccelli (2009) first described three earlier lines of thinking about AL. The first of the three earlier lines of thinking involved conceiving of AL in terms of the contexts of its use (see Scarcella, 2003; Chamot and O’Malley, 1994; Bailey & Heritage, 2008). Snow and Uccelli’s (2009) table describing contextual factors, which they elaborate into home, school, and college/professional contexts, is reproduced here as Table 8. The second earlier line of thinking about AL that Snow and Uccelli (2009) described was Cummins’ BICS/CALP distinction, but Snow and Uccelli (2009) asserted that they had “no basis for postulating a separate category of language that has passed some threshold qualifying it as academic” (p. 115).

Table 8

Snow and Uccelli’s (2009, p. 113) Contextual Factors

| <i>Audience</i> | | | |
|--|-----|---------------------------|--------------------------------|
| (Home, friends) | | (School) | (College/professional) |
| Real familiar | vs. | Pretended distant | vs. Alternative communities |
| cooperative | | uncooperative | with various levels of |
| interlocutor | | interlocutors | disciplinary knowledge |
| (assess interlocutor’s | | (suspend assumptions | (become familiar with |
| shared knowledge) | | of situational knowledge) | expectations of audience) |
| Dialogic/interactive | vs. | Monologic | vs. Delayed dialogue |
| <i>Activity/Modality</i> | | | |
| Spontaneous/improvised | vs. | Highly planned | |
| Process (dynamic) | vs. | Product (synoptic) | |
| Spoken | vs. | Written | vs. Other additional media |
| <i>Situation</i> | | | |
| Private | vs. | Public | |
| Informal | vs. | Formal | |
| <i>Sociocultural match of Primary and Secondary discourses</i> | | | |
| Closer match | vs. | Partial mismatch | vs. Full mismatch |
| (e.g., home and school) | | | (e.g., home and school) |
| • same language | | | • different language |
| • similar discourse patterns | | | • different discourse patterns |

The third earlier line of thinking about AL that Snow and Uccelli (2009) described, one “that has contributed centrally to our understanding of language, in general, and of academic language, in particular,” is the “more theory-based approach” (p. 114) of Halliday’s SFL. Snow and Uccelli (2009) leaned on Halliday’s SFL conceptualization of AL in their own framework, but, maintaining that SFL was “originally designed more as a theory of language than as a framework for educational research” (p. 114), they declared it, along with the other two previous conceptualizations of AL, inadequate. Asserting that “a comprehensive definition of academic language requires further specification” (p. 113), Snow and Uccelli (2009) argued that

An educationally relevant framework would direct less attention to the description of linguistic features per se and more to the skills required in the process of mastering academic language and, thus, potentially to the nature of instruction that would promote those skills. In other words, we argue for the value of practice-embedded approaches to thinking about academic language that would generate more directly useable information. (p. 114)

This requirement of “more directly useable information” was noteworthy, as that had long been one of the main goals of the field of ESP, which Hallidayan theory had strongly influenced since the 1960s. It is also noteworthy that Snow and Uccelli (2009) would cite “the absence of a conceptual framework” (p. 115) of AL after having cited Scarcella (2003) and Bailey (2007), both of which provided conceptual frameworks of AL. Nevertheless, the goal of Snow and Uccelli (2009) was to “survey the work on academic language in order to provide an overview of its features as a

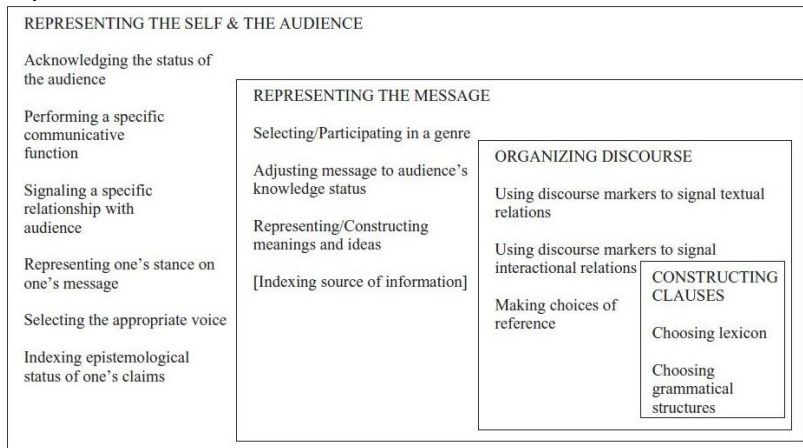
basis for proposing a pragmatics-based framework that accommodates those many discrete features in a coherent model of communication” (p. 115).

Snow and Uccelli (2009) synthesized these earlier contributions to AL scholarship and situated them within their own conceptual framework for describing and investigating AL, which they described in terms of “nested challenges” (p. 122) within communicative events. Their “pragmatics-based framework,” reproduced here as Figure 6, was Snow and Uccelli’s (2009) major contribution to AL scholarship. It

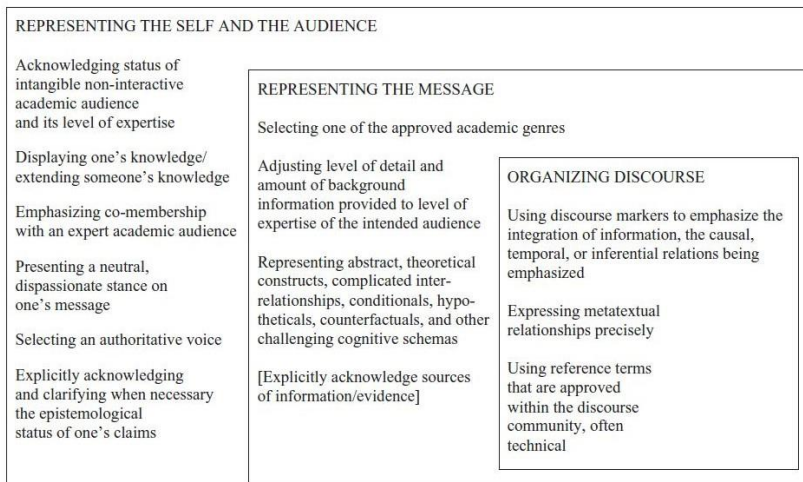
Figure 6

Snow and Uccelli’s (2009, pp. 122-123) Nested Challenges within Communicative Events

Any communicative event



AL communicative events



reconceptualized, with broad scope, how to think about the ways students need to *use* language both in and out of school. It compared the challenges people face in “any communicative event” to those they face “in an event calling for academic language” (pp. 122-123) along three dimensions: the domains of *representing the self and the audience*, *representing the message*, and *organizing discourse*. The contrasts between Snow and Uccelli’s (2009, pp. 122-123) two figures provided a sophisticated guide to the discourse skills students needed to succeed at all levels of education.

Nevertheless, while the figure focusing on the nested challenges within an AL communicative event was indeed highly pragmatic, as a conceptualization of academic language, it was still ultimately function- and feature-based.

When conceiving of AL in terms of language features and functions, Snow and Uccelli (2009), like Scarcella (2003) and Cummins (1981) before them, placed AL on a continuum. Stating that AL had no opposite and offering instead the notion that language “can be *more* or *less* academic – that is, furnished with fewer or more of the traits that are typical of academic language” (p. 115), Snow and Uccelli (2009) compared characteristics of “more colloquial” and “more academic” language. They did so by presenting and critiquing a piece of middle-school student writing, yielding a preliminary list of more and less academic language features (presented here in Table 9).

Table 9

Snow and Uccelli's (2009) Preliminary List of More and Less Academic Language Features

| <i>Less academic</i> | <i>More academic</i> |
|---|--|
| 1. Involved style | 1. Authoritative and detached stance; consistent, distant, third-person perspective; impersonal stance |
| 2. Colloquial expressions | 2. Metadiscourse markers (first, second); markers of course of rationale |
| 3. Redundancy | 3. No redundancy |
| 4. Simple connectives | 4. A variety of connectives |
| 5. Inconsistent perspective-taking (you/we) | 5. Explicit marking of different points of view |
| 6. Specific and personal | 6. Generic formulations of claims; generic statements |
| 7. Emergent clause structuring | 7. Clauses compressed in adverbial phrases and nominalizations; grammatical compression |
| | 8. Overarching initial or concluding statements |
| | 9. Uses academic vocabulary; lots of abstract/low-frequency vocabulary |
| | 10. Lexical density |
| | 11. Modal verbs |
| | 12. Endophoric reference |
| | 13. Abstract entity as agent |
| | 14. Stepwise logical argumentation; logical progression of argument (genre) |
| | 15. Evidence of planning |
| | 16. Elaborate noun phrases / nominalization |
| | 17. Deductive/inductive inference |

The list in Table 9 led to a “more formal inventory” (Snow & Uccelli, 2009, p. 115) of the rules of academic language, derived from contrasts of oral and written language, informal and formal language, and narrative and expository language. That more formal inventory is reproduced here as Table 10.

Table 10

Snow and Uccelli's (2009, pp. 119-120) Linguistic Features and Core Domains of Cognitive Accomplishments Involved in Academic Language Performance

| More Colloquial | | More Academic | |
|---|---|--|---|
| 1. Interpersonal stance | | | |
| Expressive/Involved | → | Detached/Distanced (Schleppegrell, 2001) | |
| Situationally driven personal stances | → | Authoritative stance (Schleppegrell, 2001) | |
| 2. Information load | | | |
| Redundancy (Ong, 1995)/Wordiness | → | Conciseness | |
| Sparsity | → | Density (<i>proportion of content words per total words</i>) (Schleppegrell, 2001) | |
| 3. Organization of information | | | |
| Dependency (Halliday, 1993)/Addition (Ong, 1995) (<i>one element is bound or linked to another but is not part of it</i>) | → | Constituency (Halliday, 1994b)/Subordination (Ong, 1995) (<i>embedding, one element is a structural part of another</i>) | |
| Minimal awareness of unfolding text as discourse (<i>marginal role of metadiscourse markers</i>) | → | Explicit awareness of organized discourse (<i>central role of textual metadiscourse markers</i>) (Hyland & Tse, 2004) | |
| Situational support (<i>exophoric reference</i>) | → | Autonomous text (<i>endophoric reference</i>) | |
| Loosely connected/dialogic structure | → | Stepwise logical argumentation/unfolding, tightly constructed | |
| 4. Lexical choices | | | |
| Low lexical diversity | → | High lexical diversity (Chafe & Danielewicz, 1987) | |
| Colloquial expressions | → | Formal/prestigious expressions (e.g., <i>say/like</i> vs. <i>for instance</i>) | |
| Fuzziness (e.g., <i>sort of, something, like</i>) | → | Precision (<i>lexical choices and connectives</i>) | |
| Concrete/common-sense concepts | → | Abstract/technical concepts | |
| 5. Representational congruence | | | |
| Simple/congruent grammar (simple sentences, e.g., <i>You heat water and it evaporates faster.</i>) | → | Complex/congruent grammar (complex sentences, e.g., <i>If the water gets hotter, it evaporates faster.</i>) | → Compact/Incongruent grammar (<i>clause embedding and nominalization</i> , e.g., <i>The increasing evaporation of water due to rising temperatures</i>) (Halliday, 1993) |
| Animated entities as agents (e.g., <i>Gutenberg invented printing with movable type.</i>) | → | Abstract concepts as agents (e.g., <i>Printing technology revolutionized European book-making.</i>) (Halliday, 1993) | |
| > Genre mastery | | | |
| Generic Values (Bhatia, 2002) (narration, description, explanation...) | → | School-based genres (e.g., lab reports, persuasive essay) | → Discipline-specific specialized genres |
| > Reasoning strategies | | | |
| Basic ways of argumentation and persuasion | → | Specific reasoning moves valued at school (Reznitskaya et al., 2001) | → Discipline-specific reasoning moves |
| > Disciplinary knowledge | | | |
| • Taxonomies | | | |
| Commonsense understanding | → | Abstract groupings and relations | → Disciplinary taxonomies and salient relations |
| • Epistemological assumptions | | | |
| Knowledge as fact | → | Knowledge as constructed | |

Beyond language features, numerous language functions were present in Snow and Uccelli's (2009) index of AL, including *using language to* "[display] one's knowledge," "[select] an authoritative stance," and "represent abstract, theoretical constructs, complicated interrelationships, conditionals, hypotheticals, counterfactuals, and other challenging cognitive schemas." Snow and Uccelli (2009) acknowledged the limitations of using language features and functions to define AL: "The mere length of the list in [Table 10] displays the problem with our current conception of academic language: dozens of traits have been identified that contrast with primary or colloquial language and that might function as markers of academic language, but it is unclear that any of them actually defines the phenomenon" (p. 121). That caveat notwithstanding, Snow and Uccelli's (2009) contribution to AL scholarship was to provide a pragmatic, "overall rationale for these features of academic language" by delineating "the communicative challenges to which the features of academic language are meant to respond" (p. 122).

Bailey's (2007) The Language Demands of School: Putting Academic English to the Test. Bailey (2007) examined the usefulness of the Academic English Language (AEL) "phenomenon" (p. 12) in terms of (a) assessment of the language development of ELLs, (b) curriculum development for K-12 schools, and (c) professional development for teachers of ELLs. Bailey (2007) was particularly concerned with assessment of ELLs' English language development (ELD) in the wake of the NCLB legislation, which required that ELLs be included in reported scores on statewide assessments. This national concern predisposed Bailey to the term AE as opposed to AL, because it was more specific to the American context, in which

social and political forces emphasize the acquisition of English by language minority students. Indeed, Bailey (2007) proffered the construct AEL as an even further refinement of AE from AL.

Bailey's book, *The Language Demands of School: Putting Academic English to the Test*, which is comprised of chapter contributions by various authors, was intended to influence national educational policy at a high level through the incorporation of the AEL construct into national and state assessments. This review focuses on two chapters from the book: "Teaching and Assessing Students Learning English in School" (Bailey, 2007) and "A Conceptual Framework of Academic English Language for Broad Application to Education" (Bailey & Butler, 2007).

Reflecting Cummins' ideas, Bailey (2007) highlighted the assessment problem of misidentification of students as fully English proficient (FEP) for academic purposes based on their mastery of language used for basic social interactional purposes. Bailey (2007) identified that problem as a rationale for asserting the need to better understand and explicitly teach AE. Bailey (2007) viewed focusing on AEL as the best possible approach to accurately assessing ELLs' language proficiency. Using as an entry point Chamot and O'Malley's (1994) definition of AL as "the language that is used by teachers and students for the purpose of acquiring new knowledge and skills . . . imparting new information, describing abstract ideas, and developing students' conceptual understanding" (Bailey, 2007, p. 40), Bailey added two additional features. The first was that "language as it is used in academic contexts requires students to demonstrate their knowledge by using recognizable verbal and written academic formats" (Bailey,

2007, p. 11). This requirement was common to most conceptualizations of AL, which emphasized the importance of adhering to academic conventions and meeting teachers' expectations, and was also a nod to the increased importance of SFL's genre theory (Martin, 2005) in AL. The second, a nod to the assumed decontextualization of AL, was that "students receive fewer opportunities to negotiate meaning or to use contextual cues in the classroom setting than in many social settings" (Bailey, 2007, p. 10).

Bailey (2007) divided the construct of AEL into three parts: lexical features, grammatical features, and discourse features, paving the way for the establishment of AL's tripartite definition. The lexical features of AL equated to academic vocabulary, which is "one component of the broader academic language construct" (Bailey, 2007, p. 12). Building on previous conceptualizations (e.g., Scarcella, 2003), academic vocabulary was divided into "a general academic lexicon" and "specialized ones." It included pairs of words, one general and one academic, that have the same meaning (e.g. *gather* vs. *collate*). In these cases, the academic word was often "more morphologically complex" (Bailey, 2007, p. 12). Academic vocabulary also included words that themselves have both general and academic meanings (e.g., "Don't *force* him to do it" vs. "Determine the centrifugal *force*"). Within academic vocabulary, prepositions, too, could "take on very precise and often unfamiliar usage" (p. 12).

The grammatical features of AL, as discussed by Bailey (2007), were 1- comparatives, 2- conditional relationships (*if X, then Y*), 3- combining a superordinate category (like the copula *be*) with a complement clause, as when writing formal definitions, 4- the passive voice, and 5- relative clauses, which are "less frequent in

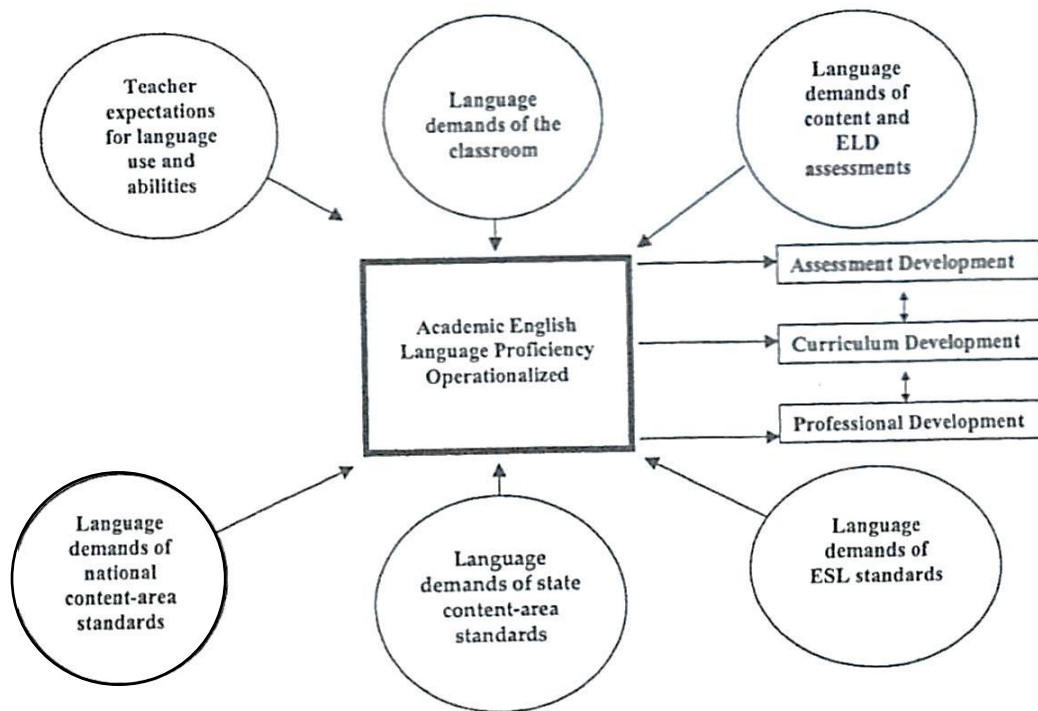
spoken English than in written English” (p. 14). Bailey (2007) cited a host of scholars (e.g., Schleppegrell, 2004) as arguing that “dependent clauses that embed information may make sentences more complex and difficult than coordinate clauses that do not” (p. 14; see Schleppegrell & Colombi 1997 for a discussion of Halliday’s distinction between *hypotactic*, *paratactic*, and *embedded clauses*).

Finally, the discourse features Bailey (2007) named involve students presenting work in ways that meet teacher expectations and accord with the established discourse conventions of different disciplines. Discourse features include the linguistic functions of earlier conceptualizations of AL (e.g., *explaining*, *describing*, *comparing*; see also Bailey, Butler, Stevens & Lord 2007), sociocultural and psychological considerations, and participation structures like Mehan’s (1979) Initiation-Reply-Evaluation (IRE) pattern.

Bailey and Butler (2007) provided a conceptual framework of AEL (Figure 7). The framework cited six “sources of information that will feed into the operationalization of the construct” (p. 71): 1- teacher expectations for language use and abilities, 2- language demands of the classroom and textbooks, 3- language demands of content assessments, 4- language standards of national professional organizations, 5- language demands of state content-area standards, and 6- language demands of ESL standards. The operationalized AEL Proficiency construct was intended to guide assessment development, curriculum development, and professional development (all three of which influence one another).

Figure 7

Bailey and Butler's (2007, p. 72) Evidentiary Bases for the Operationalization of AEL Proficiency



Critical and uncritical perspectives on AL

Since the passage of NCLB, the construct of AL has been increasingly utilized and examined from both uncritical and critical perspectives. An uncritical perspective on AL accepts the validity of the construct and seeks to use it to guide educational practice and research for the improvement of the education of ELLs and others, specifically through the facilitation of their development of high levels of English language proficiency. A critical perspective, on the other hand, denies, or at least problematizes, the validity of the construct and warns of its espousal's unintended, negative consequences on the education of ELLs and others.

Critical Perspectives on Academic Language. Valdes (2004) offered a mildly critical perspective of AL by problematizing the disparate views held of it among different professional communities. Pointing out that “given the various boundaries of academic professions, the dialogue on academic language is unfortunately made up of a series of unconnected conversations that often fail to be heard by scholars who are members of other closely related professions” (Valdes, 2004, p. 103), Valdes identified the four “communities of professional practice” of Mainstream English (i.e., literature), TESOL (College), ESL (K-12), and Bilingual Education. According to their respective educational purposes, these different communities have different ideas of what constitutes AL proficiency, such that an ESL teacher may consider a student to have achieved AL proficiency while a Mainstream English teacher may not.

Bunch (2006) offered another mildly critical perspective of AL, describing an intervention designed to help middle school ELLs develop English language skills

and social studies content knowledge. Summarizing the history of scholarship on AL, Bunch (2006) asserted that “conversations about the language of schooling often focus on (a) how language used for academic purposes varies from its putative *non-academic* counterpart, termed variably *everyday*, *ordinary*, *informal*, *conversational*, *interpersonal*, *basic*, *playground*, and even *street* language and (b) how language minority students who may be fluent in the latter often lack the former” (p. 285). He argued that such a simple black-and-white distinction between academic and conversational language “potentially masks, or at least downplays, the important ways in which students use language in a wide variety of ways, including ‘conversational’ or ‘everyday’ uses of English, to engage in academic tasks” (Bunch, 2006, p. 286). Bunch (2006) therefore did not “contrast ‘academic’ with other sorts of language” but asked “the broader question ‘how did students use language to engage in academic tasks?’” (p. 286). He distinguished between the *language of ideas*, which can be marked by “features typical of interactive communication as opposed to the ‘decontextualized,’ ‘detached,’ or ‘literate’ language often associated with ‘academic English,’” and the *language of display*, with “more features . . . associated with academic language” (Bunch, 2006, p. 295). The language of display involves genre effects, similar to the discourse leg of Bailey’s (2007) tripartite construct of AL.

Faltis (2013) offered a more strongly critical discussion of AL, thoroughly acknowledging its connection both to deficit theorizing and, through a critical analysis of Spanish heritage language education in the United States, to standard language prescriptivism. Faltis (2013) also critiqued modern research traditions in AL, maintaining that they “endeavor to promote understanding of language

associated with academic disciplines and how to make it more accessible to emergent bilinguals and struggling students generally *in ways that ignore the broader social contexts*” (p. 4, emphasis added). Faltis (2013) went so far as to cite Gee’s (2005, p. 63) statement that ““there is, or course, no such thing as ‘school language’ or ‘academic language’ as single things”” (p. 4).

Wiley (1996) demonstrated the extent to which “notions of an oral/literate and cognitive great divide [are] reproduced” (p. 152) in CALP. He explained that, as a result of this limitation,

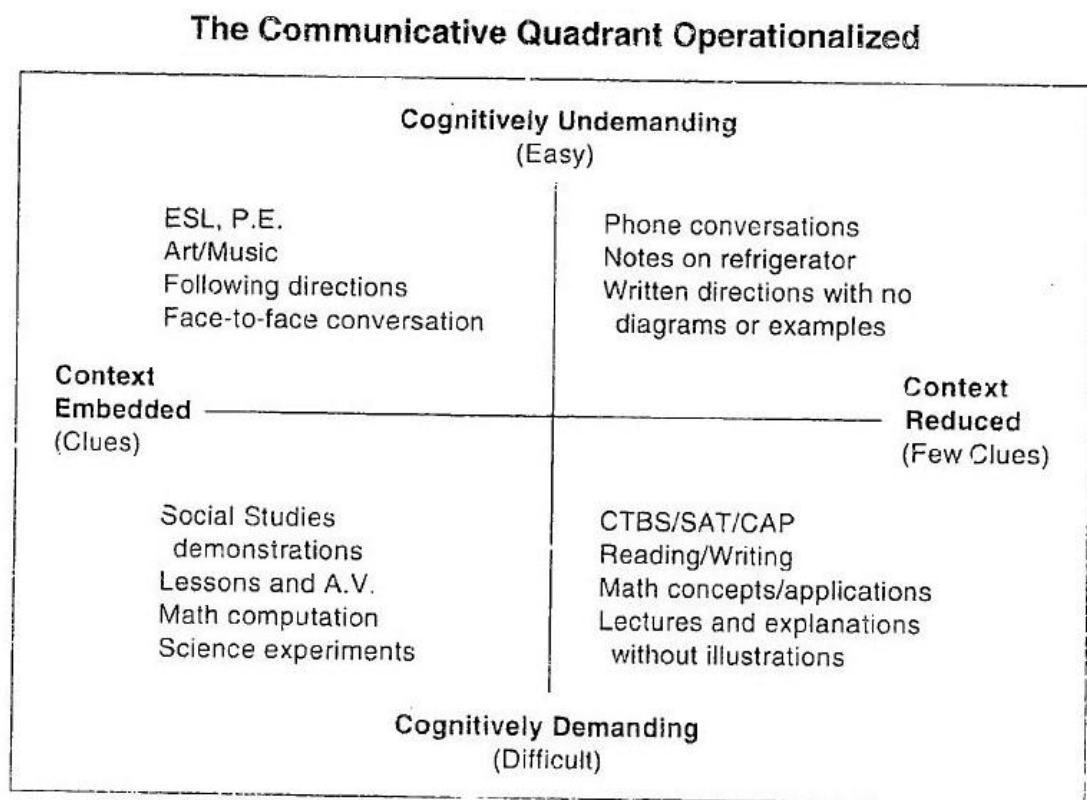
Progressive scholars often find themselves struggling against old assumptions within their own specializations. At first scholars may make small adjustments in the dominant models. They may devise slightly different labels to alter negative connotations associated with prior constructs. Nevertheless, they are still operating from the original, but weakened model. With each alteration, the dominant model reveals its loss of explanatory power. (p. 153)

By this standard, the unitary construct of academic language has long been sufficiently eroded to require its wholesale rethinking.

Wiley (1996) also showed how, despite Cummins' attempts to "clarify and refine his position, some of his interpreters have attempted to apply his framework in rather simplistic ways, which suggests either that his readers have missed his qualifications or that the framework is not sufficiently elaborated" (p. 177). Wiley (1996) provided as a figure a "staff development handout" (Figure 8) that was representative of handouts "circulated since the 1980s" to "clarify" and 'operationalize' various constructs of contemporary theory" (p. 177). Wiley (1996)

Figure 8

A staff development handout operationalizing AL



(Authorship of the handout from which this grid is adapted is unclear, although the California State Department of Education was referenced. Many such handouts have been developed and circulated by staff development personnel who, with all good intentions, have liberally, and in an ad hoc manner, attempted to "clarify" and "operationalize" various constructs of contemporary theory.)

showed how such operationalizations of AL relied on “terms and examples” that were “inescapably value laden and arbitrary” (p. 178) and concluded that “professional development materials such as these illustrate the limitations of applying constructs in practice that have not been fully elaborated at the theoretical level. Insofar as theory is a guide to practice, it must be sufficiently clear and elaborated to be applicable” (p. 178).

Along with the work of Wiley, the most sustained criticism of academic language came from Kellie Rolstad and Jeff MacSwan (Rolstad 2005, 2014, 2015; MacSwan & Rolstad 2003, 2010; Rolstad & MacSwan 2008). Starkly warning of the negative social and educational implications and consequences of the AL construct, Rolstad (2005) directly challenged its validity:

What is academic language? *Is there even such a thing?* If so, what makes it distinct? Does learning it make you *smarter*? Does academic language improve a person’s ability to analyze, evaluate, and so forth, or is it possible to think completely without academic language? (p. 1994)

Rolstad (2005) argued that “if there is such a thing as academic language, it must be considered a linguistic register on a par with any other register, no more complex, no more inherently difficult to learn, than any other register” (p. 1996; cf., Schleppegrell, 2004). She insisted that “instead of trying to explain the challenge to English learners as one of moving beyond their quickly acquired conversational English to develop a new and higher, ‘more purely linguistic, decontextualized’ form of English, we should think of their challenge as learning all the English they can to take on whatever tasks are necessary to them” (Rolstad, 2005, p. 1997). In other words,

instead of focusing on students' academic language development, we should be focusing on their language development as a whole.

It was considerations such as these that led MacSwan and Rolstad (2003) to propose the theoretical construct SLIC (Second Language Instructional Competence) as an alternative to Cummins' CALP. Rather than being a specialized form of language, SLIC "simply denotes the stage of second-language development in which the learner is able to understand instruction and perform grade-level school activities using the second language alone, in the local educational setting" (Rolstad & MacSwan, 2008, p. 64). Rolstad and MacSwan (2008) and MacSwan and Rolstad (2003, 2010) argued that the main advantages of SLIC over CALP were that SLIC (1) applies exclusively to second language acquisition, not native language development, and so escapes the risk of contributing to deficit perspectives of minority students' language development; (2) "does not ascribe any special status to the language of school," such that "children who have not yet developed SLIC are not considered cognitively less developed" (Rolstad & MacSwan, 2008, pp. 64-65); and (3) distinguishes between language development and subject matter content knowledge—rather than conflating the two, as some conceptualizations of AL do (e.g., Cummins, 1981; Schlepppegrell, 2004)—and thus promotes more accurate understanding of (a) the challenges ELLs face in U.S. schools (i.e., those involved in learning both subject matter content and the language of instruction at the same time) and (b) how those challenges differ from those faced by native English speakers who have to learn subject matter content alone.

Rolstad and MacSwan (2008) focused their criticism on CALP and the other elements of Cummins' theory (see also MacSwan, Thompson, Rolstad, McAlister & Lobo, 2017). Responding to Cummins' (2000b, p. 35-36) claim that AL involves “‘much more low frequency vocabulary, complex grammatical structures, and greater demands on memory, analysis, and other cognitive processes’” (MacSwan & Rolstad, 2003, p. 330), MacSwan and Rolstad argued that all spheres of life, not just academic discourses, have low frequency words that might be unfamiliar to most. They then stated,

Moreover, we might wonder why one would consider academic language to involve ‘complex grammatical structures’ in comparison to non-academic language. Are double negatives less complex than single negatives? Is *ain't*, a socially stigmatized contraction, less complex than *won't*, a socially acceptable one? Minimally, we would expect to see an explicit and theoretically defensible definition of linguistic complexity accompanying the claim that academic language is more complex than non-academic language, and then we would expect empirical evidence showing that, for some distinctive trait *t* of academic language which meets the definition of linguistic complexity, there is no trait *t'* of non-academic language which is as linguistically complex as *t*. Historically, a number of attempts have been made to distinguish languages or language varieties in such terms, but none have succeeded. (MacSwan & Rolstad, 2003, p. 331)

Almost twenty years after MacSwan and Rolstad (2003) noted the absence of such an “explicit and theoretically defensible definition of linguistic complexity” in

support of academic language, AL researchers have yet to offer one (though see Biber & Gray, 2016 for a recent treatment of AE that does include a definition of grammatical complexity; see also Norris & Ortega, 2009 for a theoretically grounded consideration of what constitutes grammatical complexity). There have been systemic functional linguistic and other efforts (e.g., Halliday & Martin, 1993; Schleppegrell, 2004; Butler, Bailey, Stevens, Huang & Lord, 2004) to describe the characteristics of AL, but no AL scholars have both offered a satisfactory definition of grammatical complexity and then used it to compare adequately diverse samplings of academic and non-academic language to definitively establish AL as being more grammatically complex than non-AL (though, again, see Biber & Gray, 2016 as a relevant effort).

Ultimately, however detailed and theoretically sound a definition of grammatical complexity may be, it would be difficult to establish, with categories as broad as academic and non-academic language—cf., Biber’s (1988) work on the grammar of written vs. spoken language—that one kind of language is more grammatically complex than another, because “the fact that one may come across more frequent use of a given syntactic structure hardly renders one register more difficult to learn than any other, since the same structures are likely to be found in every register, including so-called playground language” (Rolstad, 2005, p. 1997).

Uncritical Perspectives on Academic Language. Kieffer, Lesaux and Snow (2008) assessed the impact of NCLB on ELLs. While accepting the premise that NCLB was committed to “holding *all* learners to high standards,” Kieffer, Lesaux, and Snow (2008) offered constructive criticism of the law regarding how its stated objectives can best be attained—a goal the authors called “particularly challenging”

given the law's "presumption that test-based accountability . . . is the motor for educational change" (p. 57). Kieffer, Lesaux and Snow's (2008) central argument was that the disaggregation category that should be used to assess the academic performance of ELLs should be a "fixed minority language learner category" instead of the category of ELL, which, being performance-based, is unfixed.

Beyond defining the ELL population more accurately, for Kieffer, Lesaux and Snow (2008), the most important action to undertake to realize the potential benefits of NCLB for ELLs was to improve language minority students' academic language. Kieffer, Lesaux and Snow (2008) subscribed to the tripartite definition of AL with its vocabulary, grammar and discourse components, but besides referring to "complex sentence structures" (p. 63), the only examples of academic language they provided exemplified either vocabulary or discourse features. Kieffer, Lesaux, and Snow's (2008) focus was on applying, not investigating, the AL construct. For example, they advised that ELD tests must assess academic as well as social language skills.

Researchers with UCLA's National Center for Research on Evaluation, Standards, and Student Testing (CRESST) have made significant contributions to the articulation and operationalization of the AL construct. CRESST researchers carried out a three-stage research effort to develop standardized tests that would reliably gauge ELLs' content knowledge. The first stage, from 1997-2004, focused on the operationalization of the construct of AE (Butler & Stevens, 1997; Butler, Stevens & Castellon-Wellington, 1999; Stevens et al., 2000; Bailey & Butler, 2003). The second stage, from 2004-2005, consisted of the development of prototype reading passages and tasks that conformed to the operationalized AEL construct (Bailey, Butler,

LaFramenta & Ong, 2004; Butler, Lord, Stevens, Borrego & Bailey, 2004; Butler, Bailey, Stevens, Huang & Lord, 2004; Butler & Castellon-Wellington, 2005; Bailey, Stevens, Butler, Huang, & Miyoshi, 2005). The third stage, from 2005-2006, gathered students' performance data on the prototype tasks and evaluated them, leading to their retention, revision, or rejection (Bailey, Huang, Shin, Farnsworth & Butler 2007).

Bailey and Huang (2011) defined AE as “the vocabulary, sentence structures, and discourse associated with language used to teach academic content as well as the language used to navigate the school setting more generally” (p. 343). Focusing on the conceptualization and construction of English language development/proficiency standards in the wake of NCLB, the authors scrutinized various state standards regarding their integration of the AE construct. They included in the construct both “oral and written language used in classrooms by teachers and students for the purpose of classroom management and academic learning, as well as the language of textbooks, assessments, and other curricular materials” (Bailey & Huang, 2011, p. 349). Following Bailey and Heritage (2008), Bailey and Huang (2011) divided the language of school-aged children into (a) that used in the social context outside school and (b) two in-school uses, “curriculum content language (i.e., discipline-specific language)” and “school navigational language” (p. 350) for things like classroom management.

Bailey and Huang (2011) was a continuation of the effort to describe and operationalize AL across language modalities (listening, speaking, reading, writing) and grade levels while articulating what constitutes attainment of different levels of proficiency in AEL (see also Bailey & Heritage, 2014). Among CRESST researchers

and others, this effort had been underway since at least 1997. Nevertheless, Bailey and Huang (2011) noted that “the empirical base for academic English usage and acquisition is still limited; detailed information about the features of academic English across all domains, grades, and content areas would still need to be generated before such an initiative can claim to have created research-based standards” (p. 360). They therefore called for longitudinal studies to overcome the “limitations to the research base by the scant number of empirical studies of academic English characteristics and development” (Bailey & Huang, 2011, p. 360).

Schleppegrell (2012) introduced a special edition of *The Elementary School Journal* that consisted of SFL efforts to utilize the AL construct to improve the education of ELLs. Three of the articles in the special issue focused on the interplay between AL and genre (Scheele et al., 2012; Brisk, 2012; Crosson et al., 2012). The remaining two focused on vocabulary development as key to AL development (Townsend et al., 2012; Kieffer & Lesaux, 2012). Crosson et al. (2012) was a rare case of the application of the AL construct to the native-language Spanish proficiency of bilingual students, highlighting the need for students to develop academic Spanish. Kieffer and Lesaux (2012), meanwhile, presented the results of an academic language intervention aimed at heightening students’ morphological awareness by teaching them how words are formed by smaller parts (i.e., roots, prefixes, and suffixes). Kieffer and Lesaux (2012) distinguished between relational knowledge about words (e.g., the fact that the noun *farmer* comes from the verb *farm*) and syntactic knowledge (i.e., the fact that prefixes and suffixes can change words’ parts of speech).

The George Washington University's Center for Equity and Excellence in Education has published two major reviews of literature on AE (Anstrom et al., 2010; DiCerbo et al., 2014). Both reviews detailed numerous studies that explored the lexical, grammatical, and discourse features of AE, along with studies that addressed specific subject areas and others that addressed teacher preparation and professional development. Compared to the 2010 review, DiCerbo et al.'s (2014) increased focus on SFL perspectives of AE reflects the importance of SFL theory in today's conceptualization of AL.

Escheverria, Vogt and Short (2014) presented the Sheltered Instruction Observational Protocol (SIOP), a research-based model of sheltered instruction designed to ensure that teachers meet the needs of ELLs in their classrooms. Boasting an “up-to-date” discussion of AL, Escheverria, Vogt and Short (2014) stated that AL is “more complex and develops more slowly and systematically in academic settings” (pp. xiii & 8). They argued that AE “includes semantic and syntactic knowledge along with functional language use” (p. 11), though the examples they provided focused primarily on the academic vocabulary and language functions students must be able to use to succeed academically. Escheverria, Vogt and Short (2014) named the passive voice, imperatives, and *if-then* sentences as grammatical elements of AL, as well as “conjunctions and dependent clauses and how their use can create a variety of sentences with two or more related ideas” (p. 36).

Finally, there are textbooks specifically designed to help teachers incorporate AL into their instruction (e.g., Zwiers, 2013) and to help students develop AL (e.g., Freeman, Freeman & Soto, 2017). The volume of the Academic Language Mastery

Series entitled *Grammar and Syntax in Context* teaches “sophisticated and complex syntactical and grammatical structures in context,” including “technical vocabulary, lexical density, and abstraction” as well as “predictable components, cohesive texts, and language structures that include nominalizations, passives, and complex sentences” (Freeman, Freeman & Soto, 2017, pp. 3-5).

In recent years, articles and studies that utilize the constructs of AL and AE for educational improvement have proliferated, examining matters including AE socialization through individual communities of practice (Zappa-Hollman & Duff, 2015), the use of AE corpora by graduate students to promote their adoption of the writing conventions of their discourse communities (Chang, 2014), various ways in which the construct of AE can inform students’ writing development (LoCastro & Masuko, 2017; Mallia, 2017; Yang & Ting, 2017; Chen & Jun Zhang, 2017), developing AL through an abundance of opportunities for interaction (Verplaetse, 2017), AE development in English-medium instructional settings around the world (Hong & Basturkmen, 2020; Kamasak et al., 2021), and the importance of a focus on AL development in teacher preparation and professional development (Lucas, Villegas & Freedson-Gonzalez, 2008; Bunch, 2010; Athanases & Wahleithner, 2013; Merino, Mendle, Pomeroy & Gomez, 2013; Galguera, 2013; Lucas, de Oliveira & Villegas, 2014; Ardies et al., 2021). In short, the constructs of AL and AE are thriving in today’s educational research on ELLs.

This consideration of uncritical perspectives on academic language concludes with an examination of two important, current treatments of AL: Biber and Gray’s (2016) *Grammatical Complexity in Academic English: Linguistic Change in Writing*

and Uccelli and colleagues' (2015, 2017) construct of Core Academic Language Skills.

Biber and Gray's (2016) Grammatical Complexity in Academic English.

Pioneering a computer-facilitated, corpus-based approach to the linguistic analysis of Academic English, Biber and Gray (2016) offered arguably the most sophisticated treatment to date of the grammar of Academic English. Biber and Gray's (2016) focus, however, was on academic *writing*, not academic English per se. Biber and Gray (2016) were particularly interested in "the differences between humanities writing and science writing" and "the ways in which academic writing has changed historically in its grammatical style" (p. 4). The grammatical elements through which Biber and Gray (2016) argued that academic writing manifests its grammatical complexity are presented here in Table 11.

Table 11

Biber & Gray's (2016, 63-64) Complexity Features in the Study, by Structural Type Versus Syntactic Function

| Parameter A: Structural Type | Parameter B: Syntactic Function | Grammatical Sub-Categories | Examples |
|---------------------------------------|------------------------------------|---|---|
| 1. Finite Dependent Clauses | 1A. Adverbial | Causative clauses: <i>because</i> + clause | <i>She won't narc on me, <u>because she prides herself on being a gangster.</u></i> |
| | | Conditional clauses: <i>if</i> + clause | <i>Well, <u>if I stay here,</u> I'll have to leave early in the morning.</i> |
| | | Concessive clauses: <i>although</i> + clause | <i>If I don't put my name, <u>she doesn't know who wrote it, although she might guess.</u></i> |
| | 1B. Complement | Verb controlled <i>that</i> -clause | <i>I would hope that <u>we can have more control over them.</u></i> (with ZERO complementizer): <i>yeah, I think I probably could.</i> |
| | | Verb controlled <i>wh</i> -clause | <i>I don't know <u>how they do it.</u></i> |
| | | Adjective controlled <i>that</i> -clause | <i>It is evident that <u>the virus formation is related to the cytoplasmic inclusions.</u></i> |
| | | Noun controlled <i>that</i> -clause | <i>The fact that <u>no tracer particles were found in or below the tight junction (zonula occludens)</u> indicates that these areas are not a pathway for particles of this size in the toad bladder.</i> |
| | 1C. Noun modifier | Relative clause with <i>that</i> | <i>The results from a large number of cloze tests were used to estimate the amount of experimental error <u>that could be expected to result from using cloze tests of various lengths</u></i> |
| | | Relative clause with <i>wh</i> -relativizer | <i>Their nucleoid is formed by dense granules and rods composing a ring <u>which limits a central electrontransparent space.</u></i> |
| 2. Non-finite Dependent Clauses | 2A. Adverbial | <i>to</i> -clause indicating 'purpose' | <i><u>To verify our conclusion that the organic material is arranged as a coating around the silica shell components,</u> thin sections of fixed cells were also examined.</i> |
| | 2B. Complement | Verb-controlled <i>to</i> -clause | <i>I really want <u>to fix this room up.</u></i> |
| | | Verb-controlled <i>ing</i> -clause | <i>I like <u>watching the traffic go by.</u></i> |
| | | Adjective-controlled <i>to</i> -clause | <i>It was important <u>to obtain customer feedback.</u></i> |
| | | Noun-controlled <i>to</i> -clause | <i>The project is part of a massive plan <u>to complete the section of road. . .</u></i> |
| | 2C. Noun modifier | Noun + <i>ing</i> -clause (non-finite <i>ing</i> relative clause) | <i>Transfer tests <u>following over-training</u> indicated individual variability.</i> |
| | | Noun + <i>ed</i> -clause (non-finite passive relative clause) | <i>The results <u>shown in Tables IV and V</u> add to the picture. . .</i> |
| 3. Dependent phrases (non-clausal) | 3A. Adverbial | Adverb phrase | <i>I raved about it <u>afterwards.</u></i> |
| | | Prepositional phrase | <i>Alright, we'll talk to you <u>in the morning.</u></i> |
| | 3B. Noun Modifier | Attributive adjectives as noun pre-modifiers | <i><u>emotional injury, conventional practices</u></i> |
| | | Nouns as noun pre-modifiers | <i><u>the trial transfer sessions</u></i> |
| | | Prepositional phrases as noun post-modifiers | <i>Class mean scores were computed by averaging the scores <u>for male and female target students in the cla-</u></i> |
| | | Appositive noun phrases as noun post-modifiers | <i>Two Stuart monarchs <u>(Charles I and Charles II)</u> were strongly suspected of Romish sympathies. James Klein, <u>president of the American Benefits Council</u></i> |

According to Biber and Gray (2016), this table provided “the full suite of grammatical features that could be associated with grammatical complexity” (p. 61). Setting themselves apart from previous scholars concerned with Academic English, who invoked AL’s grammatical complexity without providing any theoretically defensible conceptualization of what constitutes grammatical complexity (MacSwan & Rolstad, 2003), Biber and Gray (2016) actually did offer a definition of grammatical complexity:

In descriptive linguistics, grammatical complexity and structural elaboration are strongly associated with the use of dependent clauses. By definition, a ‘simple’ clause has only a subject, verb, and object or complement. A ‘simple’ noun phrase has a determiner and a head noun. Additions or modifications to these patterns result in ‘complex’ and ‘elaborated’ grammar. In particular, linguists have traditionally singled out dependent clauses as the most important type of grammatical complexity and structural elaboration. (p. 16)

Biber and Gray (2016) criticized the single-minded focus on clausal elaboration as the only measure of grammatical complexity, noting that accepting that premise renders casual conversation, which “regularly employs many embedded dependent clauses,” more grammatically complex than much academic writing. Instead, Biber and Gray (2016) insisted that there was also “a grammatical discourse style where information is conveyed through phrasal devices rather than through the use of dependent clauses” (p. 18). These phrasal devices included nominal premodifiers of nouns, appositive noun phrases, and prepositional phrases that are typical of science texts (see also Biber, Gray & Poonpon, 2011). This kind of phrasal

grammatical complexity has “exactly the opposite function” of clausal elaboration: “maximally compressing structure rather than elaborating structure” (Biber and Gray, 2016, p. 18).

In addition, Biber and Gray (2016) related the effect of this kind of structural compression to the “related stereotype” that “academic writing is maximally explicit in the expression of meaning,” noting that while this may be the case in academic disciplines that partake in structural elaboration, “the complexity devices actually preferred in science research writing (i.e., compressed phrasal devices) result in a major *reduction* in explicitness” because they fail to “grammatically specify the meaning relationships among elements” (p. 18, emphasis in original; see also Spanos et al., 1988, for the register of mathematics). Ultimately, then, Biber and Gray (2016) refuted the idea that AE writing is necessarily more elaborated and explicit while embracing the idea that it is grammatically more complex. Its complexity just must be measured at both clausal and phrasal levels (see Norris & Ortega, 2009, for a detailed discussion of why grammatical complexity must be measured at both clausal and phrasal levels).

Continuing consideration of Academic English writing’s grammatical complexity, Biber and Gray (2016) also offered a large table, reproduced here as Table 12, that listed linguistic features that are “more common in academic writing” than in other registers. Many of these features overlap with issues of vocabulary, and, given the fact that the comparison made was between AE writing and “conversation” exclusively as recorded in the Longman Grammar of Spoken and Written English, it is questionable whether Biber and Gray’s (2016) claims that certain of the features

Table 12

Biber and Gray's (2016, pp. 79-82) Grammatical features that are especially common in academic prose (based on a survey of the Longman Grammar of Spoken and Written English)

| Feature | Pattern of use |
|--|--|
| Nouns and noun phrases: | |
| Nouns: overall pp. 65 | Approximately 60% of all content words in academic prose are nouns |
| Nouns vs. pronouns pp. 235-236 | Nouns are much more common than pronouns in academic prose, especially in object positions |
| Absence of pronouns pp. 235-236 | Pronouns are generally rare in academic prose |
| Specific pronouns: <i>this</i> and generic <i>one</i> pp. 349-350, 354-355 | Much more common in academic prose; <i>this</i> is used for immediate textual reference; <i>one</i> is used for generic rather than specific reference |
| Plural nouns pp. 291-292 | Much more common in writing than in conversation; Most common in academic prose |
| Nominalizations pp. 322-323 | Much more common in academic prose, especially nouns formed with <i>-tion</i> and <i>-ity</i> |
| Anaphoric expressions pp. 237-238 | Anaphoric reference is usually expressed with a determiner + noun (rather than a pronoun) |
| Definite article <i>the</i> pp. 267-269 | Much more common in writing than in conversation; Most common in academic prose |
| Demonstrative determiners p. 270, 274-275 | Most common in academic prose; especially <i>this</i> and <i>these</i> |
| Noun phrases with modifiers p. 578 | 60% of all noun phrases in academic prose have a modifier |
| Noun phrases with pre-modifiers p. 589, 597 | Very common in academic prose (and newspapers) |
| Nouns as pre-modifiers p. 589-596 | Very common in academic prose (and newspapers) (e.g., <i>government agencies</i>) |
| Noun phrases with post-modifiers p. 606-608 | Very common in academic prose (and newspapers) |
| Noun phrases with multiple post-modifiers p. 640-644 | Most common in academic prose (e.g., <i>the utilization of such devices for social purposes</i>) |
| Noun <i>and/or</i> noun binomial phrases pp. 1033-1034 | Most common in academic prose (e.g., <i>size and shape</i>) |
| Adjectives and adjective phrases: | |
| Adjectives: overall p.65, 506 | Adjectives are much more common in academic prose than in conversation or fiction |
| Attributive adjectives p.506, 589 | Much more common in academic prose (e.g., <i>the basic logical content</i>) |

Table 12 (cont'd.)

| Feature | Pattern of use |
|--|---|
| Specific predicative adjectives pp. 440 | Several predicative adjectives are notably more common in academic prose than in other registers: <i>different, important, difficult, possible, necessary, available, useful</i> |
| Derived adjectives pp. 531–533 | Much more common in academic prose, especially adjectives formed with <i>-al</i> |
| Verbs and verb phrases: | |
| Copula <i>be</i> Copular verb <i>become</i> pp. 359–360, 437–439 | Most common in academic prose |
| "Existence" verbs pp. 366, 369, 419 | Much more common in writing than in conversation; Most common in academic prose (e.g., <i>include, involve, indicate</i>) |
| Specific lexical verbs pp. 367–372 | Several verbs are notably more common in academic prose than in other registers: Activity verbs: <i>use, produce, provide, apply, form, obtain, reduce</i> Communication verbs: <i>describe, suggest</i> Mental verbs: <i>consider, assume, determine</i> Causative / Occurrence / Existence verbs: <i>follow, allow, require, include, involve, contain, exist, indicate, represent</i> |
| Specific prepositional verbs (especially passive prepositional verbs) pp. 416–418 | Several prepositional verbs are notably more common in academic prose than in other registers: Activity verbs: <i>deal with, BE applied to, BE used in, BE derived from</i> Communication verbs: <i>refer to</i> Mental verbs: <i>BE known as</i> Causative / Occurrence / Existence verbs: <i>lead to, result in, occur in, depend on, consist of, BE based on, BE associated with, BE related to</i> |
| Verbs with inanimate subjects pp. 378–380 | Common only in academic prose (e.g., <i>such comparisons suggest . . .</i>) |
| Derived verbs pp. 400–403 | Most common in academic prose, especially verbs formed with <i>re-</i> and <i>-ize</i> (e.g., <i>reabsorb, cannibalize, itemize</i>) |
| Tense and aspect pp. 456–462 | Academic prose relies primarily on simple aspect, present tense verb phrases |
| Passive voice pp. 476–480, 937–940 | Much more common in academic prose, especially the 'short' passive (with no <i>by</i> -phrase) |

Table 12 (cont'd.)

| Feature | Pattern of use |
|---|--|
| Specific passive verbs pp. 478–480 | Several verbs are especially common with passive voice in academic prose; for example: <i>BE + made, given, taken, used, found, seen, considered, shown</i> |
| Adverbs and adverbials: | |
| Specific adverbs pp. 560–563 | Several adverbs are notably more common in academic prose than in conversation: <i>often, usually, significantly, more, relatively, especially, particularly, generally, indeed</i> |
| Specific amplifiers pp. 560–563 | A few amplifiers are notably more common in academic prose than in conversation: <i>extremely, highly</i> |
| Specific degree adverbs pp. 566–569 | A few degree adverbs are notably more common in academic prose than in conversation: <i>relatively, fairly, slightly</i> |
| Linking adverbials pp. 766, 880–882 | Most common in academic prose; especially <i>however, thus, therefore, for example (e.g.)</i> |
| Purpose and concessive adverbials pp. 784, 786, 820–821, 824–825, 826 | Most common in academic prose (e.g., <i>in order to, although</i>) |
| Dependent clause features: | |
| Finite relative clauses with adverbial gaps pp. 624–625 | Most common in academic prose; especially with the relativizer <i>in which</i> (e.g., <i>a mutant vimentin in which Ser82 is changed to S82E</i>) |
| Participle clauses as post-modifiers in noun phrases p. 606, 630–632 | Very common in academic prose (and newspapers) (e.g., <i>the assumptions given above</i>) |
| Noun complement clauses with a <i>that</i> -clause p. 648–650 | Most common in academic prose (e.g., <i>the fact that...; a possibility that...; no doubt that</i>) |
| Noun complement clauses with a <i>to</i> -clause p. 652–653 | Very common in academic prose (and newspapers) (e.g., <i>an attempt to...; the ability to...</i>) |
| Abstract noun + <i>of</i> + <i>ing</i> -clause pp. 653–655 | Most common in academic prose, especially with the head nouns <i>way, cost, means, method, possibility, effect, problem, process, risk</i> (e.g., <i>methods of assessing error</i>) |
| Extraposed <i>that</i> -clauses pp. 672–675 | Most common in academic prose, especially controlled by the adjectives <i>clear, (un)likely, and (im)possible</i> (e.g., <i>it is unlikely that any insect exceeds this velocity</i>) |

Table 12 (cont'd.)

| Feature | Pattern of use |
|---|--|
| Extraposed <i>to</i> -clauses pp. 720–724 | Most common in academic prose, especially controlled by adjectives (e.g., <i>(im)possible, difficult, hard, important, necessary</i>) (e.g., <i>It is important to specify the conditions. . .</i>) |
| Subject predicative <i>to</i> -clause pp. 714–715, 723 | Common only in academic prose (and newspapers) (e.g., <i>The first step is to evaluate the expression</i>) |
| ing-clauses controlled by adjective predicates p. 749 | Most common in academic prose; (e.g., <i>capable of, important for/in, useful for/in: formalist strategies are useful for analyzing drama</i>) |
| Concessive adverbial clauses pp. 820–825 | Most common in academic prose (and newspapers) (<i>though, although</i>) |
| Other features | |
| Prepositions p. 92 | Most common in academic prose |
| <i>Of</i> -phrases pp. 301–302 | Much more common in writing than in conversation; Most common in academic prose |
| Prepositional phrases as post-modifiers in noun phrases p. 606–608, 634–638 | Very common in academic prose (and newspapers) (e.g., <i>the effect on the final state</i>) |
| Stance noun + <i>of</i> -phrase pp. 984–986 | Most common in academic prose, especially <i>possibility of, value of, importance of, problem of, understanding of</i> |
| <i>that/those</i> + <i>of</i> -phrase pp. 307–308 | Common only in academic prose |
| Preposition + <i>which</i> in relative clauses with adverbial gaps p. 624–626 | Common only in academic prose, especially <i>in which</i> and <i>to which</i> |
| Selected coordination tags: pp. 116–117 | Common only in academic prose, especially <i>etc.</i> |
| Quantifier <i>each</i> | Most common in academic prose |
| Semi-determiners <i>same, other, certain, and such</i> pp. 282–283 | Much more common in academic prose |
| Dual gender reference: <i>he or she, his or her, he/she</i> pp. 316–317 | Common only in academic prose |
| Lexical bundles with noun phrases and/or prepositional phrases pp. 997, 1015–1019 | Very common in academic prose; e.g., <i>the end of the, the nature of the, one of the most, the way in which, the extent to which, the fact that the, as a result of, at the time of, in the case/absence/form/presence of, on the basis of, on the other hand</i> |

are more common or most common or only common in AE writing would hold up if a more comprehensive group of non-AL language samples were considered.

Nevertheless, Biber and Gray's (2016) findings do have the empirical backing of corpus analysis, and aspects of their findings as listed in Table 12 comport with the findings of this study. Ultimately, however, the extensive list of forms and features in Table 12 hearkens back to the linguistic forms and features wave of AL scholarship, which even ardent supporters of the AL construct (Snow & Uccelli, 2009) have acknowledged to be inadequate to establish AL as a unitary entity.

Uccelli and colleagues' Core Academic Language Skills. Arguably the most important current operationalization of AL is the construct of Core Academic Language Skills (CALS) and its accompanying assessment, the Core Academic Language Skills Instrument (CALS-I), which Uccelli, Barr et al. (2015) dubbed "an expanded operational construct and a novel instrument to chart school-relevant language proficiency in pre-adolescent and adolescent learners." The affinity between Uccelli's CALS and Cummins' CALP is immediately apparent. There are just two differences. First, 'cognitive' was replaced with 'core', reflecting the fact that Uccelli and colleagues were interested in complementing "ongoing research on discipline-specific academic language" by "identifying cross-disciplinary language skills relevant to supporting reading comprehension across content areas" (Uccelli & Phillips Galloway, 2017, p. 3). Second, the singular noun *proficiency* was replaced with the plural noun *skills*, although Uccelli, Barr et al. (2015) were sure to note that "the constellation" of Core Academic Language Skills indeed functions as a "unitary" rather than a "multidimensional" construct (p. 6). Uccelli, Barr et al. (2015) and

Uccelli and Phillips Galloway (2017) both utilized sophisticated statistical analyses (multiple regression analysis) to offer evidence for CALS' unitary status, but the fact that they conceived of AL in terms of a set of skills indicates that, like others before them, they had not moved beyond the linguistic features and functions conceptualizations of AL that has been employed since the 1980s.

Uccelli, Barr et al. (2015) defined CALS as “knowledge and deployment of a repertoire of language forms and functions that co-occur with oral and written school learning task across disciplines” (p. 5). Uccelli and Phillips Galloway (2017), meanwhile, defined CALS as “a constellation of high-utility language skills needed to understand the linguistic features prevalent in academic texts across content areas, but which are typically infrequent in colloquial conversations” (p. 2). The linguistic forms and features that Uccelli and Phillips Galloway (2017) cited as being constitutive of AL and making it “difficult to comprehend” were “logical connectives that are prevalent in school texts but rare in informal peer-to-peer conversations, such as *nevertheless* and *consequently*, and knowledge of complex structures used to pack dense information in texts across content areas, such as nominalizations (e.g., *agree* → *agreement*)” (p. 2). Additionally, they identified “complex sentence structures, extended noun phrases,” and the way that “markers of stance signal the writer’s degree of certainty (e.g., *extremely likely*)” as emblematic of AL (Uccelli & Phillips Galloway, 2017, p. 2). Uccelli and Phillips Galloway (2017) cited “extensive research in functional text analysis from different traditions (e.g., systemic functional linguistics, corpus analysis, metadiscourse) [as showing] that academic texts across content areas exhibit some recurrent language patterns” (pp. 2-3). What distinguished

their approach, though, was their “focus on directly measuring academic language skills with the goal of linking student data to instruction” (Uccelli & Phillips Galloway, 2017, p. 3).

Beyond linguistic forms and features, the “comprehensive set of academic language skills” (i.e., functions) that Uccelli and Phillips Galloway (2017) selected to compose “the CALS construct” (pp. 2-3) and develop the CALS-I are presented here as Figure 9 and Table 13, reproduced from Uccelli and Phillips Galloway (2017, pp. 4 & 6, respectively). They identified these skills after conducting

Figure 9

Uccelli and Phillips Galloway’s (2017, p. 4) CALS construct

Core Academic Language Skills Construct

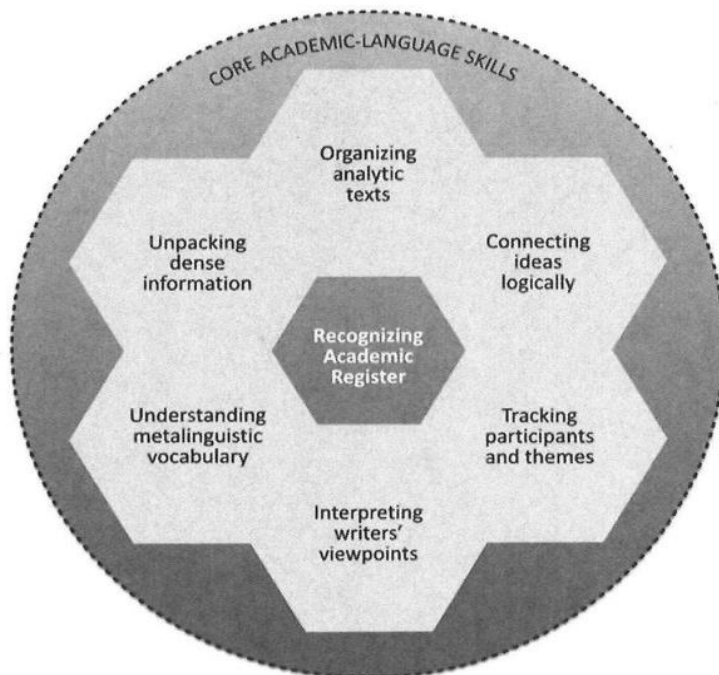


Table 13

Uccelli and Phillips Galloway's (2017, p. 6) Core Academic Language Skills Instrument (CALS-I)

| Tasks | Skills measured | Sample items | Additional examples |
|---|--|--|---|
| Unpacking dense information: Complex words (selected items from Kieffer, 2009 ^a ; Kieffer & Lesaux, 2012 ^b ; adapted from Carlisle, 2000 ^c) and complex sentences (selected and adapted items from version 2 of the Test for Reception of Grammar; Bishop, 2003 ^d) | Skill in breaking down complex words Skill in understanding complex sentence structures | The administrator reads a morphologically derived word followed by an incomplete sentence, and students are asked to complete the sentence by extracting the base from the derived word (e.g., <i>"Ethnicity. The city had many ____ groups."</i>). The administrator reads a sentence, and students are asked to select the picture that corresponds to the target sentence. Four pictures are presented, three of which depict sentences altered by a grammatical element (e.g., <i>"The sheep the girl looks at is running."</i>). | <i>invasion, durability, contribution</i> expanded noun phrases, center-embedded clauses |
| Connecting ideas logically | Skill in understanding school-relevant words that connect ideas | Students are asked to select the missing marker from among four options (e.g., <i>"Kim was sick ____ she stayed home and did not go to school. otherwise, yet, in contrast, as a result"</i>). | <i>consequently, nevertheless, in conclusion</i> |
| Tracking participants and themes | Skill in tracking referents through a text | Students are asked to match the underlined text with its antecedent by selecting among three options (e.g., <i>"China resisted the move for change. In 1989 students protested to demand changes, but the army opposed these changes. Troops were sent to stop <u>the movement</u>."</i>). | tracking references for concrete participants, events, abstract ideas |
| Organizing analytic texts | Skill in argumentative text organization | Students are asked to order four to six fragments of a brief essay (introduced by conventional markers; e.g., <i>in my opinion, one reason, in conclusion</i>) in order to display a conventional argumentative text structure. | <i>"Some think...." "Others think...." "The first reason...." "The second reason...."</i> |
| Understanding metalinguistic vocabulary | Skill in understanding words that label or qualify language or thinking moves | The administrator reads two sentences from an informational article followed by a one-sentence reaction from a respondent. Students are then asked to select which word best describes the respondent's reaction from among four options (e.g., <i>paraphrase, generalization, hypothesis, contradiction</i>). | <i>counterclaim, evidence, precise</i> |
| Interpreting writers' viewpoints | Skill in interpreting markers that signal a writer's level of certainty about a claim | The administrator reads a "scientist's" claim that includes a stance marker, and students are asked how sure they think the scientist is about the claim made (e.g., <i>"Certainly, the rock is from space."</i>). Students select from among four options to answer the question (e.g., <i>"Is this scientist sure that the rock is from space? yes, maybe yes, maybe no, no"</i>). | <i>impossible, presumably, conclusively</i> |
| Recognizing academic register | Skill in identifying more academic versus more colloquial language | Students are asked to select the most academic definition from a set of three definitions of the same familiar word. | <i>umbrella, clown, debate</i> |

an extensive synthesis of different lines of theoretical and empirical linguistics research to catalog (a) linguistic features prevalent in experts' academic texts across disciplines yet infrequent in colloquial conversations (e.g., Biber, 2006; Halliday, 2004); (b) language skills that develop throughout the upper elementary and middle school years (Berman, 2004; Christis & Derewianka, 2010; Nippold, 2007); and (c) the language demands of U.S. educational

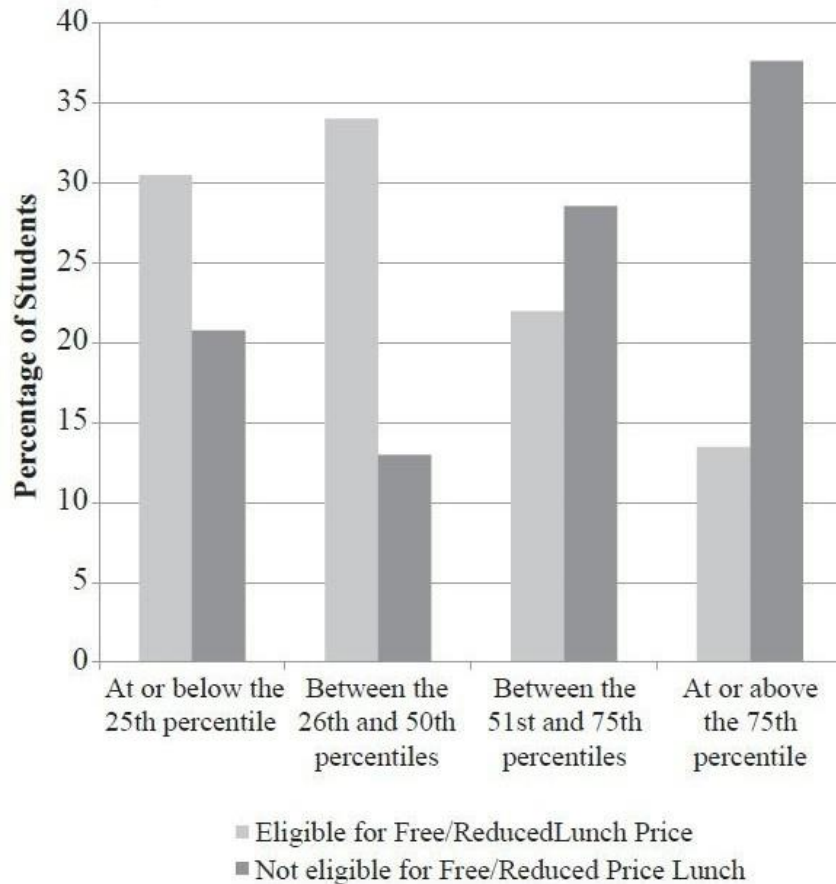
standards, school texts, textbooks, and achievement tests (Bailey, 2007; Schleppegrell, 2004). (Uccelli & Phillips Galloway, 2017, p. 3)

Uccelli and Phillips Galloway (2017) reported the findings of two studies, the first quantitative and the second qualitative. In the quantitative study, they confirmed two hypotheses: first, “that language skills continue to develop throughout adolescence and vary considerably even among students in the same grade”—a seemingly safe prediction—and second, more boldly, that “students with higher CALS would display higher reading comprehension scores” even if they were in the same grade and had “the same level of vocabulary knowledge and decoding skill,” and even when taking into account “their sociodemographic characteristics” (Uccelli & Phillips Galloway, 2017, pp. 4-6).

Uccelli and Phillips Galloway (2017) found “enormous individual variability within and across SES groups” (p. 7). In short, though there was some variability within SES groups (i.e., some lower SES kids did well on the CALS-I while some comparatively higher SES kids did poorly), in general, lower SES students performed lower than higher SES students on the CALS-I. Although Uccelli and Phillips Galloway (2017) interpreted the within-SES group variability as a hopeful sign, the figure they provided depicting the distribution of participants by CALS-I percentiles and SES, reproduced here as Figure 10, is visually striking. Quite simply, the students who were eligible for free or reduced lunch prices did substantially worse on the CALS-I. In the face of these clear contrasts based on SES, however, Uccelli and Phillips Galloway (2017) still clung to Cummins’ (1976) language proficiency explanation for school failure. The only differences were that it was CALS not CALP

Figure 10

Uccelli & Phillips Galloway's (2017, p. 7) Distribution of Participants by CALS-I Percentiles and Socioeconomic Status (Eligibility for Free or Reduced-Price Lunch)



that students were lacking and that Uccelli and Phillips Galloway (2017) were much more sensitive to possible deficit theory allegations:

Counter to a deficit view and despite the overall tendency of lower academic language skills in students from lower SES backgrounds, [Figure 10] reveals that many students from lower SES backgrounds performed comparably to or better than some of their more privileged peers.

Thus, individual differences in CALS hint at the possibility of academic language as an important component in providing high-quality and equitable instruction. (p. 7)

Regarding the second hypothesis, Uccelli and Phillips Galloway (2017) reported that “regression analyses revealed that individual differences in students’ CALS significantly contributed to reading comprehension,” even when accounting for influential factors like “grade, English-proficiency designation, SES, word reading fluency, and academic vocabulary knowledge” (p. 7). Uccelli and Phillips Galloway (2017) further noted the

novel finding . . . that when academic vocabulary and CALS-I scores were added to the model, the impact of SES and English-proficiency designation on reading comprehension became insignificant. These results are promising because they suggest that, compared with SES or English-proficiency designation, CALS-I scores more precisely predicted reading comprehension. (p. 7)

The potential problem with this analysis is one of collinearity. If CALS and reading comprehension are two sides of the same coin, then the independent and dependent variables in question actually amount to the same thing. CALS is, after all, a set of academic skills, and reading comprehension too is an academic skill. A second concern harkens back to one of the earliest sociolinguistic criticisms of CALP, which was the use of tests to define and measure literacy attainment.

The second study reported in Uccelli and Philips Galloway (2017) was qualitative. They asked students “to reflect about the language of school, using experimental CALS-I tasks as a point of departure . . . with the goal of uncovering students’ awareness of academic language and their attitudes and motivation toward academic language use” (Uccelli & Philips Galloway, 2017, p. 8). Uccelli and

Phillips Galloway (2017) were clearly disconcerted—or, as they put it, alarmed—by the findings of this study. Uccelli and Phillips Galloway (2017) wrote that the “students’ voices revealed a worrisome tendency: the extent to which students had internalized the hierarchical societal values associated with different ways of using language” (p. 8). They reported that the students “were keenly aware of the distinction between more conversational and more academic language resources and their expected uses outside or inside of school, respectively” (p. 8).

When asked to compare more academic versus more colloquial text fragments, many students repeatedly described academic language as displaying “better vocabulary,” “finer words,” and “correct words,” thus implicitly positioning the more colloquial language fragments as possibly bad, poor, or incorrect.

Finally, students reported that their uses of academic language were mainly motivated by self-presentation reasons. For instance, many students said they would use academic language to “appear nice” or to “sound smart.” Relatedly, the consistent focus on self-presentation as the motivation to use academic language suggested that students are typically unaware of the functionality of academic language resources. No student referred to the use of more precise, concise, or reflective language to facilitate their oral or written communication. Nor did they mention the usefulness of these resources to understand school texts. (Uccelli & Phillips Galloway, 2017, p. 8)

If viewed from a student-centric perspective supported by adequate theoretical context, these words should serve as a major wake-up call to AL scholars and

advocates. The gap between what educators think students should experience and what they are actually experiencing is gaping and here laid bare, and the psychological implications for students' confidence and academic and professional success are dire and deplorable.

The only way to escape the hazard the students' words revealed is to reject the construct of academic language, which is something Uccelli and Phillips Galloway (2017) were not willing to do. Instead, they drew a different conclusion. For them, "these results suggest a need to explicitly highlight the often overlooked functionality of academic language resources, that is, the ways in which the expansion of school-relevant lexical, syntactic, and discourse structures can support more precise, concise, and reflective expression and text comprehension" (Uccelli & Phillips Galloway, 2017, p. 8). They argued that "academic language ought to be presented as a set of *discourse practices* helpful to communicating scientific ideas, but which are not necessarily superior to other ways of using language and certainly not the best choice in many communicative contexts" (Uccelli & Phillips Galloway, 2017, p. 8, emphasis added). Like so many scholars before them, they seem to have wanted to have their cake and eat it too. They wanted to call AL both unitary and multiple, and they wanted to call it not "necessarily superior to other ways of using language" but also the best medium for "communicating scientific ideas."

Conclusion

Since the late 1970s, AL has been extremely influential in American educational policymaking and practice. It has come to be defined as a tripartite yet unitary construct consisting of specialized vocabulary, more complex grammar, and

special discourse features. This literature review has revealed that, of the three elements that constitute AL, arguably the most elaborated is that of discourse features, given the many language functions and skills that have been detailed that students are expected to master and perform for the successful completion of academic tasks. The second most elaborated element could then be said to be that of academic vocabulary, given the various analytical categories (general academic vocabulary, specialized academic vocabulary, technical terms, word parts, alternative meanings of common words, alternative words that express the same meaning, etc.) that have been invoked to describe it.

The least elaborated element of the tripartite construct of AL—yet arguably from a linguistic standpoint also the most important—is that of grammar, as its description has been limited to some lists of syntactic and morphological elements with no overarching rationale. The most helpful work on the grammar of academic language has come from researchers working within the systemic functional linguistic tradition, but SFL is a “semanticky” grammar (Halliday & Matthiessen, 2004, p. 31). Its main focus is on the meanings of words and how they are linked together to form texts—see, for example, Halliday & Hasan’s (1976) famous work on cohesion. Most of SFL’s grammatical insights into the complexity of AL actually relate to the discourse component, not the grammatical component, of the modern, tripartite construct of AL.

Whether any of the three elements of AL’s definition would stand up to scrutiny is open to question. There is virtually a complete lack of empirical research that intentionally and adequately contrasts AL and non-AL language samples across

the three components of the construct. However, it stands to reason that if even one of the three component elements were to be proven theoretically unsound, it would undermine the whole tripartite construct, just as if one leg were to be removed from a three-legged stool, the stool would no longer be able to stand. This study makes a start on investigating the claim that AL contains more complex grammar than non-AL.

Methods

As shown in the preceding literature review, there are many grammatical features that scholars have cited in AL scholarship as (a) being constitutive of AL and (b) affording it its grammatical complexity. The most significant of these grammatical features, categorized as clause or phrase level features, are listed in Table 14.

Table 14

Grammatical features associated with academic language in AL scholarship

| | Grammatical feature | Cited in |
|-----------------------|---|---|
| Clause-level features | Sentence type | Butler, Bailey, Stevens, Huang & Lord (2004) |
| | Complex sentences / clausal complexity | Freeman, Freeman & Soto (2017); Bailey & Butler (2007); Snow & Uccelli (2009); Kieffer, Lesaux & Snow (2008); Scarcella (2003) |
| | Hierarchical clause structuring | Schleppegrell (2001) |
| | Conditionals/ if...then / conditional relationships | Escheverria, Vogt & Short (2014); Spanos <i>et al.</i> (1988); Scarcella (2003); Bailey (2007); Snow & Uccelli (2009) |
| | Clause type | Butler, Bailey, Stevens, Huang & Lord (2004) |
| | Dependent clauses | Escheverria, Vogt & Short (2014) |
| | Conjunctions / connectives / logical connectors | Snow & Uccelli (2009); Escheverria, Vogt & Short (2014); Schleppegrell (2001); Butler, Bailey, Stevens, Huang & Lord (2004); Spanos <i>et al.</i> (1988); Uccelli <i>et al.</i> (2015) |
| | Embedded clauses | Butler, Lord, Stevens, Borrego & Bailey (2004); Scarcella (2003); Bailey (2007); Bailey & Butler (2007); Schleppegrell (2001); Snow & Uccelli (2009); Bailey, Butler, Laframenta & Ong (2004); Schleppegrell & Colombi (1997); Uccelli <i>et al.</i> (2015) |
| | ‘That’ clauses | Schleppegrell (2001) |
| | Relative clauses | Bailey (2007) |
| Phrase-level features | Restrictive relative clauses | Schleppegrell (2001) |
| | Noun phrase length / elaborate noun phrases | Butler, Lord, Stevens, Borrego & Bailey (2004); Butler, Bailey, Stevens, Huang & Lord (2004); Snow & Uccelli (2009); Schleppegrell (2001); (2016); Spanos <i>et al.</i> (1988); Biber & Gray (2016; in science writing) |
| | Complex strings of words or phrases | Spanos <i>et al.</i> (1988) |
| | Long subjects | Schleppegrell (2001) |
| | Participles modifying | Butler, Bailey, Stevens, Huang & Lord (2004); Biber & |

| | |
|--|---|
| nouns | Gray (2016; in academic writing) |
| Attributive adjectives pre-modifying nouns | Scarcella (2003); Biber & Gray (2016; in humanities writing) |
| Nouns pre-modifying nouns | Biber & Gray (2016; in science writing) |
| Noun + participles pre-modifying nouns | Biber & Gray (2016; in science writing) |
| Appositive noun phrases | Biber & Gray (2016; in science writing) |
| Participial phrases | Spanos <i>et al.</i> (1988); Schleppegrell (2001) |
| Prepositions / prepositional phrases | Schleppegrell (2001); Butler, Bailey, Stevens, Huang & Lord (2004); Spanos <i>et al.</i> (1988) |
| Prepositional phrases as noun post-modifiers | Biber & Gray (2016; in science writing) |
| Adverbial expressions / adverbials | Schleppegrell (2001); Biber & Gray (2016; in academic writing) |
| Discourse markers-transitions, organizing signals | Scarcella (2003) |
| Discourse markers-temporal, sequential relations | Short (1994); Snow & Uccelli (2009); cf., Schatzmann & Strauss (1955) |
| Discourse markers-causal, inferential relations | Short (1994); Snow & Uccelli (2009) |
| Discourse markers-overall frames, initial or concluding statements | Snow & Uccelli (2009); Scarcella (2003); cf., Schatzmann & Strauss (1955) |
| Comparatives / comparing | Spanos <i>et al.</i> (1988); Lemke (1990); Bailey (2007); Butler, Lord, Stevens, Borrego & Bailey (2004); O'Malley (1992) |
| Passive voice / passive structures | Spanos <i>et al.</i> (1988); Bailey (2007); Escheverria, Vogt & Short (2014); Freeman, Freeman & Soto (2017); Butler, Bailey, Stevens, Huang & Lord (2004); Biber & Gray (2016); Scarcella (2003) |
| Transitivity / active voice | Scarcella (2003); Short (1994) |
| Nominalizations | Freeman, Freeman & Soto (2017); Butler, Bailey, Stevens, Huang & Lord (2004); Snow & Uccelli, 2009; Schleppegrell (2001); Biber & Gray (2016; in academic writing); Scarcella (2003) |
| Grammatical metaphor | Halliday (1989); Halliday & Martin (1993); Scarcella (2003); Snow & Uccelli (2009); Biber & Gray (2016) |
| Grammatical compression / structural compression | Snow and Uccelli (2009); Biber & Gray (2016; in science writing); Scarcella (2003) |
| Simple past & historical present | Short (1994) |

| | | |
|--|---|---|
| | Present tense, past tense, present perfect | Scarcella (2003) |
| | Continuous | Scarcella (2003) |
| | Variety and frequency of modal verbs | Snow & Uccelli (2009); Scarcella (2003) |
| | Hypotheticals / hypothesizing | Snow & Uccelli (2009); O'Malley (1992) |
| | Contrafactuals | Snow & Uccelli (2009) |
| | Use of lexical nouns over pronouns / high lexical density | Schleppegrell (2001); Scarcella (2003); Snow & Uccelli (2009); Biber & Gray (2016; in academic writing) |
| | Morphological complexity | Bailey (2007); Kieffer & Lesaux (2012); Butler, Bailey, Stevens, Huang & Lord (2004); Scarcella (2003) |

Because the list of features in Table 14 derives from the publications of various scholars, there is some overlap among its individual elements. It is possible, though, to distill from those elements a more concise list of the most important grammatical features thought to contribute to the grammatical complexity of academic language. That list, again divided between clause-level and phrase-level features, is provided in Table 15. It omits sentence-level considerations, because they are above the unit of analysis of the study. It also omits verb tense (present/past/future), including the feature of historical present, which is more a discourse feature than a grammatical feature. Finally, it omits the use of lexical nouns over pronouns and morphological complexity, both of which are related more to vocabulary than to grammar.

Most of the features listed above are straightforward. Among the phrase-level features, however, nominalization can be interpreted in at least two ways: first, as “complex nouns that are derived from verbs, adjectives, or other nouns” (Lieber, 2016, p. 3), or even from whole clauses; or second, as participial phrases, to-infinitive phrases, or noun clauses that are “nominalized” in that they serve as the grammatical

Table 15

Synthesis of key grammatical features of academic language

| Clause-level features | Phrase-level features |
|---|--|
| <p>1. Structural elaboration (Biber & Gray, 2016) / hierarchical clause structuring / clausal complexity through use of:</p> <ul style="list-style-type: none"> • Dependent clauses • Embedded clauses • Relative clauses • Restrictive relative clauses • Conditional clauses | <p>1. Structural compression (Biber & Gray, 2016; Schleppegrell, 2001) through use of:</p> <ul style="list-style-type: none"> • Long noun phrases w/ variety of noun modifiers (attributive adjectives, nouns pre-modifying nouns, participles pre-modifying nouns, noun + participles pre-modifying nouns) • Prepositional phrases (including as noun post-modifiers) • Infinitival phrases (participial phrases and to-infinitive phrases) • Multi-phrase grammatical subjects and objects • Nominalization <p>2. Appositive noun phrases</p> <p>3. Comparatives and superlatives</p> <p>4. Adverbials and prepositional phrases serving as discourse markers</p> <p>5. Verbal aspect (perfect, progressive)</p> <p>6. Verbal mood (modal verbs, subjunctive mood for hypotheticals and contrafactuals)</p> <p>7. Passive voice</p> |

subjects or objects of clauses. The first kind of nominalization is extremely common, and though the morphological changes that occur in such nominalizations are certainly grammatical matters, understanding the nominalizations themselves is typically more a matter of vocabulary than of grammar. For that reason, this study focuses on the second kind of nominalization, which is more syntactic in nature.

Research questions

Using the synthesis of key grammatical features of academic language provided in Table 15 as a guide, this study investigates its first four research questions:

1. Are common claims about the grammatical features of AL attested in AL speech samples?
2. Are common claims about the grammatical features of AL attested in AL writing samples?
3. Are common claims about the grammatical features of AL attested in non-AL speech samples?
4. Are common claims about the grammatical features of AL attested in non-AL writing samples?

Based on information gathered through investigating these four questions, this study investigates a fifth research question:

5. Are there significant differences between AL and non-AL language samples, both spoken and written, with respect to the extent to which common claims about the grammatical features of AL are attested in them?

Data sources

A prerequisite for answering the research questions of this study is to distinguish between AL and non-AL language samples. In the past, while scholars have put significant effort into specifying what constitutes academic language, no one has directly addressed the question of what constitutes non-academic language. Instead, scholars have simply declared that academic language exists, attributed to it

grammatical features that they deem to be especially constitutive of it, and then, to provide foils for it, ambiguously compared it to things like ‘conversation’ (Cummins, 2000a; Schleppegrell, 2001; Biber & Gray, 2016) or newspaper reportage (Biber & Gray, 2016). Except for Biber and Gray (2016), nowhere in the educational research literature have scholars actually contrasted samples of putative academic language with samples of language that are deemed to be non-academic, and even Biber and Gray’s (2016) investigation, though corpus-based, was limited with respect the kinds of sources they examined. To legitimately distinguish between AL and non-AL language samples and then compare the grammar of the two is therefore the primary objective of this study.

A conceptual framework for distinguishing AL from non-AL

As revealed in the preceding literature review, scholars have conceptualized of academic language in different ways over the years. They have conceptualized it (1) topically, as the language of academic subjects, textbooks, etc. (e.g., Schleppegrell, 2001; Butler & Bailey, 2007); (2) individually, as being the particular brand of language used by educated people (e.g., Scarcella, 2003); (3) contextually, as the language that takes place in school, both for learning new information and for navigating school contexts (e.g., Snow & Uccelli, 2009; Bailey & Heritage, 2008; see Flores & Rosa, 2015 for a raciolinguistic critique of works written from an additive bilingual perspective that posit standard, academic English as the variety of language that is appropriate to the school setting); and (4) in terms of its intended audience, whether a general or specialized one (e.g., Biber & Gray, 2016).

Of these conceptualizations of AL found in the AL literature, the second, that regarding the individual language user, merits some consideration. This study operationalizes AL in this way in an effort to make concrete what is in the literature. The notion of academic language being a brand of language used by a particular subset of society is not without precedent (Schatzmann & Strauss, 1955; Bernstein, 1971). Nor is it unproblematic in terms of its implications for students. Wiley (1996) noted an autonomous perspective contention

that literate parents privilege their children with literate speech. Because these parents are competent at using language to describe language (metalanguage), their children's awareness of language is heightened which in turn is seen as facilitating their children's literacy development. Stated differently, the progeny of highly literate parents have a cognitive head start over those children who must endure a less cognitively embellished heritage. (p. 49)

Nevertheless, if academic language is, as CALP implied, a level of individual language proficiency derived from participation in school-based academic activities (though see Scribner & Cole, 1978, 1981 for a disentanglement of the effects of literacy and schooling on cognition), then, for the purposes of this study, that would require the setting of some cut-off point before and after which individuals would be deemed uneducated or educated. While levels as low as 5th and 8th grade have been used in previous literacy studies investigating the effect of schooling on literacy (Wiley, personal communication), in this study the level was set to whether or not an individual had earned a high school diploma.

Based on the four conceptualizations of academic language found in the literature, this study developed and tested a conceptual framework for determining whether a language sample constitutes AL or non-AL:

(1) A language sample can be determined to constitute AL or non-AL

based on the interplay of three primary variables: (a) topic

(whether the language sample is about an academic or a non-

academic topic); (b) person (whether the language sample was

produced by a highly educated or not highly educated person); and

(c) context (academic or non-academic setting, publication,

audience, etc.). If a language sample qualifies as AL or non-AL

with respect to two of the three primary variables, it represents AL

or non-AL, respectively. If it qualifies as AL or non-AL with

respect to all three primary variables, it represents “gold-standard”

AL or non-AL. (see Table 16).

(2) A language sample’s AL or non-AL status will interact with two

intervening variables. The first variable is whether the sample is

written or spoken. The second variable is whether the sample is

edited or unedited (for written language samples) or prepared or

unprepared (for spoken language samples).

Table 16

Examples of how the three primary variables determine language samples to be academic or non-academic language

| Language sample | Topic | Education level of writer/speaker | Context | Determination |
|--|--------------|-----------------------------------|--------------|-------------------------------------|
| Academic journal article | Academic | Highly educated | Academic | Gold-standard academic language |
| High school biology textbook | Academic | Highly educated | Academic | Gold-standard academic language |
| College professor's course lecture | Academic | Highly educated | Academic | Gold-standard academic language |
| Article from the journal Science | Academic | Highly educated | Non-academic | Academic language |
| Teacher using "school-navigational language" with students (Bailey & Heritage, 2008; Bailey & Huang, 2011) | Non-academic | Highly educated | Academic | Academic language |
| Newspaper sports article | Non-academic | Highly educated | Non-academic | Non-academic language |
| High school dropout ordering breakfast in a diner | Non-academic | Not highly educated | Non-academic | Gold standard non-academic language |

Within this conceptual framework, some language samples may be deemed to be more patently academic than others (as if occupying different points on a Likert scale with "very academic" and "very non-academic" at the extremes and a gray area in the middle). Additionally, one might hypothesize that written language samples would be more heavily identified as AL than spoken language samples, and that edited/prepared language samples would be more heavily identified as AL than unedited/unprepared language samples. At one extreme, then, would be gold-standard academic, written, edited language samples, and at the other extreme would be gold-standard non-academic, spoken, unprepared language samples.

A multifaceted formula such as this for distinguishing between academic and non-academic language is necessary because a legitimate conceptualization of what

constitutes academic language cannot be monolithic. None of the three primary variables listed above can dominate, nor is any one alone sufficient. For example, one cannot say that the education level of a speaker alone can determine whether a language sample constitutes academic or non-academic language. When a highly educated person orders lunch at a café, the language that person uses can hardly be called academic language (Gottlieb & Ernst-Slavit, 2014). To maintain that every word a highly educated person ever says must necessarily qualify as academic language would render the construct meaningless.

Meanwhile, the two intervening variables must be allowed to apply to both AL and non-AL samples. That is, both AL and non-AL language samples can be written or spoken, and both can be edited or unedited (for written language samples) or prepared or unprepared (for spoken language samples).

While it is obvious that both AL and non-AL language samples can come in both written and spoken form, the assertion that they can also be either edited/prepared or unedited/unprepared warrants some explanation. At first glance, one might assume that any language sample that has undergone a formal editing process must necessarily constitute academic language. However, if all samples of edited language, regardless of topic or intended audience, were of necessity to be considered AL language samples—and, by the same token, all samples of unedited language were of necessity to be considered non-AL language samples—then one would be conflating the edited with the academic, and there would be no way, in colloquial terms, to compare apples to apples (i.e., edited AL language samples to

edited non-AL language samples and unedited AL language sample to unedited non-AL language samples).

Testing the conceptual framework

While the conceptual framework just described would allow the researcher to unilaterally select data sources for the study and provide a justification for the selection, the principles of disciplined inquiry (Shulman, 1986) would require that the framework be tested somehow to establish objective reliability. To accomplish that, the researcher conducted a survey testing the hypothesis that, when presented with a series of language samples presumed by the conceptual framework to represent either AL or non-AL, respondents would consistently identify presumably AL language samples as AL and presumably non-AL language samples as non-AL.

In the survey, educators read a series of 42 language samples and indicated whether they considered each to be a sample of AL or non-AL. There were three answer choices: (1) Academic language, (2) Not academic language, and (3) Can't decide (CD). After each language sample, survey participants had an opportunity to comment on why they had answered as they had.

The three primary variables described above establish sources as academic or non-academic, and the two intervening variables provide two more binaries (written or spoken and edited/prepared or unedited/unprepared), yielding a total of eight categories of data sources ($2 \times 2 \times 2 = 8$). These categories, which are listed in Table 17, guided the selection of language samples for the survey. Of the 42 language samples that were selected to comprise the survey (see Appendix A), four represented Category 1A, seven represented category 1B, four represented Category 2A, six

Table 17

The eight proposed categories of data sources

| | |
|----|----------------------------|
| 1A | AL, written, edited |
| 1B | Non-AL, written, edited |
| 2A | AL, written, unedited |
| 2B | Non-AL, written, unedited |
| 3A | AL, spoken, prepared |
| 3B | Non-AL, spoken, prepared |
| 4A | AL, spoken, unprepared |
| 4B | Non-AL, spoken, unprepared |

represented Category 2B, three represented Category 3A, seven represented category 3B, five represented Category 4A, and six represented Category 4B. There were consistently more samples on the presumably non-academic side because it was conjectured that the challenge for this study would be to find suitable sources of non-academic language. It was assumed that when presented with language samples that were presumably academic, survey participants would consistently recognize them as such. There was more concern over the identification of presumably non-academic language samples as indeed representing non-academic language.

Preceding the language samples posed for consideration, the survey consisted of a declaration of informed consent and a brief set of instructions on how to complete the survey, in which minimal information about how academic language has been defined was given. Inspired by Valdes' (2004) assertion that different professional communities among American educators conceptualize academic language differently, the researcher solicited participation in the survey from five different groups of educators. Using university, college, and school/district websites, as well as materials made available by the Center for Applied Linguistics, bilingual education conferences, and other online sources, the researcher solicited the participation of nearly 2,000 people, including (a) professors of English, Comparative

Literature, Applied Linguistics or TESOL; (b) K-12 ELL teachers, administrators, or paraprofessionals; (c) bilingual education teachers or administrators; and (d) mainstream high school English teachers.

A total of 77 responses to the survey were received. 42 survey participants were professors of Applied Linguistics or TESOL, 14 were professors of English or Comparative Literature, two were K-12 ELL teachers, administrators or paraprofessionals, and 19 were individuals who checked ‘other’ and identified themselves as lecturers, professors, administrators, doctoral students or researchers in various language-related disciplines. The fact that most of the responses came from professors of Applied Linguistics or TESOL was not surprising, as the construct of AL comes from these fields, so it is possible that those individuals felt more inclined and/or qualified to complete the survey.

Findings of the survey

The following three sections present the findings of the survey. The first section presents the quantitative results question category by question category. From a qualitative perspective, the second section then discusses survey respondents’ comments on the choices they made.² The third section is a discussion of both the quantitative and qualitative findings of the survey.

² It should be noted at the outset that one survey participant selected ‘academic language’ for every single item and copy-pasted the exact same comment after every item: “You need to understand specialized vocabulary to comprehend the text.”

Quantitative results of the survey. Four survey items represented Category 1A (written, edited, presumably AL language samples) (Table 18). The economics journal article and biology textbook both achieved 100% agreement, as nearly did the literature journal article (99%). At 95% agreement, the sample from the algebra textbook was also heavily judged to be academic language. The average agreement rates for category 1A were 98% for AL, <1% for non-AL, and 1% for CD.

Table 18

Category 1A: Written, edited, presumably non-AL sources

| Source | AL | Not AL | CD |
|----------------------------|------|--------|----|
| Economics journal article | 100% | 0 | 0 |
| Algebra textbook | 95% | 1% | 4% |
| Literature journal article | 99% | 0 | 1% |
| Biology textbook | 100% | 0 | 0 |
| Average: | 98% | <1% | 1% |

Seven survey items represented Category 1B (written, edited, presumably non-AL language samples) (Table 19). The National Enquirer article, pop culture newspaper article, and personal letters all garnered over 90% agreement, while the

Table 19

Category 1B: Written, edited, presumably non-AL sources

| Source | AL | Not AL | CD |
|--|-----|--------|-----|
| Newspaper article: sports | 10% | 86% | 4% |
| Dungeons and Dragons players' handbook | 31% | 52% | 17% |
| The National Enquirer article | 6% | 91% | 3% |
| Entertainment Weekly article | 13% | 84% | 3% |
| Billboard advertisement | 12% | 83% | 5% |
| Newspaper article: pop culture | 9% | 91% | 0 |
| Personal letters | 6% | 92% | 1% |
| Average: | 13% | 83% | 5% |
| Average w/out D&D handbook: | 10% | 88% | 3% |

sports newspaper article, Entertainment Weekly article, and billboard advertisement garnered between 83-86% agreement. Only the Dungeons and Dragons players' handbook achieved a lower level of agreement (52%, still a simple majority) regarding its non-AL status, as 31% of respondents called it academic language and 17% were unable to decide. The average agreement rates for category 1B were 13% for AL, 83% for non-AL, and 5% for CD. Removing the D&D handbook led to the average agreement rates becoming 10% for AL, 88% for non-AL, and 3% for CD.

Four survey items represented Category 2A (written, unedited, presumably AL language samples) (Table 20). Both samples from graduate courses' online discussions were consistently recognized as academic language, with 91% of respondents calling the doctoral level discussion language sample AL and 82% calling the master's level discussion AL. The standardized test samples did not fare as well, with only 56% deeming the GRE essay AL and a very low 37% calling the LSAT essay AL. In fact, over half of the respondents (52%) identified the LSAT essay as non-AL. The average agreement rates for Category 2A were 67% for AL,

Table 20

Category 2A: Written, unedited, presumably AL sources

| Source | AL | Not AL | CD |
|--|-----|--------|-----|
| Online discussion post from doctoral-level class | 91% | 5% | 4% |
| Exemplary LSAT essay | 38% | 52% | 10% |
| Exemplary GRE essay | 56% | 27% | 17% |
| Online discussion post from master's-level class | 82% | 12% | 6% |
| Average: | 67% | 24% | 9% |
| Average w/out standardized test essays: | 86% | 8% | 5% |

24% for non-AL, and 9% for CD. Removing the standardized test essays led to the average agreement rates becoming 86% for AL, 8% for non-AL, and 5% for CD.

Six survey items represented Category 2B (written, unedited, presumably non-AL language samples) (Table 21). Apart from one sample—a comment exchange on an Entertainment Weekly article that only a relatively low 61% of respondents considered non-AL—these samples were all heavily identified as being examples of non-AL. Non-AL designations ranged from just over 87% to over 97%. The average agreement rates for Category 2B were 8% for AL, 87% for non-AL, and 5% for CD. Removing the comments on the Entertainment Weekly article led to the average agreement rates becoming 4% for AL, 92% for non-AL, and 3% for CD.

Table 21

Category 2B: Written, unedited, presumably non-AL sources

| Source | AL | Not AL | CD |
|--|-----|--------|-----|
| Minecraft forum discussion | 8% | 87% | 5% |
| Entertainment Weekly article | 3% | 93% | 4% |
| Diary entry | 3% | 97% | 0 |
| Diary entry | 6% | 88% | 5% |
| Gaming forum online discussion | 4% | 93% | 3% |
| Comments on Entertainment Weekly article | 23% | 61% | 16% |
| Average: | 8% | 87% | 5% |
| Average w/out EW article comments: | 5% | 92% | 3% |

Three survey items represented Category 3A (spoken, prepared, presumably academic language) (Table 22). Survey respondents overwhelmingly labeled the samples drawn from the calculus and history lectures AL (97% each). The consensus about the physics lecture, though not quite as overwhelming, was still strong, with 90% of respondents designating the language sample AL. The average agreement rates for Category 3A were 95% for AL, 2% for non-AL, and 3% for CD.

Table 22

Category 3A: Spoken, prepared, presumably AL sources

| Source | AL | Not AL | CD |
|------------------|-----|--------|----|
| Physics lecture | 90% | 6% | 4% |
| History lecture | 97% | 0 | 3% |
| Calculus lecture | 97% | 0 | 3% |
| Average: | 95% | 2% | 3% |

Seven survey items represented Category 3B (spoken, prepared, presumably non-AL language samples) (Table 23). The stand-up comedy routine, TV

Table 23

Category 3B: Spoken, prepared, presumably non-AL sources

| Source | AL | Not AL | CD |
|-----------------------------|-----|--------|-----|
| Rap lyrics | 4% | 87% | 9% |
| Stand-up comedy | 1% | 99% | 0 |
| Weather forecast | 6% | 91% | 3% |
| TV advertisement | 3% | 97% | 0 |
| NBA player interviews | 2% | 95% | 2% |
| Sports TV talk show | 4% | 93% | 3% |
| Storytelling | 13% | 74% | 13% |
| Average: | 5% | 91% | 4% |
| Average w/out storytelling: | 3% | 94% | 3% |

advertisement, and NBA player interviews were overwhelmingly judged to be non-AL (95% to 99% agreement). The rap lyrics, weather forecast, and sports TV talk show were highly judged to be non-AL (87% to 93% agreement). Only the storytelling sample was only moderately judged to be non-AL, with 74% of respondents deeming it AL, 13% calling it non-AL, and 13% not being able to decide. The average agreement rates for category 3B were 5% for AL, 91% for non-AL, and 4% for CD. Removing the storytelling sample led to the average agreement rates becoming 3% for AL, 94% for non-AL, and 3% for CD.

Five survey items represented Category 4A (spoken, unprepared, presumably AL language samples) (Table 24). As a group of language samples presumably representing academic language, Category 4A yielded unexpected results. One of the samples of student talk was heavily judged to be non-AL, with 81% of respondents calling it non-AL and only 14% calling it AL. A second sample of student talk was slightly more regarded as being AL (38% of respondents), but still over half of the respondents (54%) considered it to be non-AL. The last two samples of student talk

Table 24

Category 4A: Spoken, unprepared, presumably AL sources

| Source | AL | Not AL | CD |
|--|-----|--------|-----|
| Student talk: high school English class discussion | 38% | 54% | 8% |
| Teacher talk: high school History class discussion | 74% | 17% | 9% |
| Student talk: high school History class discussion | 49% | 45% | 5% |
| Student talk: high school English class discussion | 14% | 81% | 5% |
| Student talk: high school History class discussion | 49% | 39% | 12% |
| Average: | 45% | 47% | 8% |

were both considered to represent academic language by just under half of the respondents (49% each), failing to qualify as AL in the eyes of even a simple majority, with large percentages of respondents (45% and 39%) calling them non-AL. Only the teacher talk sample was judged to be academic by over half of the survey's respondents (74%), though still 17% of respondents deemed it non-AL. The average agreement rates for category 4A were 45% for AL, 47% for non-AL, and 8% for CD.

Six survey items represented Category 4B (spoken, unprepared, presumably non-AL language samples) (Table 25). The first interview with a pop star and the paternity court dialogue both garnered 94% agreement regarding their non-AL status. The interviews with teenagers, interview with an ex-convict, and interviews with former slaves garnered between 88% and 91% agreement regarding their non-AL status. Only the second interview with a pop star not quite as strongly identified as non-AL, though it still was by 83% of the respondents, with just 10% deeming it AL and 6% being unable to decide. The average agreement rates for category 4B were 5% for AL, 90% for non-AL, and 5% for CD.

Table 25

Category 4B: Spoken, unprepared, presumably non-AL sources

| Source | AL | Not AL | CD |
|-------------------------------|-----|--------|----|
| Interviews with teenagers | 4% | 90% | 6% |
| Interview with pop star | 10% | 83% | 6% |
| Interview with ex-convict | 4% | 91% | 5% |
| Interviews with former slaves | 4% | 88% | 8% |
| Interview with pop star | 4% | 94% | 3% |
| Paternity court dialogue | 4% | 94% | 3% |
| 4B average: | 5% | 90% | 5% |

Analysis of survey participants’ comments. In their comments, survey participants shed light on why they either did or did not consider language samples to be academic language. Broad themes emerged from the comments through survey participants’ focus on the (1) context, (2) vocabulary, (3) formality and style, (4) discourse features and genre, and (5) grammar of the language samples. The vast majority of comments were related to context, which is here divided into four subcategories: (a) the topic or subject matter of the language sample; (b) the source or setting of the language sample; (c) the intended audience of the language sample; and (d) the level of ‘contextualization’ of the language sample. Comments commonly touched upon more than one theme, and it was not uncommon for a theme to trump others in rendering a sample AL or not-AL in one case but to be similarly trumped by other themes in other cases.

Context: Topic or Subject Matter. Comments revealed that a sample’s topic or subject matter influenced survey respondents’ designation of it as AL or non-AL:

| AL designations | Non-AL designations |
|--|---|
| “Academic topic” | “Nonacademic subject matter and treatment” |
| “The language and content here are both academic, traditionally understood.” | “Game description” |
| “References an academic discipline (philosophy).” | “Understandable to anyone with a basic knowledge of and interest in baseball” |
| | “Part of popular culture or sub-culture, not academic” |
| | “The topic, though a possible candidate for academic attention, is rather ribald as is the language.” |

While an important factor, academic subject matter alone was not enough to ensure academic language status. Other language features could call a language sample’s academic language status into question (“too colloquial for written academic

language, though academic in content. Is the latter enough?") or trump academic subject matter altogether and motivate non-AL designations:

| |
|--|
| "The writing is about a scholarly or intellectual interest but uses 'civilian language'." |
| "This is an example of talking about academic subjects, but not in academic language necessarily." |
| "Well, the *content* is clearly something typical of academia ('unreliable narrator') but I can't tell if the particular utterance is in an academic context..." |

Context: Source or Setting. Of the different kinds of comments survey participants made, by far the most common was to conjecture the source of a language sample or the setting in which it was produced. These conjectures occurred whether the participants had deemed the samples academic language, not academic language, or had not been able to decide:

| AL designations | Non-AL designations | Could not decide |
|--|---|--|
| "Could be acad. conference panel dialogue." | "Seems like either a forum or instant messages between people." | "This seems like some sort of in-class discussion possibly." |
| "Appears to be part of a background section of an essay." | "Could appear in an academic journal, but more likely in a real estate magazine/report." | "Difficult to tell whether this is a casual online chat or one associated with a class." |
| "Probably an undergraduate student's response in a literature class, which locates this excerpt within an academic setting." | "I'm defining 'academic language' mostly based on context, and this seems to be a popular news report." | "This sounds like the answer to an exam/essay question." |
| | "Hmm, sounds like someone writing to his therapist about his attractions to various women." | "Clearly from a help forum . . . maybe I'm just responding to imagined context?" |

Whether the guesses were correct or not was not as important as the evidence they provided of context being a major factor in respondents' attributions of academic or non-academic language status to language samples.

Survey participants' comments exhibited the overwhelming importance they ascribed to context and setting for a determination of academic language status:

| |
|--|
| "Depends on context." |
| "Could be in context." |
| "Could be information relevant to an academic paper on gaming, or could be an instruction manual. Unable to decide without context." |
| "For me, 'academic' also relates to the context (e.g., university setting, professional conference, scholarly journal, etc.)." |
| "I'd really want to know more about the context, here and in many of the dialogues." |

The influence of context was so strong that, even though participants had been directed in the survey instructions to consider the language samples in and of themselves, for their language only, and not to be influenced when determining academic or nonacademic language status by whether or not they felt that a language sample could be considered or discussed within an academic setting, comments still frequently indicated that, though a language sample itself was not perceived to represent academic language, the survey participant could imagine it occurring within an academic setting:

| |
|--|
| "But I could imagine this embedded in an academic text." |
| "Could have been discussed in a class." |
| "Could be the object of academic inquiry." |

And that that might even render it constitutive of academic language:

| |
|--|
| "Was it being discussed in class?" |
| "Probably not but it could be, say, part of an interview about access to higher ed. which might tip it." |
| "Unless it was a personal narrative or ethnography type genre." |
| "Academic language if you are trying to analyze this complex rap that includes specialized terms." |
| "Could be academic if the description of what the player does was the prelude to an academic argument concerning the nature of D &D role playing." |
| "Primary history source, oral narrative. AL if used in class. If related in conversation, not AL." |

Another comment in this vein, made by a respondent who couldn't decide if the Biggie Smalls rap was academic language or not, pointed to the importance of using culturally responsive materials in schools:

| |
|--|
| "Could be academic language if used in a poetry lesson in English language arts. The work of |
|--|

Carol Lee comes to mind. I think language like this *should* be present in academic settings so that students who are familiar with this language can see that their experiences belong in academic settings.”

A second pointed to the importance of engaging students’ interests for best performance results:

“I say ‘not academic’ because it would not often be used in a school context. I guess an argument could be made that . . . D&D enthusiasts would respond better in schools if schooling offered space for their interests. The structure is quite similar to academic language, but the context is not (typically) academic.”

And two more, made by respondents who couldn’t decide if the storytelling sample was academic language or not, pointed first to the notion that discussion of race relations is an activity particularly inherent to academic settings and second to the idea that context could trump even specialized vocabulary and render a language sample non-AL:

“This one seems borderline somehow - it is more conversational, but I could see it being used in an academic setting, say in a discussion about race and identity. Most of the structure is quite conversational, but some of the phrasing and vocabulary (e.g., the visibility of First Nations people and indigenous people in the city...) [is academic in nature].”

“Sounds like it could be part of the introduction to an academic lecture. ‘Visibility’ as used here is typical of some academic fields and the careful inclusion of two different terms, ‘First Nations’ and ‘indigenous’ to cover accepted terminology are typical of academic discourse. And this could perfectly well be an introduction to a lecture at an academic conference or in a class, if it comes to that. But there are other contexts in which it might occur outside academia (one can imagine this as part of an interview on a talk show, for example.)”

While these comments edged on conflating context and language, there were also comments that highlighted the distinction between the two:

“Could have been held in academic setting but for me this is not academic language.”

“This excerpt may be a personal account presented in a historical academic work, but as an independent textual unity it is definitely not an example of academic language.”

“Such a text could be discussed by academics, but the text is not academic per se.”

“Could be used in a course but the language is not academic”

Context: Audience. A third aspect of context that survey respondents highlighted in their comments was the intended audience of the language sample. The

presumed audience could contribute to an AL designation (“2nd par. critical point & language makes 1st par. seem intro to engage acad. or acad./civic audience”) or to a non-AL designation:

| |
|--|
| “For a general audience written at 5th grade reading level” |
| “2nd per. pronouns make it sound oriented to popular audience vs. academic, but otherwise it's close.” |
| “There is some specialized vocabulary here but it's still conversational and doesn't appear to be intended for a scholarly audience/context” |

Participants also hedged AL designations by referring to the presumed audience of the language sample:

| |
|---|
| “Perhaps not intended for a scholarly audience” |
| “Acad writing but for a civilian and educated audience” |

Context: Contextualization. According to Cummins’ (1980b) original conceptualization, academic language is “decontextualized.” Respondents’ comments referred to the level of contextualization of the language sample, with more ‘contextualized’ language samples being associated with non-AL:

| |
|--|
| “A good example of ‘contextualized’ language” |
| “Another highly contextualized language sample” |
| “Highly contextualized . . . but I can follow most of it because of my familiarity with basketball, as opposed to #23, which is challenging because I am unfamiliar with Minecraft.” |

Vocabulary. Aside from context, vocabulary was the most commonly cited factor qualifying a language sample as academic language or disqualifying it from being academic language:

| AL designations | Non-AL designations |
|---|--|
| “Specialized vocabulary” | “Lacks AWL (academic word list) vocabulary.” |
| “Rare vocabulary” | “Lack of academic vocabulary” |
| “It seems academic not so much in structure but in vocabulary use.” | “No specialized language” |
| | “Diction is not academic.” |

Considerations of vocabulary could also cause indecision, with one ‘cannot decide’ judgment eliciting the comment, “the wording is a combination of academic and civilian wording.”

The presence of “specialized vocabulary,” “specialized jargon,” “nominalizations,” “abstract nouns,” “low frequency words,” etc., were factors that led to academic language designations. One respondent commented that the use of a word “in a specific sense, as deployed within specific academic field” made a language sample academic. Another indicated that a sample was academic because it “uses everyday terms like truth/justice/love in ways that connect them to specific disciplinary debates.” And others indicated that the presence of a specific word influenced their decision to label a sample academic language (e.g., “specific academic content word: narrator”; “a reliable narrator make this rather obvious”).

The concept of jargon received particular attention. One respondent who called the sample from a sports article academic language explained that it was a “report from a specialized field with jargon, so it fits some of the criteria for academic language.” Meanwhile, at least one non-AL judgement was caveated with the concession that it did contain “specialized jargon,” and one respondent noted, “slang is not actively a part of academic language; jargon is; go figure.” Voices on jargon were not unanimous, though, as one respondent lauded a sample just deemed AL for being “free of jargon,” a second complained that a sample contained “too much jargon to be easily understood,” and a third asked, “is jargon only academic if it's about academic topics?”

While all respondents seemed to concur that vocabulary was important, several commented that vocabulary alone was not enough to ensure a language sample AL status (e.g., “academic language is not merely relegated to word choice, it depends on the focus of the words”). Two respondents who labeled the Minecraft forum discussion non-AL commented that “the topic is about a technology so it has its own lingo, but it isn't academic verbiage” and “there is specialized language in here (nether hub) but it's not academic—it's technical.” The rap lyrics elicited the comment that “not all ‘specialized vocabulary’ constitutes ‘academic language.’” And one respondent simply asked, “lots of technical language...does that make it academic...??”

Formality and Style. The level of formality of language samples was a major theme in survey participants’ comments. Participants felt that a high level of formality was a good reason for an AL judgment:

| |
|---|
| “Formal language” |
| “Obviously not the casual, everyday kind of discussion of material expressions of divinity” |
| “This is an unusually formal way of discussing D&D, so maybe that's why it seems academic to me.” |
| “Lexis and grammar are moderately formal, even though the topic is not.” |

But over affirmation, they felt even more pointedly that informality could disqualify a sample from obtaining AL status:

| |
|---------------------------------------|
| “Informal, conversational” |
| “Informal, nonacademic structure” |
| “Informal narrative of an experience” |

Or could at least detract from AL status:

| |
|--|
| “A mix of academic and informal” |
| “Some lapses into informal discourse” |
| “Academic structure and some phrases e.g. ‘in regards to’ but informal, vague too” |

Commonly cited disqualifiers from AL status on the grounds of formality were if a sample contained slang or profanity, was too colloquial, or contained informal word choice:

| Slang or profanity | Too colloquial | Informal word choice |
|---|--|--|
| “Use of slang” | “The style is often colloquial” | “Informal word selection” |
| “Slang, in spades” | “Academic but has colloquialisms” | “‘cops’ is too informal for written academic language (cf. ‘law enforcement’, ‘police’)” |
| “It could be a discussion in class but the profanity suggests otherwise.” | “‘like’ and similar colloquialisms like ‘in regards to,’ ‘vibe,’ ‘I hated it,’ ‘just’ and ‘kind of’” | |

Respondents frequently cited specific words or expressions whose informality disqualified samples from being academic language:

| |
|--|
| “Informality of wording, like ‘so’” |
| “You guys” |
| “Gonna, well hi there” |
| “‘Lol,’ ‘dang,’ and contraction (‘ve) do not belong to academic writing” |

In addition to focusing on the formality of language samples, survey respondents made copious comments that touched upon their style. Stylistic considerations could make or break a language sample’s AL status—or lead to ‘cannot decide’ judgments:

| Stylistic consideration → AL designation | Stylistic consideration → Non-AL designation | Stylistic consideration → Could not decide |
|--|---|---|
| “Language is more concise.” | “‘um’ and ‘uh’ are never considered parts of academic language.” | “Mostly academic; however, less so when it comes to the sentence-initial instances of ‘and’ or ‘but’” |
| “Professional: matter-of-fact . . . easily understandable” | “Acad writing will not have so many ‘and-coordinated’ clauses.” | “Mostly academic; however, the many instances of ‘like’ cause academicity to decrease.” |
| | “Nonacademic transition words/phrases; overuse of words such as like” | |
| | “[2 nd person] an | |

| | | |
|--|--|--|
| | inappropriate academic device” | |
| | “Some false starts” | |
| | “Fractured sentences” | |
| | “‘PHENOMENAL’ (caps), I thought: ‘hmmm ok’” | |

Sometimes, when samples were deemed academic, aspects of their style were criticized as caveats to their “academicity”:

| |
|--|
| “I tend to dislike the sentence-starting ‘so,’ though.” |
| “On the negative side I would say that the first person plural is overly used.” |
| “‘didn’t’ seems like an odd one out, but this sample is spoken, and in spoken academic language it is possible to use contractions.” |

Some of this criticism evoked the concept of ‘academese’, meaning language that is “deliberately complex, and more concerned with impressing readers than communicating ideas” (Biber & Gray, 2016, p. 1):

| |
|---------------------------------------|
| “The worst kind of academic language” |
| “Awful but academic” |

Meanwhile, some comments on style touched upon substantive issues:

| |
|--|
| “Too many references and not enough content” |
| “Opinionated, unsubstantiated” |
| “Personalized” |

Comments on the student talk samples highlight a developmental aspect of academic language, implying that students had not yet mastered school discourse practices sufficiently for the products of their speech to be considered academic language. Several respondents made it clear that their non-AL judgments were linked to their belief that students were the sources of the samples:

| |
|---|
| “Sounds like a student.” |
| “A student speaking?” |
| “This sounds like a student moving toward using acad. lg. in discussion.” |
| “Attempted academic language??” |
| “Like a student response piece delivered orally, but not as precise or formal as developed acad. lg.” |

Comments that alluded to students' linguistic immaturity followed AL judgments, non-AL judgments, and 'cannot decide' judgments:

| Students' linguistic immaturity following 'AL' judgments | Students' linguistic immaturity following 'non-AL' judgments | Students' linguistic immaturity following 'cannot decide' judgments |
|--|--|---|
| "barely academic" | "topic is academic but the speaker is not using academic language to discuss it" | "this seems like a student speaking in class and attempting to use academic language" |
| "not very articulate" | "about an academic topic but not academic English" | |
| "proto academic" | "technically academic, practically not" | |
| "a bit rambling and the point is weak, but acceptable in a greater context of dialogue as academic language" | | |
| "sounds like student mostly working within acad. lg. with some informal oral slang mixed in" | | |

Meanwhile, from a more positive perspective, some respondents regarded the student speech samples as students working with academic content to develop their school discourse skills:

| |
|--|
| "sounds like student critically thinking & communicating, just with informal hedges & modifiers" |
| "thinking out loud to deepen understanding, sort out what's imp. from what isn't" |
| "and the fact that the person is using details from a text to support an argument as well as the cohesive devices like in regards" |

One respondent who couldn't decide whether a student talk sample was academic language or not articulated this blossoming-discourse-oriented perspective particularly well:

| |
|---|
| Speaker is expressing an opinion based on their experience. However that opinion is offered to support an analytical observation. Repeated use of informal "filler" words (like) also suggests that I might expect this from a student in a class discussion, rather than a teacher/researcher. Not sure if 'student contributions' are included in your definition of 'academic.' But, if they are, this would count because of the attempt at analysis. |
|---|

Discourse Features and Genre. Another major theme in survey participants' comments related to the presence of discourse features that they either associated or did not associate with academic language. The presence of certain discourse features contributed to AL designations, while the presence of others contributed to non-AL designations:

| AL designations | Non-AL designations |
|---|-----------------------------------|
| "citations" | "non-standard punctuation" |
| "quotations" | "a story is told chronologically" |
| "specific textual reference" | |
| "the use of linking expressions" | |
| "transitions are appropriate to an oral presentation" | |

Respondents alluded to (a) participation in a broader discourse as qualifying language samples as AL and (b) lack of such participation as disqualifying language samples from being academic language:

| AL designations | Non-AL designations |
|---|---|
| "relates its claims to a broader argument within an academic field" | "sentences describe/report without offering an analytical framework or references to a wider disciplinary framework through which to view the material" |
| | "no broader analytical framework offered. No attempt to locate claims in relation to a broader academic argument" |

A clear message from respondents' comments was that analysis, as a type of discourse, is a quintessential embodiment of academic language. This belief was expressed following 'AL', 'non-AL', and 'cannot decide' judgments:

| AL designations | Non-AL designations | Could not decide |
|---|---|---|
| "analysis" | "context is biased cross-examination, not unbiased analysis" | "not an academic register, but analysis and reflection" |
| "structurally it is (analysis)" | "neither language or analytical/reflective stance, thus not academic" | |
| "clear, competent analysis of a non-academic subject" | | |

Analysis also inspired caveats to non-AL judgments:

| |
|--|
| “interestingly analytical” |
| “not typically academic language -- but includes analysis and specialized jargon so shares attributes” |

Beyond analysis, other types of discourse were associated with academic language, but type of discourse was more commonly cited to explain non-AL judgments:

| AL designations | Non-AL designations |
|---|--|
| “academic reflection” | “autobiographical” |
| “summary of what speaker believes Thoreau said. Not likely in even an educated conversation outside academia because of the focus on summarizing Thoreau's perspective” | “had trouble deciding, but went with distinction that it's directions, not analysis” |
| | “overall structure is more rhetorical than academic” |

One comment associated explanation with academic language, but not description (“the language is precise and accurate but with regards to weather and description not explanation”). Meanwhile, comments following ‘cannot decide’ judgments offered conflicting perspectives about persuasion, with one respondent associating persuasion with academic language (“again, diction is not academic but structure and content is. (type = Persuasive)”) and another associating it with non-academic language (“this is clearly a professor using theory but for more of a persuasive argument”).

Finally, personal narrative (“has the quality of a narrative . . . too personalized”) and commentary (“this could be spoken in school, but practically-speaking is commentary rather than academic lang”) were considered not to be manifestations of AL, nor decidedly was the mere offering of opinion:

| |
|---|
| “opinion, not analysis or reflection” |
| “clearly in a classroom, but content-wise, this is not what we want our students to do with language—e.g., say what they did and did not like, as opposed to giving a well-structured analysis” |
| “the subject matter, the vocabulary and the sentence structure is academic. However . . . it has |

| |
|--|
| the character of an evaluation where the author is expressing a personal opinion rather than citing expert sources to find fault in an argument or stance” |
|--|

Related to type of discourse, a few comments made broad reference to “nonacademic structure” to explain non-AL judgments, and one read, “I think it’s more the content than anything that seems academic, but the structure doesn’t; so while this clearly took place in a classroom, I’m not sure if it would be considered academic language.” Lastly, two comments following non-AL judgments of samples whose topics involved race relations included caveats that critical thinking is properly part of academic language:

| |
|--|
| “the categorization work being done in the second sentence suggests a possible academic purpose” |
| “but critical thinking is being applied to a social reality many will face” |

Genre also played a significant role in influencing participants’ judgments. The clearest takeaway from comments that pertained to genre was that journalism is not academic language. Corroborating claims in scholarship (e.g., Biber & Gray, 2016), respondents explained non-AL designations with “journalese,” “journalistic prose,” “long-form journalism,” “newscaster-ese, hence not academic,” etc. Other comments underscored the notion that “journalistic” is distinct from academic:

| |
|--|
| “if it’s in an academic context, then yes. If it’s in a journalistic context, then no” |
| “speaker 1’s last sentence is sort of a give-away, if one had not noticed the journalistic patterns in Speaker 1’s initial statement” |
| “the structure of sentences (‘written by . . .’ introductory participial phrase) and the short sentences without connectives, as well as the content, indicate journalistic writing” |

Beyond journalism, there were genres that survey participants identified as constitutive of AL, and there were others that they identified as non-AL, among them storytelling, song lyrics, and poetry:

| AL designations | Non-AL designations |
|---|---------------------|
| “could be a pedagogy reflection genre; could also be acad. professional writing for broader | “story-telling” |

| | |
|--|---|
| audience” | |
| “or op-ed type lg. aimed at public audience” | “cues of story-telling, not academic” |
| | “a comedic story” |
| | “this is possibly lyrics to a rap or hip-hop song” |
| | “rap” |
| | “poetic language” |
| | “it's poetry/song and certainly could have been composed in school but it's not academic” |
| | “this is an example of lyrics or poetry, which, while a higher register, is not academic language traditionally understood” |
| | “clearly artistic usage of language, not academic” |
| | “poetry is another order of discourse” |

Comments offered mixed indications regarding fiction. One comment following a non-AL judgment flatly explained that it came from “a novel or short story,” while a comment following a ‘cannot decide’ judgment indicated that fiction could constitute academic language: “the first paragraph seems more ‘academic’ than the second. I’d guess both are from a short story of some sort, so this could be academic language.” Messages were also conflicting regarding primary sources. Two comments following ‘cannot decide’ judgments indicated that, at the very least, primary sources were not considered to represent bona fide academic language:

| |
|---|
| “this seems to be a primary text: not a category you offer” |
| “primary history source, oral narrative. AL if used in class. If related in conversation, not AL” |

Grammar. Comments on the grammar of language samples were present but minimal. Grammatical considerations could disqualify a language sample from being AL, but more commonly grammar was cited to explain AL designations:

| AL designations | Non-AL designations |
|-------------------|-------------------------------------|
| “complex grammar” | “no complex grammatical structures” |

| | |
|---|---|
| “traditionally accepted grammatical structures” | “in the present” |
| “multiple what-clauses” | “specialized, but not ‘more complex grammar, and special discourse features’ of written language” |
| “use of embedding” | |
| “lots of info is given between clauses so the listener has to wait for the closing grammatical structure” | |

Additionally, three comments addressed the proximity of subjects to their verbs, though their messages were somewhat contradictory. On the one hand, one respondent commented that the fact that “the subjects are things and their verbs are far from the subj” made a sample academic language, and another hedged an AL judgment by conceding that the “verbs stay near their subjects, who are people.” But on the other hand, a third respondent commented that “this is acad lang for an educated public so Subjects near verbs, first SV combo early in sentence.”

Discussion of the findings of the survey. Quantitatively, the results of the survey largely confirmed the hypothesis it tested. In six of the eight categories, significant majorities of survey respondents labeled the presumably AL language samples academic language and the presumably non-AL language samples non-academic language (between an average of 94% to 98% for the presumably AL samples and an average of 83% to 91% for the presumably non-AL samples). In fact, removing the outliers of the Dungeons and Dragons players’ handbook from Category 1B, which as a formal, textbook-style manual struck 31% of survey participants as AL and only 52%—still a majority—as non-AL, along with the samples of storytelling from Category 3B and comments on the Entertainment Weekly article from Category 2B, both of which addressed race relations, the range

of averages of non-AL judgments for presumably non-AL samples increases to from 88% to 94%.

The two categories where the expected judgments were not observed were Category 2A (written, unedited, presumably academic language) and Category 4A (spoken, unprepared, presumably academic language). In Category 2A, the GRE sample was only judged to be academic language by a small majority (56%) of respondents, and the LSAT essay sample was judged to be non-academic language by a small majority (52%) of respondents. In Category 4A, the four student talk samples were all heavily judged to be non-academic language (by 39% to 81% of respondents), and not one of them was judged to be academic language by a simple majority of respondents. As a result, standardized test essays and student talk samples were eliminated from consideration as samples to represent their respective categories. Besides those two exceptions, the quantitative findings of the survey provide support for the conceptual framework of academic language that it tested and for the AL or non-AL status of the individual language samples that it tested.

From a qualitative perspective, a picture emerged of academic language status being determined heavily by context—specifically by the topic being addressed and the setting within which it was produced—as well as by formality, vocabulary, and discourse features, and less so by grammatical considerations. None of these elements reigned supreme, however, so samples that were considered to be more academic with respect to one feature and less academic with respect to another ended up getting judged on a balance.

At a fundamental level, survey participants questioned whether the distinction between academic language and non-academic language is an absolute, black-and-white one in the first place (“mix of academic and nonacademic”; “the first paragraph seems more ‘academic’ than the second”; “if this were a Likert scale, I’d be agreeing it’s academic but not strongly agreeing”). After reading the sample from a weather report, one respondent lamented, “personally, it’s getting a little confusing to differentiate academic language and non-academic language,” and from a more critical perspective, another commented, “I’m concerned that ‘academic language’ is going to be conflated with ‘language of wider communication’ in this study . . . I think the term ‘academic’ is problematic and a little reductive here.”

These concerns could perhaps be mollified through a shift in terminology. Reflecting upon the student talk samples that were so roundly considered not to be representative of academic language, two respondents drew distinctions between “academic” or “disciplinary” language and “pedagogical” or “school” language. The latter two highlight the context and setting where the kind of language development that academic language entails is supposed to take place: the school. Meanwhile, a few respondents used the term ‘academic discourse’ in place of ‘academic language’, highlighting the fact that the various sets of language skills we want students to develop at school are properly discourses, not separate languages, which can reasonably be grouped together, across the K-12 grade levels, as school discourses.

Selection of data sources based on survey results

Guided by the results of the survey, the researcher selected the final data sources for the study. Appendix 2 lists the sources of all 160 100-AS-unit language

samples—80 of academic language and 80 of non-academic language—that were the final data sources for this study. The samples were distributed evenly among the eight categories of the conceptual framework of academic vs. non-academic language. The language samples were also distributed across ten different themes, four for academic language samples and 6 for non-academic language samples. The themes of the academic language samples reflect the four broad areas of academia: humanities (20 100-AS-unit samples), mathematics (15 100-AS-unit samples), the hard sciences (25 100-AS-unit samples), and the social sciences (20 100-AS-unit samples). The themes for non-academic language samples reflect six non-academic areas of interest to people: sports (17 100-AS-unit samples), pop culture (17 100-AS-unit samples), gaming (10 100-AS-unit samples), personal narrative (28 100-AS-unit samples), and vocational (8 100-AS-unit samples).

Category 1A (academic, written, edited) consists of nine samples from academic textbooks and eleven samples from peer-reviewed academic journal articles. Category 2A (academic, written, unedited) consists of four samples from a literature discussion forum, one sample from an online discussion from an undergraduate-level philosophy course, five samples from a mathematics discussion forum, five samples from a physics discussion forum, and five samples from online discussions from a doctoral-level education course. Category 3A (academic, spoken, prepared) consists entirely of samples of university-level academic lectures from online courses available on the edX platform. Category 4A (academic, spoken, unprepared) consists of five samples from an academic panel discussion about literature, ten samples from two academic panel discussions about hard sciences, four

samples from sociological conversations between university professors, and one sample of undergraduate sociology students questioning an argument in class.

On the non-academic side, Category 1B (non-academic, written, edited) consists of five samples from an online gaming magazine, five samples from pop culture print journalism, five samples from sports print journalism, three samples from tabloids, and two samples from a plumbing handbook. Category 2B (non-academic, written, unedited) consists of five samples from gaming blogs and comments, five samples from sports blogs and comments, four samples from comments on a pop-culture newspaper article, two samples from personal letters, and four samples from online diary entries. Category 3B (non-academic, spoken, prepared) consists of five samples from an episode of Fox NFL Sunday, five samples from sports and pop culture radio journalism, two samples from TV commercials during Fox NFL Sunday, two samples of storytelling, and two samples from a cooking show. Finally, Category 4B (non-academic, spoken, unprepared) consists of five samples from an interview with an ex-convict, five samples from an interview with Tupac Shakur, five samples from slave narratives recorded by the 1941 Federal Writers' Project, two samples from interviews with Fannie Lou Hamer, and four samples from interviews with Biggie Smalls and Ice Cube. The selection of samples to represent category 4B was influenced by a desire to ensure that the speakers had relatively low levels of formal education and were speakers of a non-standard dialect of English.

Though purposive, the sampling for this study was strictly principled. Altogether, the 160 samples represent fabrics, so to speak, of academic and non-

academic language. However, there are limitations that could be improved upon in subsequent iterations of this study. First, typically, all 100 AS-units of each sample came from a single source, and just one sample from each source was included in the final data set. However, there were cases where two or more thematically linked sources contributed to individual 100-AS-unit samples, and there were cases when up to five individual 100-AS-unit samples were drawn from a single source (e.g., from an academic discussion panel or a long interview). In a future iteration of this study, a more concerted effort could be made to ensure that all samples in each category come entirely from separate, single sources. Also, an effort was made to draw from different sections of academic journal articles, chapters of textbooks, etc., but it could be done more systematically in a future study.

Second, regarding basing the selection of sources on the results of the survey, to ensure sources' legitimacy as representatives of academic or non-academic language, all sources that were included in the final data set obtained at least an 80% AL or non-AL agreement level, which eliminated formal gaming manuals (category 1B), standardized test essays (Category 2A), and high school-level student talk samples from class discussions (Category 4A). However, two exceptions were made. The first was to include written comments on a pop culture newspaper article in category 2B even though the comments on the Entertainment Weekly article had been designated non-AL by only 61% of survey respondents. The second exception was to retain the same source (<https://themoth.org/>) for the final data set's storytelling samples in category 3B even though the survey's storytelling sample was designated non-AL by only 73% of survey respondents—though a different story was selected to

comprise the bulk of the final data set's two storytelling samples. Both of those low-scoring non-AL language samples happened to include discussion of race relations, which may have motivated AL judgments.

Third, though most of the sources in the final data set were directly supported by samples from the survey, some were not. In Category 2A, the doctoral course online discussion posts are fully supported, but the literature, math, and science forum discussion posts have no direct precedent in the survey. This gap could be remedied in future iterations of this study by exclusively using online discussions from humanities, mathematics, hard sciences, and social sciences doctoral courses for Category 2A samples. Additionally, because Category 4A of the survey was comprised entirely of student and teacher talk samples that failed to meet the 80% threshold, the four academic discussion panels that comprise Category 4A in the final data set have no precedent in the survey.

Despite these limitations, the 160 100-AS-unit samples of the final data set legitimately represent academic and non-academic language. In fact, if anything, the contrast between the 80 academic and 80 non-academic samples is extreme rather than modest. The academic samples come predominantly from highly educated individuals in bona fide academic settings. The non-academic samples, meanwhile, regardless of the education level of their writers or speakers, all hail from settings that are so patently not academic that the comparison between them and the academic language samples is stark in terms of the complexity of the semantic messages the writers and speakers are conveying, so much so that it is unquestionable that there exist copious other valid non-academic language sources that convey much more

complex semantic messages—what MacSwan (2020) calls “complex conceptual understandings” (p. 33)—than those contained in the non-AL language samples of this study’s data set. Exploring such non-academic source possibilities, both in terms of existing language samples and of original interview possibilities, could be a priority in replications of this study.

Unit of analysis

The unit of analysis of this study is the *AS-unit*, or ‘analysis of speech unit’ (Foster et al., 2000). While the AS-unit was developed to apply to spoken language, it derives from the *t-unit*, or ‘minimal terminable unit’ (Hunt, 1965), which was developed to apply to written language. The close connection between these two units makes the AS-unit applicable to both written and spoken language. This connection is described below, focusing first on the t-unit and then on the AS-unit.

The t-unit

Hunt (1965) defines a t-unit as being “one main clause with all the subordinate clauses attached to it” (p. 20). He describes how the t-unit can be used to segment written texts as follows:

A whole piece of writing could be sliced up into units of this sort, just as a rib pork roast is sliced off into chops. The person slicing need only be careful to cut where the joints come instead of cutting into a chunk of solid bone. There should be no trouble deciding whether an expression, if it is intelligible at all, goes with the preceding main clause or the following. (Hunt, 1965, p. 20)

As examples, consider the following two sentences: ‘Tom did the dishes after he finished dinner. Then he watched a movie.’ These two sentences are made up of three

clauses, but they comprise just two t-units. Each sentence consists of a single t-unit. In the first sentence, the main (or independent) clause is ‘Tom did the dishes.’ The subordinate (or dependent) clause that is attached to it is ‘after he finished dinner.’ The second sentence, ‘then, he watched a movie,’ consists of a single main (or independent) clause with no dependent clauses attached to it.³ These two sentences provide support for Hunt’s (1965) commonsensical claim that it should be obvious which independent clause a dependent clause goes with, since ‘after he did the dishes’ clearly modifies the independent clause that precedes it rather than the one that follows it.

Hunt’s (1965) definition of a t-unit does, however, require some clarification regarding what constitutes a clause. For Hunt and others (e.g., Biber & Gray, 2016), a clause can be headed by a tensed (or finite) verb or by an untensed (or non-finite) verb.⁴ Thus the sentence, ‘having finished the dishes, Tom watched a movie’ would be considered to consist of two *clauses*, one independent (‘Tom watched a movie’) and the other dependent (‘having finished the dishes’). In this study, though, only finite verbs are considered to head clauses. Non-finite verbs may head infinitival phrases (e.g., participial phrases) but not clauses. Therefore, the sentence ‘having finished the dishes, the man watched a movie’ is considered to consist of the infinitival (or participial) phrase ‘having finished dinner’ (because ‘having finished’

³ In this study, the terms *independent* and *dependent* are preferred over *main* and *subordinate*.

⁴ In this study, the terms *finite* and *non-finite* are preferred over *tensed* and *untensed*.

is a non-finite verb) and the clause ‘the man watched a movie’ (because ‘watched’ is a finite verb).⁵ Further examples of t-units are provided in Table 26.

This specification regarding the definition of a clause requires a clarification of the definition of a t-unit, because, given these new parameters, there are clearly t-units that consist not just of independent and dependent clauses but also of independent clauses and different kinds of phrases—all phrases being by nature dependent. Perceiving this necessity, Larsen-Freeman (1978) usefully expands Hunt’s (1965) definition of the t-unit to “one main clause plus whatever *subordinate clauses, phrases, and words* happen to be attached to or embedded within it” (p. 441, emphasis added). While preferring the term ‘independent clause’ to ‘main clause,’ this study adopts Larsen-Freeman’s (1978) expanded definition of a t-unit because it describes the unit more comprehensively.

Table 26

Examples of t-units

| T-unit | Description |
|--|---|
| When Mike finished the dishes, he watched a movie. | Dependent clause + independent clause |
| Having finished the dishes, Mike watched a movie. | Participial (ing-infinitival) phrase + independent clause |
| In the middle of the night, Mike watches movies. | 2 prepositional phrases + independent clause |
| Tomorrow, Mike will watch a movie. | Word + independent clause |
| To tell you the truth, Mike loves movies. | To-infinitival phrase + independent clause |

⁵ In this study, the category of infinitival phrases is divided into two subcategories. The first subcategory is to-infinitival phrases, which are headed by to-infinitives and include all phrases (minimum one) governed by those to-infinitives. The second subcategory is ing-infinitival phrases, which are headed by “ing-infinitive” verbs (e.g., *giving*, *being* given, *having* given, *having* been given—that is, active, passive, perfect active, and perfect passive participles when adjectives, and gerunds when nouns) and include all phrases (minimum one) governed by those ing-infinitive verbs.

The AS-unit

While the t-unit is generally satisfactory for the segmentation of written texts, spoken language is sufficiently different from written language to require a different unit for its segmentation. When writing prose—and not doing so with the intention of representing spoken language—people typically write in complete sentences. In conversation, however, people commonly co-construct speech, yielding legitimate utterances that are not formulated in full clauses. For example, Ann may ask Sue, “Where is Mike?” And Sue may answer, “At home.” In this case, if one were to apply the conventions of writing, which typically call for correctly formed sentences, one would have to label Sue’s answer a fragment (*i.e.*, not a full independent clause) because it lacks a subject and a finite verb, and therefore one would also have to deem it prescriptively incorrect even though it is a perfectly natural and acceptable response to the question.

Because of this tendency not to speak in full clauses, as well as other factors like false starts and interruptions, Foster et al. (2000) assert that oral data is “particularly messy” (p. 365) and that it is difficult “to work with the fragmentary and elliptical data which is typical of oral language samples” (p. 357). Further arguing that “the T-unit definition is inadequate to deal with a full analysis of spoken discourse” (p. 360) but nevertheless insisting upon the importance of having a standard unit of analysis that can be used across speech samples by all researchers, Foster et al. (2000) propose the use of the AS-unit, which “takes Hunt’s T-unit as its starting point and then elaborates this to deal with the features characteristic of spoken data” (p. 365).

Foster et al. (2000) defined an AS-unit as “a single speaker’s utterance consisting of *an independent clause, or sub-clausal unit*, together with any *subordinate clause(s)* associated with either” (p. 365). This definition is essentially the same as Hunt’s t-unit definition except for the adjustment that an AS-unit can have as its heart either an independent clause *or* a “sub-clausal unit.” Thus, the AS-unit gives independent status to subclausal units, with *an independent subclausal unit* being deemed to consist of “*either* one or more phrases which can be elaborated to a full clause by means of recovery of ellipsed [sic] elements from the context of the discourse or situation” (Foster et al., 2000, p. 366, emphasis in original).

While adopting Foster *et al.*’s (2000) definition of the AS-unit, as it does with Hunt’s (1965) definition of a t-unit, this study applies Larsen-Freeman’s (1978) terminological clarification to the definition, such that an AS-unit becomes a single speaker’s utterance consisting of an independent clause, or sub-clausal unit, together with any *subordinate clauses, phrases, or words* associated with either.

To illustrate two possible manifestations of an AS-unit—one without and one with an associated subordinate clause, phrase, or word—consider the example given above of Ann’s response to the question of Mike’s whereabouts. As it happened, she responded, ‘at home,’ and that utterance constitutes a single AS-unit. Its recoverable ellipsis is ‘he is,’ and ‘at home’ is an independent, subclausal unit that lacks any associated subordinate clauses, phrases, or words. Meanwhile, if Ann had responded, “at home, cooking dinner,” then ‘at home, cooking dinner’ would also be a single AS-unit. ‘At home’ would still be the independent, subclausal unit constituting the heart of the AS-unit, and ‘cooking dinner’ would be a participial phrase associated with it.

While the AS-unit was developed to account for the “messy” nature of spoken language, as it turns out, written language, especially informal and unedited written language, can be messy too. Written language also includes sentence fragments, whether they are employed for stylistic effect or other reasons. Therefore, if a segmentation unit does not allow for the inclusion of independent, subclausal units, it cannot account for all the elements of real-world written texts. Because the AS-unit does allow for independent, subclausal units but functions exactly as the t-unit does whenever full, independent clauses *are* present, it is the only one of the two units that can fully segment all real-world written and spoken texts. It is therefore the unit of analysis for this study, applied to both spoken and written language samples.

The coding system and coder reliability

Each of the 160 samples of the final data set is comprised of 100 AS-units. It occasionally happened that one or more AS-units were interjected inside another AS-unit, dividing it into two or more pieces. In those cases, AS-unit numbers were additionally labeled with letters *a*, *b*, and so on (e.g., ^{75a}Fiction, all art ⁷⁶I don't care what it is ⁷⁷it could be a painting on the wall ^{75b}invites us to slow down and pay attention). In the segmentation and counting of AS-units, false starts and repetitions were discounted. Also, in cases of reported speech, if the clause reporting the speech was just a simple noun and verb (e.g., ²⁷⁶“And then,” Gomez added, “I wept.”), it was discounted, but if there was any other phrase connected to it, it was counted as its own AS-unit (e.g., ²⁸⁶“This is an existential crisis,” ²⁸⁷said Dayna Frank, the owner of First Avenue in Minneapolis, a regular spot for Prince, the Replacements and Hüsker Dü that opened in 1970”). When full independent clauses were constituents of

another independent clause, they were not counted as independent AS-units but considered noun clauses (e.g., ⁴⁴This is just as true of a Neorealist film like *Bicycle Thief* as it is of a fantasy film like René Clair's *I Married a Witch*). Lastly, question tags (e.g., 'he didn't say that, did he?') were also not counted as individual AS-units.

Before coding the full data set, to ensure reliability of coding the researcher went through a process that began with developing fourteen separate coding tasks for identifying the grammatical features listed in the synthesis of key grammatical features of academic language (Table 15 on page 104). The tasks, which are available in Appendix 3, covered (1) nouns (lexical nouns, pronouns, nominalizations); (2) noun phrases (number of words per noun phrase, appositive noun phrases); (3) modifiers (attributive adjectives pre-modifying nouns, participles pre-modifying nouns, and nouns pre-modifying nouns); (4) comparatives and superlatives; (5) verb tenses and aspects (progressive and perfect); (6) verbal voice (active, passive, and stative); (7) modal verbs and verbal mood (indicative and subjunctive); (8) prepositional phrases (including prepositional phrases that post-modify nouns and prepositional phrases that serve as discourse markers); (9) the length (in number of phrases) of grammatical subjects and objects, along with the use of adverbials as discourse markers; (10) infinitival phrases (including participial phrases and to-infinitive phrases); (11) clauses (including independent clauses and three kinds of dependent clauses: adverb clauses, adjective clauses, and noun clauses); (12) clause initializers (conjunctions, relative adverbs, and relative pronouns); (13) sentence types (simple, compound, complex, and compound-complex); and (14) conditionals (real and unreal).

Detailed sets of instructions were prepared for how to identify the grammatical features, and each task was paired with a sample of academic language that was to be coded for the elements of that task. The researcher coded the samples for all fourteen tasks and sent one task each to professors of linguistics and classics at universities around the United States, asking them to complete the task. Two to five responses were received for each task, and the codings of the professors were compared with those of the researcher. When discrepancies were present, the researcher communicated with the professors to reconcile the differences and make adjustments as necessary.

While this process was productive for promoting coder reliability, the actual process of coding the complete data set, which at a length of 16,000 AS-units (160 samples x 100 AS-units) was quite a large body of natural language data, involved some bootstrapping and refinement as the researcher progressed through the samples. Consistency from beginning to end was of paramount importance, so proofreading and revision were employed during the coding for each grammatical feature. In the interest of maximum clarity and replicability, the following notes share details of the coding process for each feature, and examples of AS-units coded for features are available in Appendix 4.

1. **Noun phrases [4 data points].** A noun phrase could be a single noun all alone or a head noun along with the words (e.g., determiners, adjectives, other nouns) that modify it, or that it governs. In some cases, prepositions were considered parts of noun phrases (e.g., ⁵The uterine mother-of-pearl supplants Uranus' phallus). When equally modified by a preceding

determiner, adjective(s), etc., more than one noun was considered to co-head a single noun phrase (e.g., “Yeats’ early stylistic shifts and themes”). Month and year (e.g., “July 1857”) and city and state (e.g., “Cairo, Illinois”) were also counted as co-headed single noun phrases. Acronyms were counted as single nouns heading their own noun phrases.

Noun phrases were distinguished from appositive noun phrases, and the frequencies of both (1) “non-appositive” noun phrases and (2) appositive noun phrases were tallied. Acronyms and initials following the noun phrases they denote were counted as appositive noun phrases. Using the frequency tallies, (3) the average number of words per noun phrase was calculated for each sample, and (4) the maximum number of words per noun phrase was noted for each sample.

2. **Noun modifiers [4 data points].** Frequencies of (1) attributive adjectives pre-modifying nouns, (2) participles pre-modifying nouns, (3) nouns pre-modifying nouns, and (4) noun + participles pre-modifying nouns (e.g., “a *death-defying* stunt,” “*alcohol-fueled* comedy”). Only noun pre-modifiers were counted; predicate adjectives were not counted. Also, strictly noun + participles pre-modifying nouns were counted, not adjectives or adverbs + participles pre-modifying nouns.
3. **Comparatives and superlatives [1 data point].** Frequencies of comparative and superlative adjectives and adverbs were tallied. Superlative pronouns (e.g., “the best”) were included in the tallies. The

frequencies of comparatives and superlatives were subsequently combined to create a single data point for analysis.

4. **Verbal aspect [2 data points].** Frequencies of occurrences of (1) progressive aspect and (2) perfect aspect verbs were tallied. Combinations of progressive and perfect aspects within single verbs were not tallied, though could be in a future iteration of the study, along with combinations that include passive voice.
5. **Passive voice [1 data point].** Frequencies of passive voice verbs were tallied, including both finite and non-finite verbs. Single words that are passive verbal adjectives (i.e., participles like ‘a beloved father’) were not included in the tally of passives.
6. **Modal verbs, verbal mood, and interrogatives [4 data points].**
Frequencies of (1) expressed modal verbs were tallied. Though it is not commonly considered to be a modal verb, ‘do’ was included in the tally when it was employed in affirmative, declarative statements (e.g., I do declare), but not when it was employed in negative and/or interrogative statements (e.g., he doesn’t like, does he like?). Variety of modal verbs was considered to be a vocabulary matter and therefore was only informally recorded, but the vast majority of modal verbs occurred in both AL and non-AL language samples, with only perhaps a few happening to occur only in one or the other in these particular language samples. In addition to modal verbs, frequencies of (2) subjunctive mood verbs were

tallied, and, as a sort of reverse barometer for AL, frequencies of (3) imperative mood verbs and (4) interrogatives were tallied as well.

7. **Prepositional phrases [2 data points].** Frequencies of prepositional phrases were tallied. No distinction was made between prepositional phrases with different kinds of objects (e.g., a simple noun, a gerund phrase, a noun clause) because no mention of objects of prepositional phrases was found in the literature review, even though that is something that could logically be cited as endowing one “kind” of language with more grammatical complexity than another. A distinction was drawn, however, between (1) prepositional phrases that do not post-modify nouns and (2) prepositional phrases that do post-modify nouns. Typically, prepositional phrases would immediately follow the nouns they post-modify, but in cases where they did not, if there was a clearly identifiable noun that the prepositional phrase was post-modifying, then that prepositional phrase was counted as a noun-post-modifying prepositional phrase. By the same token, if a prepositional phrase happened to immediately follow a noun phrase but functioned adverbially, it was counted as just a prepositional phrase, not a noun-post-modifying prepositional phrase. Lastly, pronoun + prepositional phrases were included in the tally of noun post-modifiers, a practice that could be reconsidered in a future iteration of this study.
8. **Adverbial and prepositional phrases as discourse markers [1 data point].** Adverbial and prepositional phrases that served as discourse

markers were both tallied, and their totals were combined into a single data point for each language sample. Discourse markers signify things like temporal, organizational, causal, and other relations, which are common functions for adverbial and prepositional phrases. Noun phrases that functioned adverbially (e.g., the next day) were included in the tally, but infinitival phrases that functioned adverbially (e.g., that being the case, that said) were not, nor were interjections.

To qualify as a discourse marker, an adverbial or prepositional phrase had to actually *mark* the discourse. It was considered to mark the discourse if it was fronted, or expressed at or nearer to the beginning of the clause it was in. So, as an example, in the AS-unit, “In July 1857, a large crowd of Missourians rode into Cairo, Illinois on a Saturday night,” “in July 1857” is a discourse marker because it is fronted, but “on a Saturday night” is not a discourse marker because it is not fronted, even though they both show temporal relations. If the sentence had read, “In July 1857, on a Saturday night, a large crowd of Missourians rode into Cairo, Illinois,” then both would have been counted as discourse markers, because both would have been fronted.

9. **Grammatical subjects and objects [2 data points].** The number of phrases comprising the grammatical subjects and objects of all AS-units was counted. For example, in the example above, “a large crowd of Missourians” is the grammatical subject of the AS-unit, and it consists of the noun phrase “a large crowd” and the prepositional phrase “of

Missourians.” Meanwhile, the prepositional phrase “of Missourians” consists of the preposition “of” and its object, “Missourians,” which is itself a noun phrase. Therefore, the grammatical subject “a large crowd of Missourians” was counted to consist of a total of three phrases (the noun phrase “a large crowd,” the preposition “of,” which is counted as a phrase in itself, and the noun phrase “Missourians”). Grammatical objects (e.g., “Missourians”) that were part of grammatical subjects (e.g., “a large crowd of Missourians”) were considered to be solely constituents of the grammatical subjects they were part of and were not counted as objects in their own right. However, when not parts of grammatical subjects, the grammatical objects of both verbs and prepositions were identified and their phrases counted. Conjunctions were not included as phrases in phrase tallies. Ultimately, subjects and objects were not distinguished from one another but were counted together, yielding the two data points of (1) average number of phrases per subject/object and (2) maximum number of phrases per subject/object. Appositive noun phrases were counted as separate subjects or objects from the nouns phrases that they were in apposition to.

A grammatical subject or object could consist of a phrase or multiple phrases, or of a clause or multiple clauses, but it may also consist of a combination of phrases and clauses. The main guiding principle by which grammatical subjects and objects were identified, in all cases but especially in phrase-clause combinations, was of restrictiveness. When a

noun phrase was followed by a restrictive relative clause, the noun phrase and the clause together were counted as a single subject or object (e.g., “*The few borderland rescues that we know were performed by all white crowds* were generally undertaken by...”), but when a noun phrase was followed by a non-restrictive relative clause (e.g., “Amanda Smith, *whose parents* were African American Underground Railroad activists in Lancaster County, Pennsylvania, recounted...”), the noun (“Amanda Smith”) and the subject of the relative clause (“whose parents”) were counted as separate subjects. When restrictive relative clauses were included in subjects or objects, the relative pronoun or adverb and the finite verb of the relative clause were counted together as one phrase (accounting for the common occurrence of null relative pronouns), but when non-complement noun phrases (e.g., what he said, why he said it) were subjects or objects, their relative pronouns or adverbs were counted in addition to their finite verbs. Lastly, when to-infinitive verbs complemented and shared subjects with the finite verbs of restrictive clauses (e.g., the idea he tried to express), for the purposes of counting the phrases comprising the subject or object, the verbs were counted together as co-heading a single verb phrase.

Typically, restrictive relative clauses begin with the relative pronoun ‘that’, but they can also begin with other relatives (e.g., “went into *the room where his wife lay in bed*”) or even preposition plus relative pronoun combinations (e.g., “*the decade for which we have the most complete*

statistics on fugitive slave cases,” which could also be expressed as “the decade *that* we have the most complete statistics on fugitive slave cases *for*”). Ultimately, the principle of restrictiveness determines the contours of all subjects and objects because it captures the full extent of the semantic relationships that must be taken into consideration in order to understand the totality of the meaning being conveyed by the grammatical subject or object. This same principle applies to combinations of phrases, typically prepositional phrases but also participial phrases that post-modify nouns (e.g., “...were generally undertaken by *small communities especially committed to the cause of abolitionism*,” which could also be expressed with the full, finite dependent clause, “*small communities that were especially committed to the cause of abolitionism*”).

In this study, when two noun clauses together were grammatical subjects or objects of the same verb, they were considered one subject or object, and all the phrases comprising them were counted together. However, when three or more noun clauses were grammatical subjects or objects of the same verb, they were counted separately as three subjects or objects. This distinction was maintained consistently throughout the full data set, but in future iterations of the study it could be better to combine noun clauses regardless of number.

10. **Infinitival phrases [2 data points].** Two kinds of infinitival phrases were tallied. The first was ing-infinitival phrases (participial and gerundive phrases). The second was to-infinitival phrases, which consist of to-

infinitive head verb and any phrases (minimum one) associated with it. To-infinitival phrases were counted when they stood alone, functioning adverbially, and also when they complemented finite verbs, except when they were part of “going to” and “have to” constructions (i.e., when the same meaning could be expressed by a modal verb).

11. Dependent clauses [3 data points]. Three kinds of dependent clauses were identified and their frequencies tallied: (1) adverb clauses, (2) adjective clauses, and (3) noun clauses. Adverb clauses begin with a relative adverb and modify a finite verb in another clause. Adjective clauses begin with a relative pronoun (or null pronoun) and modify a noun in another clause. Noun clauses include both traditional noun clauses (e.g., “what she said,” “what he did”) and also verb-complement clauses (e.g., “he said *that he was tired*”). The logic behind this combination of noun and verb-complement clauses is that “*that he was tired*” is the thing that he said (he said *something* → he said *that he was tired* → *that he was tired* was *what he said*), so the verb-complement clause really is functioning as a noun. By these definitions, these three kinds of clauses were sufficient to code all the dependent clauses among the 16,000 AS-units that comprised the data set for this study.

12. Clause-initial conjunctions [1 data point]. The frequency of clauses that began with conjunctions (e.g., and, but, or, so) was tallied. Clauses beginning with ‘so’ were included in the tally when ‘so’ functioned as a

conjunction (meaning ‘*and therefore*’) but not when it functioned as a relative adverb (meaning ‘*in order that*’).

13. Conditionals [1 data point]. The frequency of conditionals was tallied.

Real (indicative mood) and unreal (subjunctive mood) conditionals were tallied separately, but their totals were combined into one data point for analysis. Conditionals with subclausal components (e.g., “if so, then...”) were included in the tally.

14. Nominalization [1 data point]. Frequencies of nominalizations were tallied. As discussed in section 3.1, single word nominalizations were considered a matter of vocabulary and therefore not included in the frequency tallies. Three kinds of nominalizations were identified and included in the tally: gerund phrases, certain to-infinitival phrases, and certain noun clauses. All gerund phrases were counted as nominalizations, whether they functioned as the subjects or objects of verbs or as the objects of prepositions. When followed by ing-infinitival phrases, ‘before’ and ‘after’ were considered to be prepositions (viz., ‘before Christmas’, ‘after Christmas’, *‘when Christmas’) and the ing-infinitival phrases were themselves seen as gerunds and thus included in the tally as nominalizations. This practice was maintained consistently throughout the coding, but it could be reconsidered in a future iteration of this study.

To-infinitival phrases that functioned as the subject of a verb were counted as nominalizations, but to-infinitival phrases that were verb complements (e.g., “he wants *to have fun*”) were not counted as

nominalizations, except for those that followed the linking verb ‘to be’ (e.g., the point is *to have fun*”, which were counted as nominalizations.

While traditional noun clauses (e.g., *what she said*; *where she went*) were all counted as nominalizations, verb-complement noun clauses (beginning with ‘that’) were not included in the tally (e.g., I never said *that Petruchio was cruel*), with no exception for the linking verb ‘to be’ in this case. If a noun clause beginning with ‘that’ preceded the verb for which it served as subject (e.g., “*that he lied* is amazing to me”), it was counted as a nominalization, but if the noun clause was displaced to the predicate by the pronoun ‘it’ (e.g., “*it* is amazing to me *that he lied*”), the noun clause was not considered a nominalization. The pronoun ‘it’ was considered to “de-nominalize” in this way in all cases, just as being prepositioned to the verb for which it served as subject had a strong nominalizing effect for infinitival phrases.

A claimed grammatical feature of academic language that is not measured by a single, discrete variable is hierarchical structuring. Schleppegrell (2001) contrasted hierarchical clause structuring to emergent structure, with hierarchical structure being obtained through the incorporation of dependent clauses and infinitival phrases into sentences, while emergent structure involves the mere stringing together of independent clauses. Corroboratively, s-nodes, which provide a means of measuring syntactic complexity, are defined as finite and infinite verbs (Long *et al.*, 2018; Althowaini, 2018). Hierarchical structuring is therefore measured in this study by

combining the three dependent clauses and two infinitival phrases it tallies into a single data point.

Data analysis

Research questions one through four asked a very particular, basic question. That question was whether grammatical features that have been commonly claimed in the educational research literature to be especially constitutive of academic language are attested, or are present, in (1) spoken samples of academic language, (2) written samples of academic language, (3) spoken samples of non-academic language, and (4) written samples of non-academic language. To answer this question, as detailed in the previous section, the researcher tallied the frequency of 29 different grammatical features in all 160 language samples, 25 of which were recorded as pure frequencies and 4 of which as averages of tallied frequencies. The results are presented in the next chapter as averages of the 25 tallied frequencies and averages of the averages of the 4 tallied frequencies.

Research question five asked whether there were significant differences between AL and non-AL language samples, both spoken and written, with respect to the extent to which common claims about the grammatical features of AL were attested in them. Answering this question required more sophisticated statistical analysis. To address the violation of normality assumption that a linear regression imposes and the over-dispersion of the count data, a series of negative binomial regression analyses were conducted. It is not surprising that the data had nonnormal distributions or that they were overdispersed, because the entire population was a set of clustered units rather than a homogenous set of individuals. Instead of using a

genuinely random sample, the population was categorized into families: academic vs. non-academic, written vs. spoken, and edited/prepared (edprep) vs. unedited/unprepared (unedprep). Within those families, or clusters, similarities are expected, and differences are expected across them, so, overall, variances that are greater than the means are expected.

The dependent (or outcome) variables for the negative binomial regressions were 26 of the 29 grammatical features that had been tallied.⁶ The independent variables were the categorical variables of academic vs. non-academic, written vs. spoken, and edited/prepared vs. unedited/unprepared. Of the 26 dependent variables that were subjected to negative binomial regression analyses, 25 exhibited the best goodness of fit with the negative binomial model with the ancillary parameter estimated (as opposed to it being fixed to 1). In addition to yielding the lowest Akaike's Information Criterion (AIC) and Bayesian Information Criterion (BIC) values, the ratio of the deviance to the degrees of freedom (value/df) was between 1.002 and 1.108 for 15 of the outcome variables and between 1.111 and 1.185 for 10 variables, all which values are very close to 1. Meanwhile, for the dependent variable of noun + participles pre-modifying nouns, the best goodness of fit was achieved with the negative binomial model with log fixed to 1 (value/df = 0.904), and for the dependent variables of appositive noun phrases and interrogatives, the best fit was achieved by setting the negative binomial to 0.7 (respective values/df of 1.004 and

⁶ Frequencies of noun phrases were tallied primarily to determine average noun phrase length, so their regression results are not reported in this section, though they are mentioned briefly in the discussion. Maximum number of words per noun phrase and maximum number of phrases per subject or object were tallied for descriptive purposes only, so they were not included as dependent variables for the negative binomial regressions.

1.058 compared to 1.206 and 1.221 with the ancillary parameters estimated, and modest to no improvements in AIC and BIC values).

For 24 of the 26 dependent variables, the omnibus test yielded significant results ($p < 0.05$), most commonly at the $p < 0.001$ level, indicating that the model incorporating the three predictor variables was a significant improvement in fit over the null model, or intercept-only model, with no predictors. For the dependent variable of adverbial and prepositional phrases as discourse markers, SPSS was unable to compute the initial model log likelihood because of numerical problems. Only for the dependent variable of ‘conditionals’ did the omnibus test result not reach significance, though it nearly did ($p = 0.052$). Overall, the omnibus test results for the 29 dependent variables support the validity of the model used for the analysis.⁷

The results reported in the next chapter include the results for each dependent variable on the tests of model effects and parameter estimates. In all cases, the predictor variables were coded as 1 for AL, written, and edited/prepared, and 0 for non-AL, spoken, and unedited/unprepared. When a test of model effects is significant ($p < .05$), the predictor variable individually (i.e., regardless of the other variables) explains a significant amount of the variability in the outcome variable. When a test

⁷ In the tests of model effects and/or the parameter estimates for the 26 dependent variables, the model yielded a total of 45 significant interaction effects among the three independent variables. Fifteen of the significant interaction effects were two-way interactions between the academic/nonacademic and written/spoken factors, thirteen were two-way interactions between the academic/nonacademic and edprep/unedprep factors, nine were two-way interactions between the written/spoken and edprep/unedprep factors, and eight were three-way interactions among all three factors. In-depth analysis of the interaction effects is beyond the scope of this study, which is more concerned with main effects, but as a general note, the number and nature of the interactions corroborated the hypothesis that the written/spoken and edprep/unedprep factors would serve as intervening variables that would predictably influence the log counts of the various grammatical features (the outcome variables) among AL and non-AL language samples.

of parameter estimates is significant ($p < .05$), the predictor variable explains a significant amount of the variability in the outcome variable when all the other predictors are reference groups.

Within the tests of parameter estimates, the unstandardized regression coefficient (B) reflects the expected change in the predicted log count of the outcome variable for every one unit increase on a predictor variable (i.e., for academic as opposed to non-academic, written as opposed to spoken, and edprep as opposed to unedprep samples), with positive values indicating expected increases in log counts as the variable shifts from 0 to 1 and negative values indicating expected decreases in log counts as the variable shifts from 0 to 1. In this study, unstandardized regression coefficients are generally expected to be positive, indicating increased log count of features in AL over non-AL, written over spoken, and edited/prepared over unedited/unprepared language samples. Cases that do not conform to that expectation are discussed.

Finally, again with regard to the tests of parameter estimates, the exponential beta (ExpB) is reported for each dependent variable. The ExpB provides the incidence rate ratio (IRR), which represents the predicted change in the incidence rate per unit increase on the predictor, with (a) values greater than one indicating that with increasing scores on the predictor, the incidence rate changes by a factor of the IRR and (b) values less than one indicating that with increasing scores on the predictor, the incidence rate decreases by a factor of the IRR. Because all three predictor variables in this study are nominal variables with the same unit (0 or 1), the IRR

indicates the amount of the overall variability for which each of the parameters accounted.

Findings

Findings are reported in two sections. The first section addresses research questions one through four, and the second section addresses research question five.

Research questions 1-4

Research questions one through four asked whether grammatical features that have been commonly claimed in the educational research literature to be especially constitutive of academic language are attested in (1) spoken samples of academic language, (2) written samples of academic language, (3) spoken samples of non-academic language, and (4) written samples of non-academic language. These are basic but, from an empirical perspective, important questions. They were addressed by tallying the frequencies of twenty-five grammatical features and the lengths of four grammatical features in eighty AL and eighty non-AL language samples.

The findings from the 160 language samples are presented as averages and standard deviations in Table 27.⁸ Range is included for the categories of “maximum length (in words) of noun phrases’ and ‘maximum length (in phrases) of grammatical subjects and objects’. For both variables, the ranges are similar across the four categories. Surprisingly, both the highest number of words in a single noun phrase and the highest number of phrases in a single grammatical subject or object occurred in non-AL language samples.

⁸ A limitation of this study is that it did not include a precise counting of embedded clauses.

Table 27***Tallies of 29 grammatical features commonly associated with AL***

| Grammatical feature | Academic | | | | Non-academic | | | |
|---|----------------------|-------|----------------------|-------|----------------------|-------|----------------------|-------|
| | Written | | Spoken | | Written | | Spoken | |
| | Avg | SD | Avg | SD | Avg | SD | Avg | SD |
| Noun phrases (non-appositive) | 483.45 | 93.28 | 408.20 | 64.42 | 407.25 | 72.87 | 337.23 | 49.45 |
| Appositive noun phrases | 12.45 | 18.22 | 6.4 | 6.6 | 10.08 | 11.71 | 3.75 | 4.01 |
| Average length (in words) of noun phrases | 1.91 | 0.19 | 1.71 | 0.16 | 1.88 | 0.21 | 1.65 | 0.18 |
| Maximum # words per noun phrase | 6.75 Range: 4-10 | 1.45 | 6.15 Range: 4-10 | 1.21 | 7.00 Range: 5-10 | 1.41 | 6.15 Range: 3-12 | 1.82 |
| Attributive adjectives pre-modifying nouns | 104.20 | 44.92 | 65.40 | 28.11 | 67.33 | 31.48 | 34.05 | 16.74 |
| Nouns pre-modifying nouns | 51.08 | 47.46 | 65.38 | 28.06 | 54.35 | 33.93 | 25.48 | 16.86 |
| Participles pre-modifying nouns | 15.73 | 10.09 | 6.42 | 4.32 | 11.17 | 8.15 | 4.88 | 4.24 |
| Noun + participles pre-modifying nouns | 1.30 | 2.28 | 0.35 | 0.80 | 1.30 | 1.52 | 0.20 | 0.46 |
| Comparatives and superlatives | 8.08 | 5.6 | 6.20 | 5.17 | 6.95 | 4.54 | 3.55 | 2.94 |
| Progressive | 5.95 | 5.54 | 10.70 | 6.32 | 8.10 | 4.99 | 12.77 | 7.34 |
| Perfect | 7.85 | 5.45 | 7.30 | 5.37 | 12.78 | 6.28 | 7.17 | 5.21 |
| Passive | 26.95 | 16.01 | 13.13 | 10.47 | 15.50 | 8.48 | 7.78 | 5.39 |
| Expressed modal verbs | 24.55 | 12.73 | 26.00 | 12.34 | 22.10 | 8.56 | 16.68 | 8.05 |
| Subjunctive mood | 12.10 | 10.47 | 9.70 | 5.88 | 8.13 | 3.55 | 6.75 | 4.76 |
| Imperative mood | 3.83 | 6.07 | 1.43 | 1.72 | 4.72 | 10.86 | 5.75 | 9.20 |
| Interrogatives | 2.73 | 3.77 | 5.80 | 3.84 | 2.52 | 2.59 | 3.08 | 2.80 |
| Prepositional phrases (not noun-post-modifying) | 118.75 | 34.05 | 82.28 | 20.75 | 99.10 | 24.93 | 69.48 | 16.71 |
| Prepositional phrases (noun post-modifying) | 102.15 | 40.80 | 64.70 | 28.10 | 55.20 | 22.49 | 27.63 | 11.14 |
| Adverbial and prepositional phrases as discourse markers | 29.65 | 11.36 | 27.33 | 10.72 | 29.23 | 10.68 | 22.05 | 9.17 |
| Average length (in phrases) of grammatical subjects and objects | 2.38 | 0.36 | 2.05 | 0.27 | 1.96 | 0.26 | 1.68 | 0.19 |
| Maximum # phrases per grammatical subject / object | 15.70 Range: 8-22 | 3.44 | 15.33 Range: 8-27 | 3.93 | 15.58 Range: 8-39 | 6.57 | 13.60 Range: 8-34 | 5.17 |
| Ing-infinitival phrases | 29.35 | 13.10 | 13.78 | 6.93 | 25.33 | 9.59 | 11.68 | 5.97 |
| To-infinitival phrases | 27.23 | 10.62 | 22.18 | 9.89 | 23.90 | 7.29 | 19.73 | 9.04 |
| Adverb clauses | 21.90 | 10.31 | 19.60 | 6.93 | 19.25 | 6.67 | 20.75 | 9.09 |
| Adjective clauses | 25.60 | 10.25 | 27.08 | 10.69 | 20.88 | 8.96 | 14.98 | 6.92 |
| Noun clauses | 24.90 | 14.49 | 31.00 | 13.15 | 19.75 | 6.99 | 19.87 | 8.81 |
| Clause-initial conjunctions | 18.05 | 5.75 | 38.12 | 14.65 | 24.20 | 7.04 | 34.15 | 13.92 |
| Conditionals | 3.72 | 3.95 | 3.77 | 3.61 | 3.35 | 3.85 | 3.00 | 2.66 |
| Syntactic nominalizations | 23.52 | 9.77 | 23.40 | 11.01 | 20.53 | 6.15 | 15.63 | 6.29 |

Research question 5

Research question five asked whether there are significant differences between written and spoken, AL and non-AL language samples with respect to the extent to which common claims about the grammatical features of AL are attested in them. This question was addressed through the negative binomial regression analyses. The findings for research question 5 are presented below according to the dependent variables' performance on the tests of model effects and parameter estimates.

On the tests of model effects, the AL/non-AL factor yielded significant results for 18 of the 26 dependent variables and non-significant results for 8 of the 26 dependent variables. The significant and non-significant results are listed in Table 28.

Table 28

Negative binomial regression results: Test of model effects for the AL/non-AL factor

| Significant results | <i>p</i> | Non-significant results | <i>p</i> |
|---|----------|---|----------|
| 1. Average length (in words) of noun phrase | .031 | 1. Appositive noun phrases | .074 |
| 2. Attributive adjectives pre-modifying nouns | <.001 | 2. Nouns pre-modifying nouns | .354 |
| 3. Participles pre-modifying nouns | <.001 | 3. Noun + participles pre-modifying nouns | .525 |
| 4. Comparatives and superlatives | <.001 | 4. Interrogatives | .057 |
| 5. Progressive aspect verbs | <.001 | 5. To-infinitival phrases | .053 |
| 6. Perfect aspect verbs | .017 | 6. Adverb clauses | .434 |
| 7. Passive voice verbs | <.001 | 7. Clause-initial conjunctions | .057 |
| 8. Subjunctive mood verbs | <.001 | 8. Conditionals | .200 |
| 9. Expressed modal verbs | <.001 | | |
| 10. Imperative mood verbs | <.001 | | |
| 11. Prepositional phrases (not noun post-modifying) | <.001 | | |
| 12. Prepositional phrases (noun post-modifying) | <.001 | | |
| 13. Prepositional and adverbial phrases as discourse markers | .024 | | |
| 14. Average length (in phrases) of grammatical subjects and objects | <.001 | | |
| 15. Ing-infinitival phrases | .020 | | |
| 16. Adjective clauses | <.001 | | |
| 17. Noun clauses | <.001 | | |
| 18. Nominalizations | <.001 | | |

On the tests of parameter estimates, the AL/non-AL parameter yielded significant results for 13 of the 26 dependent variables and non-significant results for the other 13. Interestingly, two of the dependent variables that did not yield significant results in the test of model effects, ‘noun + participles pre-modifying nouns’ and ‘interrogatives’, did yield significant results in the test of parameter estimates. These significant and non-significant results are listed in Table 29.

Table 29

Negative binomial regression results: Test of parameter estimates for the AL/non-AL parameter

| Significant results | | <i>p</i> | Non-significant results | | <i>p</i> |
|---|--|----------|---------------------------------|--|----------|
| 1. Average length (in words) of noun phrase | | .023 | 1. Appositive noun phrases | | .329 |
| 2. Attributive adjectives pre-modifying nouns | | <.001 | 2. Nouns pre-modifying nouns | | .877 |
| 3. Participles pre-modifying nouns | | .002 | 3. Progressive aspect verbs | | .609 |
| 4. Noun + participles pre-modifying nouns | | .040 | 4. Perfect aspect verbs | | .126 |
| 5. Comparatives and superlatives | | .004 | 5. Passive voice verbs | | .808 |
| 6. Interrogatives | | .002 | 6. Subjunctive mood verbs | | .489 |
| 7. Prepositional phrases (not noun post-modifying) | | .038 | 7. Expressed modal verbs | | .081 |
| 8. Prepositional phrases (noun post-modifying) | | <.001 | 8. Imperative mood verbs | | .083 |
| 9. Prepositional and adverbial phrases as discourse markers | | .001 | 9. Ing-infinitival phrases | | .141 |
| 10. Average length (in phrases) of grammatical subjects and objects | | <.001 | 10. To-infinitival phrases | | .066 |
| 11. Adjective clauses | | <.001 | 11. Adverb clauses | | .061 |
| 12. Noun clauses | | <.001 | 12. Clause-initial conjunctions | | .098 |
| 13. Nominalizations | | .001 | 13. Conditionals | | .103 |

The unstandardized regression coefficients (B) in the tests of parameter estimates were most frequently positive, indicating as expected that in most cases higher log counts were associated with AL- over non-AL, written over spoken, and edited/prepared over unedited/unprepared language samples. There were, however, some exceptions worth noting. B was negative on the AL/non-AL parameter for ‘nouns pre-modifying nouns’, indicating that nouns pre-modifying nouns were

common in non-AL language samples. Meanwhile, for both ‘progressive aspect verbs’ and ‘clause initial conjunctions’, B was positive on the AL/non-AL parameter but negative on the written/spoken and edprep/unedprep parameters, indicating that progressive aspect verbs and clause-initial conjunctions were common in AL language samples, spoken language samples, and unedited/unprepared language samples.

Surprisingly, for ‘passive voice’, B was negative on the AL/non-AL parameter, positive on the written/spoken parameter, and negative on the edprep/unedprep parameter, indicating that passive voice was common in non-AL language samples, written language samples, and unedited/unprepared language samples. Unsurprisingly, B was negative on the AL/non-AL and written/spoken parameters for imperative mood, indicating that imperative mood verbs are common in non-AL and spoken language samples.

B was positive on all three parameters for interrogatives, indicating that questions are common in AL language samples, written language samples, and edited/prepared language samples. It was negative on all three parameters for both ‘adverb clauses’ and ‘conditionals’, indicating that adverb clauses and conditionals are common in non-AL language samples, spoken language samples, and unedited/unprepared language samples. Lastly, while as would be expected B was positive for ‘noun clauses’ on the AL/non-AL parameter, it was negative on the written/spoken parameter, indicating that noun clauses are common in spoken language samples.

Turning finally to data regarding the exponential B (ExpB) and incidence rate ratio, of the thirteen significant results in the tests of parameter estimates, in three cases—1- 'average length (in words) of noun phrases', 2- 'participles pre-modifying nouns', and 3- 'comparatives and superlatives'—both the written/spoken and edprep/unedprep parameters had higher Exp(B) values than the AL/non-AL parameter, indicating that they had higher IRRs and accounted for more of the variability than the AL/non-AL parameter (see Table 30).

Table 30

Negative binomial regression results: Incidence rate ratios, part one

| Dependent variable | Parameter | Exp(B) |
|---|-----------------|--------|
| Average length (in words) of noun phrases | AL_non-AL | 1.057 |
| | Written_spoken | 1.157 |
| | Edprep_unedprep | 1.173 |
| Participles pre-modifying nouns | AL_non-AL | 2.171 |
| | Written_spoken | 3.488 |
| | Edprep_unedprep | 3.756 |
| Comparatives and superlatives | AL_non-AL | 2.068 |
| | Written_spoken | 2.955 |
| | Edprep_unedprep | 2.227 |

In another four of the thirteen significant results in the tests of parameter estimates—1- 'attributive adjectives', 2- 'noun + participles pre-modifying nouns', 3- 'prepositional phrases (not noun post-modifying)', and 4- 'prepositional and adverbial phrases as discourse markers'—either the written/spoken parameter or the edprep/unedprep parameter had a higher Exp(B) value than the AL/non-AL parameter, indicating that one other parameter (in the first three cases the written_spoken parameter, and in the fourth case the edprep_unedprep parameter) had a higher IRR and accounted for more of the variability than the AL/non-AL parameter (see Table 31).

Table 31***Negative binomial regression results: Incidence rate ratios, part two***

| Dependent variable | Parameter | Exp(B) |
|--|-----------------|--------|
| Attributive adjectives | AL_non-AL | 2.129 |
| | Written_spoken | 2.222 |
| | Edprep_unedprep | 1.797 |
| Noun + participles pre-modifying nouns | AL_non-AL | 5.500 |
| | Written_spoken | 9.000 |
| | Edprep_unedprep | 3.000 |
| Prepositional phrases (not noun post-modifying) | AL_non-AL | 1.173 |
| | Written_spoken | 1.307 |
| | Edprep_unedprep | 1.125 |
| Prepositional and adverbial phrases as discourse markers | AL_non-AL | 1.504 |
| | Written_spoken | 1.372 |
| | Edprep_unedprep | 1.527 |

Finally, in the last six of the thirteen significant results in the tests of parameter estimates—1- ‘interrogatives’, 2- ‘prepositional phrases (noun post-modifying)’, 3- ‘average length (in phrases) of subjects and objects’, 4- ‘adjective clauses’, 5- ‘noun clauses’, and 6- ‘syntactic nominalizations’—the AL/non-AL parameter had the highest Exp(B) value of the three parameters, indicating that the AL/non-AL parameter had the highest IRR and accounted for more of the variability than either of the other two parameters (see Table 32).

Table 32***Negative binomial regression results: Incidence rate ratios, part 3***

| Dependent variable | Parameter | Exp(B) |
|---|-----------------|--------|
| Interrogatives | AL_non-AL | 2.680 |
| | Written_spoken | 1.400 |
| | Edprep_unedprep | 1.460 |
| Prepositional phrases (noun post-modifying) | AL_non-AL | 2.309 |
| | Written_spoken | 2.016 |
| | Edprep_unedprep | 1.478 |
| Average length (in phrases) of subjects and objects | AL_non-AL | 1.245 |
| | Written_spoken | 1.192 |
| | Edprep_unedprep | 1.111 |
| Adjective clauses | AL_non-AL | 1.897 |
| | Written_spoken | 1.135 |
| | Edprep_unedprep | .932 |
| Noun clauses | AL_non-AL | 1.605 |
| | Written_spoken | .938 |
| | Edprep_unedprep | .828 |
| Syntactic nominalizations | AL_non-AL | 1.495 |
| | Written_spoken | 1.329 |
| | Edprep_unedprep | .959 |

Discussion

Regarding research questions one through four, the findings of this study clearly indicate that common claims about the grammatical features of academic language are attested in (1) AL speech samples, (2) AL writing samples, (3) non-AL speech samples, and (4) non-AL writing sample. All the grammatical features that have commonly been claimed to be especially associated with academic language and, moreover, to endow it with enhanced grammatical complexity are abundantly attested in both AL and non-AL speech and writing samples. This study empirically demonstrates that there is no categorical difference between the grammar of academic language and the grammar of non-academic language. There was no grammatical feature that occurred in AL language samples but did not occur in non-AL language samples. Had that occurred, it would have opened a potential avenue by which academic language could possibly be shown to be grammatically more complex than non-academic language. But it simply did not.

Regarding the study's fifth research question, in the negative binomial regression analyses, while the tests of model effects showed significant differences between AL and non-AL language samples for 18 of the 26 grammatical features that were analyzed, the parameter estimates, which controlled for the written-spoken and edited/prepared-unedited/unprepared predictors, showed significant differences between AL and non-AL language samples for only 13 of the 26, or half, of the grammatical features. And even among those 13 significant results in the parameter estimates, for three of them, both the written/spoken and edprep/unedprep parameters predicted more of the variability in log counts than the AL/non-AL parameter did;

and for another four of them, either the written/spoken parameter (three cases) or the edprep/unedprep parameter (1 case) predicted more of the variability in log counts than the AL/non-AL parameter did. In only six cases (one of which was interrogatives) did the AL/non-AL parameter account for more of the variability than both other predictors.

While indeed a minority of cases, when considered together, the grammatical features that displayed the greatest frequency differences do have implications for pedagogy. Two of the features, (1) noun-pre-modifying prepositional phrases and (2) average length (in phrases) of grammatical subjects/objects, imply the existence of large semantic units. In other words, students need to know to read or listen to multiple phrases to get the full meaning of what is being imparted. The more phrases, the more compounding of meaning. The more compounding of meaning, the greater the semantic complexity. And the greater the semantic complexity, the greater the need to know how to read and listen for whole semantic units. That is a practical skill. It represents the building of knowledge. It is done using very basic syntactic building blocks and can manifest itself as subtly as by the consistent use of grammatical subjects and objects that consist of a noun phrase plus one noun-post-modifying prepositional phrase as opposed to a single noun phrase all alone. Of course, the numbers of phrases can grow higher, but teachers can deliberately teach students the habit and skill of reading for such semantic complexity.

Secondly, the significant results for adjective phrases, noun phrases, and syntactic nominalizations have implications regarding the hierarchical structuring of

language.⁹ Again, reading for hierarchical structure, which can manifest itself over the course of a large language sample through the consistent inclusion of even modest numbers of dependent clauses or infinitival phrases in AS-units, is a habit and a practical skill that can be deliberately taught and practiced. That is what going to school is for, and it is an eminently achievable task. After all, even though adjective clauses, noun clauses and syntactic nominalizations were among the grammatical features with the biggest statistical differences on the AL/non-AL parameter, per 100 AS-units, readers of AL versus non-AL language samples were reading on average just 26 instead of 21 adjective clauses, or just 25 instead of 20 noun clauses. Listeners were hearing on average just 23 instead of 16 grammatical nominalizations. The differences do not sound overwhelming.

These implications for pedagogy notwithstanding, the picture painted by the binomial regression analyses is murky at best in terms of its support for the claim of a superior grammatical complexity of academic language. It also elicits the question, where lies the onus of proof? Under normal circumstances, the onus lies on the claimant to prove a claim. The case of academic language did not follow this natural pattern, but if it had, findings from this study suggest that it might have had difficulty clearing an initial bar. There are neither categorical differences nor clear quantitative differences between AL and non-AL language samples with respect to the grammatical features that comprise them. These two facts do not portend a verifiable superior grammatical complexity of “academic” over “non-academic” language.

⁹ Combination adverb clauses, adjective clauses, noun clauses, ing-infinitival phrases and to-infinitival phrases into a single data point holistically reflecting hierarchical structuring yielded similarly significant negative binomial regression results.

Conclusion

The findings of this study call into question the claim that academic language employs more complex grammar than non-academic language. Its findings warrant further investigation comparing the grammatical features of AL and non-AL language samples, to include the collection of original language samples through interviews, the use of crowdsourced sources, and the use of a corpus-based approach, and recognizing that, in accordance with conceptualization of academic vs. nonacademic language that this study's survey corroborated, "non-academic language" can convey greater varieties of "complex conceptual understandings" (MacSwan, 2020, p. 33) than were here considered.

The dubiousness of the grammatical third of the definition of academic language indicates that it should no longer be accepted as a unitary entity. Spolsky (1984) was correct to warn against CALP that "rather than becoming more precise, acronyms encourage greater vagueness," and that compared to the "strict rules and formal procedures for the naming of new stars and new species," we are too loose "in the human and social sciences . . . about terminological innovation" (p. 41). Edelsky et al. (1983), too, were correct when they insisted that the literacy skills kids need to develop in school are "not a separate entity" but "an extension of communicative competence" (p. 12), which, as a sociolinguistic construct, has always been unabashedly multidimensional. Uccelli and Phillips Galloway (2017) themselves even called academic language "a set of discourse practices" (p. 8).

Given the prominence of discussion of discourse features in AL research, it seems the natural conclusion what is currently thought of as the unitary construct of

academic language should be reconceptualized as non-unitary sets of school discourse practices. Mastery of the school discourses that occur at each grade level (i.e., the discourse of second grade, the discourse of fifth grade, etc.) both supports and is supported by vocabulary building throughout students' K-12 educations. Those grade-level school discourses entail the practical skills that teachers want their students to master before they move on to the next grade. After all, that is what success in school is all about: building the vocabulary and discourse skills necessary to move on to whatever next challenges await.

Reconceptualizing academic language as various school discourses neutralizes the deficit perspective and classical prescriptivist criticisms of academic language, and it more accurately frames the goals students seek to accomplish in school. They do not have to accomplish the huge, daunting, obscure goal of mastering "academic language." They just have to become familiar with and comfortable executing basic discourse practices, the cumulative mastery of which eventually culminates in high levels of literacy.

Reconceptualizing academic language as various school discourses also paves the way for the more asset-based pedagogical approach of truly valuing students' home languages and using them to promote their academic success. The school discourse practices students must master can be accomplished in any variety of any language. The knowledge students show, the ideas they have, the arguments they make, the evidence they provide, etc., are more important than the language through which they do those things on any given occasion. By focusing on school discourse practices instead of academic language, educators and educational researchers can

create a linguistic climate in American schools that will be more conducive to the proliferation of strong bilingual education programs and may eventually lead to a multilingual education system for all.

Appendix A: Sources of the survey's language samples

Category 1A: The survey's written, edited, presumably AL language samples

1. De la Croix, D., Doepke, M., & Mokyr, J. (2017). Clans, guilds, and markets: Apprenticeship institutions and growth in the preindustrial economy. *The Quarterly Journal of Economics*, 133(1), 1-70. Page 2.
 2. Abramson, J. (senior contributing author). College Algebra. Openstax at Rice University. Published February 13, 2015. Digital ISBN-13: 978-1-947172-12-8. <https://openstax.org/details/books/college-algebra>. Accessed January 21, 2019. Page 259.
 3. Richardson, T. H. (2016). Emerson, Thoreau, Fuller, and Transcendentalism. *American Literary Scholarship*, 2016(1), 3-22. Page 5.
 4. Zedalis, J., & Eggebrecht, J. (senior contributing authors). Biology for AP Courses. Openstax at Rice University. Published March 2, 2018. Digital ISBN-13: 978-1-947172-41-8. <https://d3bxy9euw4e147.cloudfront.net/oscms-prodcms/media/documents/APBiology-OP.pdf>. Accessed January 21, 2019. Page 604.
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Category 1B: The survey's written, edited, presumably non-AL language samples

1. King, G.A. III. (October 17, 2019). The approach Yankees must take in crucial ALCS Game 4. New York Post. <https://nypost.com/2019/10/17/the-approach-yankees-must-take-in-crucial-alcs-game-4/>.
 2. Heinsoo, R., Collins, A., & J. Wyatt. (2008). Dungeons and Dragons Player's Handbook. Roleplaying game core rules. 620-21736720-001 EN. Page 8.
 3. Radar Staff. (2019 January 22). Chyna hits back after child protective services called following 'drunk weekend'. The National Enquirer. Radar Online. <https://radaronline.com/exclusives/2019/01/blac-chyna-cps-dream-king-cairo-child-protective-services/>. Accessed January 23, 2019.
 4. Rice, L. (2019 January 22). James Gandolfini's son Michael to play Tony in Sopranos prequel. Entertainment Weekly. <https://ew.com/movies/2019/01/22/james-gandolfini-son-michael-young-tony-sopranos-prequel/>. Accessed January 23, 2019.
 5. Zatarain's Crab Boil Ad. <https://images.app.goo.gl/fSMFqV8PTpQSGU39>.
 6. Madonna injured, postpones 'Madame X' concert in Brooklyn. By Nadine DeNinno. October 7, 2019. <https://nypost.com/2019/10/07/madonna-injured-postpones-brooklyn-madame-x-show/>.
 7. Quirk, Robert E. When You Come Home: A Wartime Courtship in Letters, 1941-45.
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Category 2A: The survey's written, unedited, presumably AL language samples

1. University of Maryland. College of Education. Doctoral level course. Online Discussion. Student post.
 2. The LSAT writing sample: An exemplary essay. Copyright 1997-2012 by Mark Stewart. <http://www.west.net/~stewart/lsat/writing-sample-model-essay.htm>. Accessed January 25, 2019.
 3. Graduate Record Examinations. Practice General Test #3. Analytical Writing Sample Essays and Commentaries. https://www.ets.org/s/gre/accessible/gre_practice_test_3_writing_responses_18_point.pdf.
 4. University of Maryland. College of Education. Master's level course. Online discussion. Student post.
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Category 2B: The survey's written, unedited, presumably non-AL language samples

1. Exchange between Chrispodhola and Hexalobular. Minecraft Forum. July 8, 2019. <https://www.minecraftforum.net/forums/minecraft-java-edition/discussion/2971612-went-through-nether-portal-to-find-my-base-missing>.
 2. Entertainment Weekly. 10/14/19. The Batman casts Zoe Kravitz as Catwoman. Comments. <https://ew.com/movies/2019/10/14/the-batman-zoe-kravitz-catwoman/>.
 3. Anonymous Male. Daily Thoughts. "Thoughts from yesterday." 10/23/19. MyDiary.org. <https://www.my-diary.org/read/e/546002187/thoughts-from-yesterday#blue>.
 4. Ann Handley. Four Diary Entries. (August 29, 2008). <https://annhandley.com/four-diary-entries/>.
 5. Marteebe. (5/5/2019 & 6/24/2019). What game are you playing right now? Joyfreak. <https://www.joyfreak.com/threads/what-game-are-you-playing-right-now.738/>.
 6. Miley Cyrus apologizes for 'racially insensitive' comments about hip-hop. June 12, 2019. Comments. <https://ew.com/music/2019/06/12/miley-cyrus-apologizes-for-insensitive-hip-hop-comments/>.
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Category 3A: The survey's spoken, prepared, presumably AL language samples

1. DavidsonNext: Phy1_APccxAP® Physics 1: Challenging Concepts. EdX. https://courses.edx.org/courses/course-v1:DavidsonNext+Phy1_APccx+2T2018/courseware/Acceleration/LC1_Position_versus_Time_Graphs_for_Uniform_Acceleration/?child=first.
 2. Lectures from IsraelX: ISLAM101x. Arab-Islamic History: From Tribes to Empires. <https://courses.edx.org/courses/course-v1:IsraelX+ISLAM101x+2T2018/course/>. Pre-Islamic Arabia: The Local Scene. <https://courses.edx.org/courses/course-v1:IsraelX+ISLAM101x+2T2018/courseware/52f5c4f0d054436c8e443a84e4769802/a7aaf7a629654237ae44be13a3eb7878/?child=first>.
 3. Calculus applied! Lecture. HarvardX. <https://courses.edx.org/courses/course-v1:HarvardX+CalcAPL1x+2T2018>.
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Category 3B: The survey's spoken, prepared, presumably non-AL language samples

1. The Notorious B.I.G. Juicy.
<https://www.google.com/search?q=biggie+smalls+lyrics&oq=biggie+smalls+lyrics&aqs=chrome..69i57j0l5.5559j0j4&sourceid=chrome&ie=UTF-8>.
 2. JohnnyCarson. (March 28, 2011). Eddie Murphy's Stand Up Comedy Routine (FULL), First Appearance on Johnny Carson Show.
<https://www.youtube.com/watch?v=w1TKGtai7og>.
 3. Today's National Weather Forecast. (9/18/2013). The Weather Channel.
<https://www.youtube.com/watch?v=t2aWyRtnRCg>.
 4. Mouse Trap from Milton Bradley. TV advertisement. <https://youtu.be/ZpbvIHYpZoA>.
 5. NBA's Most Savage Interviews, Part 1.
<https://www.youtube.com/watch?v=1r82HjnhF4w>.
 6. NFL Full Games 2019/2020. (October 22, 2018). 0:06 / 53:42
FOX NFL Sunday FOX Oct 21, 2018.
<https://www.youtube.com/watch?v=AyAAAbIzSKE>.
 7. Falen Johnson. March 12, 2015. Invisible Toronto. The Moth.
<https://themoth.org/stories/invisible-toronto>.
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Category 4A: The survey's spoken, unprepared, presumably AL language samples

1. Student talk. Class Discussion: "A Honest Exit" (1 of 4). (Nov 28, 2012). Fenwick Television. <https://www.youtube.com/watch?v=VY5beo9FQy4>.
 2. Teacher talk. The Hun School of Princeton. (Feb. 5, 2019). 10th Grade U.S. History Harkness Discussion-Uncut. <https://www.youtube.com/watch?v=O4pF83SIeyo>.
 3. Student talk. The Hun School of Princeton. (Feb. 5, 2019). 10th Grade U.S. History Harkness Discussion-Uncut. <https://www.youtube.com/watch?v=O4pF83SIeyo>.
 4. Student talk. Class Discussion: "A Honest Exit" (1 of 4). (Nov 28, 2012). Fenwick Television. <https://www.youtube.com/watch?v=VY5beo9FQy4>.
 5. Student talk. Class Discussion: "A Honest Exit" (1 of 4). (Nov 28, 2012). Fenwick Television. <https://www.youtube.com/watch?v=VY5beo9FQy4>.
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Category 4B: The survey's spoken, unprepared, presumably non-AL language samples

1. Racing the past: Voices from the Apache Rez. (March 7, 2015). Christianrozierfilm.
https://www.youtube.com/watch?v=1_L6FdOaOS8.
 2. Big Daddy Kane interview. 10/14/19. The Source. NDSmith.
<https://thesource.com/2019/10/14/big-daddy-kane-interview/>.
 3. LAHWF. (July 7, 2019). Chatting with an Ex-Convict.
<https://www.youtube.com/watch?v=WxZeP0PiFzI>.
 4. Slave narratives: A folk history of slavery in the United States from interviews with former slaves. <https://www.loc.gov/resource/mesn.021/?sp=8>.
 5. Biggie72971. (March 19, 2012). Rare Biggie Smalls Interview + Freestyle!
<https://www.youtube.com/watch?v=Lv8PdI477ks>.
 6. Paternity Court. (September 25, 2018). Man Says He Has Zero Spiritual Energy With This Child (Full Episode). Paternity Court.
<https://www.youtube.com/watch?v=IWmCUaDs6-g>.
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Appendix B: The final data sources of the study

The following eight tables list the sources from which were drawn the 160 100-AS-unit samples of academic and non-academic language that were analyzed in this study.

Table 33

Category 1A: Academic, written, edited sources

| # | Description | Details |
|-------------------|--|---|
| 1 (100 AS-units) | Humanities: History journal article | Churchill, R. H. (2018). When the Slave Catchers Came to Town: Cultures of Violence along the Underground Railroad. <i>Journal of American History</i> , 105(3), 514-537. |
| 2 (100 AS-units) | Humanities: Modern Literature journal article | Khalifa, R. (2020). “The Echo-Harbouring Shell”: Of Shells and Selves in Paul Valéry and WB Yeats. <i>Journal of Modern Literature</i> , 43(2), 1-20. |
| 3 (100 AS-units) | Humanities: History textbook | Corbett, P.S., Janssen, V., Lund, J.M., Pfannestiel, T., <i>et al.</i> (senior contributing authors). U.S. History. Openstax at Rice University. Published December 30, 2014. Digital ISBN-13: 978-1-947172-08-1. |
| 4 (100 AS-units) | Humanities: Music journal article | Winters, B. (2010). The non-diegetic fallacy: Film, music, and narrative space. <i>Music and Letters</i> , 91(2), 224-244. |
| 5 (100 AS-units) | Humanities: Philosophy journal article | Schaffer, J. (2010). Monism: The priority of the whole. <i>The Philosophical Review</i> , 119(1), 31-76. |
| 6 (100 AS-units) | Mathematics: College Algebra textbook | Abramson, J. (senior contributing author). College Algebra. Openstax at Rice University. Published February 13, 2015. Digital ISBN-13: 978-1-947172-12-8. |
| 7 (100 AS-units) | Mathematics: Mathematics journal article | Simpson, C. T. (1990). Harmonic bundles on noncompact curves. <i>Journal of the American Mathematical Society</i> , 3(3), 713-770. |
| 8 (100 AS-units) | Mathematics: Calculus textbook | Strang, G., & Herman, E.J. (senior contributing authors). Calculus. Volume 1. Openstax at Rice University. Published March 30, 2016. Digital ISBN-13: 978-1-947172-13-5. |
| 9 (100 AS-units) | Mathematics: Calculus textbook | Strang, G., & Herman, E.J. (senior contributing authors). Calculus. Volume 1. Openstax at Rice University. Published March 30, 2016. Digital ISBN-13: 978-1-947172-13-5. |
| 10 (100 AS-units) | Mathematics: Applied Mathematics journal article | Akman, D., Akman, O., & Schaefer, E. (2018). Parameter estimation in ordinary differential equations modeling via particle swarm optimization. <i>Journal of Applied Mathematics</i> , 2018. |
| 11 (100 AS-units) | Hard sciences: Biology | Al-Mathkoori, R., Albatineh, A., Al-Shatti, M., & Al-Taiair, A. (2018). Is age of menarche among school girls related to |

| | | |
|-------------------|--|--|
| | journal article | breastfeeding during infancy?. American Journal of Human Biology, e23122. |
| 12 (100 AS-units) | Hard sciences: Biology textbook | Zedalis, J., & Eggebrecht, J. (senior contributing authors). Biology for AP Courses. Openstax at Rice University. Published March 2, 2018. Digital ISBN-13: 978-1-947172-41-8. |
| 13 (100 AS-units) | Hard sciences: Chemistry journal article | Ma, S., Hwang, S., Lee, S., Acree Jr, W. E., & No, K. T. (2018). Incorporation of Hydrogen Bond Angle Dependency into the Generalized Solvation Free Energy Density Model. <i>Journal of chemical information and modeling</i> , 58(4), 761-772. |
| 14 (100 AS-units) | Hard sciences: Chemistry textbook | Flowers, P., Theopold, K., Langley, R., & Robinson, W.R. (senior contributing authors). Chemistry. Openstax at Rice University. Published March 11, 2015. Digital ISBN-13: 978-1-947172-09-8. |
| 15 (100 AS-units) | Hard sciences: Physics textbook | Wolfe, G., Gasper, E., Stoke, J., Kretchman, J., et al. (senior contributing authors). College Physics for AP Courses. Openstax at Rice University. Published August 12, 2015. Digital ISBN-13: 978-1-947172-17-3. |
| 16 (100 AS-units) | Social Sciences: Economics journal article | De la Croix, D., Doepke, M., & Mokyr, J. (2018). Clans, guilds, and markets: Apprenticeship institutions and growth in the preindustrial economy. <i>The Quarterly Journal of Economics</i> , 133(1), 1-70. |
| 17 (100 AS-units) | Social Sciences: Education journal article | White, M. C. (2018). Rater performance standards for classroom observation instruments. <i>Educational Researcher</i> , 47(8), 492-501. |
| 18 (100 AS-units) | Social Sciences: Economics textbook | Greenlaw, S.A., & Shapiro, D. (senior contributing authors). Principles of Economics 2e. Openstax at Rice University. Published October 11, 2017. Digital ISBN-13: 978-1-947172-37-1. Accessed January 21, 2019. |
| 19 (100 AS-units) | Social Sciences: Psychology textbook | Spielman, R.M., Dumper, K., Jenkins, W., Lacombe, A., et al. (senior contributing authors). Psychology. Openstax at Rice University. Published December 8, 2014. Digital ISBN-13: 978-1-947172-07-4. |
| 20 (100 AS-units) | Social Sciences: Sociology journal article | Bonacich, E. (1972). A theory of ethnic antagonism: The split labor market. <i>American sociological review</i> , 547-559. |

Table 34

Category 2A: Academic, written, unedited sources

| # | Description | Details |
|-------------------------|---|---|
| 1-4 (400 AS-units) | Humanities: Online literature discussion forum | The Literature Network Forums. Thread: May 15 Reading: Tropic of Cancer. (http://www.online-literature.com/forums/showthread.php?81911-May-15-Reading-Tropic-of-Cancer). Thread: Christmas Reading: Snow by Orhan Pamuk. (http://www.online-literature.com/forums/showthread.php?80865-Christmas-Reading-Snow-by-Orhan-Pamuk). Thread: Taming of the Shrew: Act V. (http://www.online-literature.com/forums/showthread.php?22859-Taming-of-the-Shrew-Act-V). |
| 5 (100 AS-units) | Humanities: Philosophy course online discussion | HarvardX: ER22.1xJustice. Lecture 7 Discussion. Lecture #07: John Locke -- Property Rights (Course Justice edX). |
| 6-10 (500 AS-units) | Mathematics: Mathematics discussion forum | Wolfram Community. An SEIR like model that fits the coronavirus infection data. Enrique Garcia Moreno E., University of Helsinki. (https://community.wolfram.com/groups/-/m/t/1888335). Including comments. |
| 11-15 (500 AS-units) | Hard sciences: Physics discussion forum | Physics Discussion Forum. Two-photon pair production: a technical issue? Sep. 19, 2019. (https://physicsdiscussionforum.org/two-photon-pair-production-a-technical-issue-t1781.html). Thread: Need help, new theory of gravity? Feb. 3, 2018. (https://physicsdiscussionforum.org/need-help-new-theory-of-gravity-t1442.html). Including comments. |
| 16-20 (500 AS-units) | Social Sciences: Doctoral course online discussion | EDCI 788D: Foundations in Applied Linguistics Research in Education. Div II Core 2. Spring 2016. Pre- and post-reading reflections (Weeks 6, 7, 9 & 13). College of Education. University of Maryland, College Park. |

Table 35

Category 3A: Academic, spoken, prepared sources

| # | Description | Details |
|-------------------|--|---|
| 1 (100 AS-units) | Humanities: History lectures | IsraelX: ISLAM101 Arab-Islamic History: From Tribes to Empires. “The Transition Period after Muhammad’s Death” & “Rashidun: the Rightly Guided Caliphs and the First Islamic State.” Arab-Islamic History: From Tribes to Empires edX. |
| 2 (100 AS-units) | Humanities: World literature lectures | HarvardX HUM12x Masterpieces of World Literature. “Goethe in Weimar,” “Goethe's Garden House,” “Introducing Johann Peter Eckermann,” & “Episodes and Themes From the Epic of Gilgamesh.” Course Masterpieces of World Literature edX. |
| 3 (100 AS-units) | Humanities: Music lectures | HarvardX: MUS24.3x First Nights - Beethoven's 9th Symphony and the 19th Century Orchestra. “What is a Symphony I - The Four Movements (Beethoven 04)” & “What is a Symphony II – Themes.” First Nights - Beethoven's 9th Symphony and the 19th Century Orchestra edX. |
| 4 (100 AS-units) | Humanities: Philosophy lectures | HarvardX: ER22.1x Justice. Lecture 7. John Locke: Property Rights. Course Justice edX. |
| 5 (100 AS-units) | Humanities: Literature lectures | HarvardX: Hum3.2x Shakespeare's The Merchant of Venice: Shylock. “Shylock and Jessica” & “Friendship Bonds, Marriage Bonds.” Shakespeare's The Merchant of Venice: Shylock edX. |
| 6 (100 AS-units) | Mathematics: Calculus applied lectures | HarvardX CalcAPL1x Calculus Applied! “1.1.1 Video: What Makes a Good Question?” “1.2.1 Video: Parameters of a Question,” “1.3.1 Video: Item Response Curves” & “1.4.1 Video: The Item Response Model.” Course Calculus Applied! edX. |
| 7 (100 AS-units) | Mathematics: Engineering Calculus lectures | HKUx: HKU11xEngineering Calculus and Differential Equations. Chapter 4: Parametric Equations and Polar Coordinates. “Parametrizations of Plane Curves: Video 1 and Video 2.” Engineering Calculus and Differential Equations edX. |
| 8 (100 AS-units) | Mathematics: Linear Algebra lectures | MITx: 18.033x Differential Equations: Linear Algebra and NxN Systems of Differential Equations. “Complex eigenvalues: Rotation matrix” & “Eigenspaces: Finding eigenvalues and eigenvectors: a 2 by 2 example.” Differential Equations: Linear Algebra and NxN Systems of Differential Equations edX. |
| 9 (100 AS-units) | Mathematics: Probability lectures | HarvardX: PH125.3x Data Science: Probability. “Random Variables” & “Sampling Models.” Data Science: Probability edX. |
| 10 (100 AS-units) | Mathematics: Calculus lectures | DavidsonNext: Cal_AP_BCx AP® Calculus BC. “Euler’s Method LC1: The Method and Examples.” AP® Calculus BC edX. |
| 11 (100 AS-units) | Hard sciences: Physics lectures | DavidsonNext: Phy1_APccx AP® Physics 1: Challenging Concepts. Acceleration: “LC1: Position versus Time Graphs for Uniform Acceleration” & “LC2: Velocity & Acceleration versus Time Graphs for Uniform Acceleration.” AP® Physics 1: Challenging Concepts edX. |
| 12 (100 AS-units) | Hard sciences: Molecular | MITx - 7.28.1x Molecular Biology - Part 1: DNA Replication and Repair. “The Structure of DNA” & “DNA replication.” Molecular Biology - Part 1: DNA Replication and Repair edX. |

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|-------------------|---|--|
| | biology lectures | |
| 13 (100 AS-units) | Hard sciences: Chemistry lecture | MITx: 3.012Sx Structure of Materials. Unit 3: “Symmetry in 2D Crystals.” Course Structure of Materials edX . |
| 14 (100 AS-units) | Hard sciences: Environmental Science lectures | DartmouthX: DART.ENVS.02x Introduction to Environmental Science. Non-Renewable Energy (Week 4). Fossil Fuel Generation of Steam and Electricity: “The Dartmouth Powerplant.” Energy Concepts: “Energy Concepts” & “Coal, Oil and Natural Gas.” Introduction to Environmental Science edX . |
| 15 (100 AS-units) | Hard sciences: Astronomy lectures | WasedaX: ASTRO112x Cosmic Rays, Dark Matter, and the Mysteries of the Universe. “Connection of Cosmology and Particle Physics.” Cosmic Rays, Dark Matter, and the Mysteries of the Universe edX . |
| 16 (100 AS-units) | Social Science: Developmental Psychology lectures | UQx - PSYC1030.2x Introduction to Developmental Psychology. “Nature and nurture,” “Senses: Vision,” “Senses: Hearing” & “Senses: Taste and touch.” Introduction to Developmental Psychology edX . |
| 17 (100 AS-units) | Social Science: Macroeconomics lectures | UC3Mx: ECO.2x Fundamentals of Macroeconomics. “2.4.1 The price levels and the Consumer Price Index,” “2.4.2 The Consumer Price Index and the GDP deflator,” “2.4.3 Comparing economic variables across time,” “2.5 Summing up.” Fundamentals of Macroeconomics edX . |
| 18 (100 AS-units) | Social Science: Sociology lectures | WellesleyX: SOC101Global Sociology. Part 1: Introducing the sociological imagination. “Who is C. Wright Mills and why is he important?” & “Big theory, classical theory.” Course Global Sociology edX . |
| 19 (100 AS-units) | Social Science: Political Science lectures | HarvardX: HKS101A_3 Citizen Politics in America: Public Opinion, Elections, Interest Groups, and the Media. Political parties: “Political parties video lecture.” Course Citizen Politics in America: Public Opinion, Elections, Interest Groups, and the Media edX . |
| 20 (100 AS-units) | Social Science: Criminal Psychology lectures | UQx: Crime101x The Psychology of Criminal Justice. Episode 3: Identifying the Suspect. “The line-up: Reducing bias,” “The line-up: Simultaneous or sequential?” & “The line-up: Choosing the foils.” Course The Psychology of Criminal Justice edX . |

Table 36***Category 4A: Academic, spoken, unprepared sources***

| # | Description | Details |
|----------------------|---|---|
| 1-5 (500 AS-units) | Humanities: Academic panel discussion | “Moral Imagination: A discussion of literature and moral awareness.” May 12 2011. University of Washington College of Arts & Sciences. UWcas. https://www.youtube.com/watch?v=8mJXSN2dByE . |
| 6-10 (500 AS-units) | Hard Sciences: Academic panel discussions | “Panel Discussion: Translating Academic Innovation to Biotechnology Development.” UC Berkeley Events. Feb 6, 2015. https://www.youtube.com/watch?v=EJhk8AqdBNo . & “In Conversation: J. Craig Venter.” The Aspen Institute. Jun 26, 2016. https://www.youtube.com/watch?v=ELlhwU0IKRo . |
| 11-15 (500 AS-units) | Hard Sciences: Academic panel discussion | “The Great Debate - What is Life?” March 7, 2013. Arizona State University Origins Project. TheScienceFoundation. https://www.youtube.com/watch?v=xIHMnD2FDeY . |
| 16-20 (500 AS-units) | Social Sciences: Sociological discussions | WellesleyX: SOC101Global Sociology. “Everyday theory and the significance of sociology,” “Why to love theory,” “The sociological imagination as a springboard for theory,” “The power of comparative study and the global future of sociology,” “What is distinctively sociological?” “Wellesley Students Question Rivoli's Argument.” Course Global Sociology edX . |

Table 37

Category 1B: Non-academic, written, edited sources

| # | Description | Details |
|---------------------|-------------------------------------|--|
| 1-5 (500 AS-units) | Gaming: Gaming magazine articles | <p>PC Gamer: The Global Authority on PC Games. US Edition. "PC Gamer UK February issue: Phoenix Point." By PC Gamer. January 10, 2019. (https://www.pcgamer.com/pc-gamer-uk-february-issue-phoenix-point/). "AMD Ryzen 4000 – Zen 3 CPU release date, specs, pricing, and performance." By Jacob Ridley. May 3, 2020. (https://www.pcgamer.com/au/amd-ryzen-4000-release-date-specs-performance/). "The Stardew Valley Expanded mod feels like a proper expansion." By Lauren Morton. May 8, 2020. (https://www.pcgamer.com/the-stardew-valley-expanded-mod-feels-like-a-proper-expansion/). "Gorgeous cyberpunk adventure VirtuaVerse is out today." By Shaun Prescott. May 12, 2020. (https://www.pcgamer.com/gorgeous-cyberpunk-adventure-virtuaverse-is-out-today/). "This mod gives Geralt a dad bod." By Christopher Livingston. May 12, 2020. (https://www.pcgamer.com/this-mod-gives-geralt-a-dad-bod/). "The Witcher books: beginner's guide and reading order." By Rob Dwiar. January 11, 2021. (https://www.pcgamer.com/the-witcher-books/). "PC Gamer UK November issue: Control." By PC Gamer. September 20, 2018. (https://www.pcgamer.com/pc-gamer-uk-november-issue-control/). "Wasteland 3 developer diary deep dives on character creation." By Shaun Prescott. May 18, 2020. (https://www.pcgamer.com/wasteland-3-developer-diary-deep-dives-on-character-creation/). "Dominate 9th century England with these Assassin's Creed Valhalla tips." By Jared Oloman. November 12, 2020. (https://www.pcgamer.com/assassins-creed-valhalla-release-date-trailer-gameplay/). "Microsoft Flight Simulator system requirements have been released." By Shaun Prescott. April 21, 2020. (https://www.pcgamer.com/microsoft-flight-simulator-system-requirements/). "Get rich quick with these Mount & Blade 2: Bannerlord cheats." By Christopher Livingston. July 28, 2020. (https://www.pcgamer.com/mount-blade-2-bannerlord-cheats/). "The best Mount & Blade 2: Bannerlord mods." By Christopher Livingston. July 28, 2020. (https://www.pcgamer.com/best-mount-and-blade-2-bannerlord-mods/).</p> |
| 6-10 (500 AS-units) | Pop Culture: Print Journalism | <p>The New York Times. "Dua Lipa Craved a Fun '80s Dance Song. See How She Made 'Physical.'" By Joe Coscarelli. May 7, 2020. (https://www.nytimes.com/2020/05/07/arts/music/dua-lipa-physical.html). "The Best Movies and TV Shows Coming to Netflix, Amazon and More in May." By Noel Murray. May 1, 2020. (https://www.nytimes.com/2020/05/01/arts/new-to-stream-netflix.html). "How Hip-Hop Royalty Found a New Home on Instagram Live." By Jon Caramanica. May 7, 2020. (https://www.nytimes.com/2020/05/07/arts/music/hip-hop-instagram-coronavirus.html). "The Fall of 'Terrace House.'" By Eric Margolis. July 17, 2020.</p> |

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|-----------------------------|--------------------------------|---|
| | | <p>(https://www.nytimes.com/2020/07/17/arts/television/terrace-house-suicide.html). “Erykah Badu Is Blazing a New Trail (From Badubotron).” By Melana Ryzik. July 21, 2020.</p> <p>(https://www.nytimes.com/2020/07/21/arts/music/erykah-badu-livestreams.html). “Small Clubs Are Where Rock History Is Made. How Many Will Survive?” By Ben Sisario. May 6, 2020.</p> <p>(https://www.nytimes.com/2020/05/06/arts/music/independent-venues-coronavirus.html). “Lucinda Williams Is Raw, Riled Up and Ready to Speak Her Mind.” By Jewly Hight. April 21, 2020.</p> <p>(https://www.nytimes.com/2020/04/21/arts/music/lucinda-williams-good-souls-better-angels.html). “In ‘Run,’ Archie Panjabi Sees Shades of Her Most Famous Role.” By Jessica Shaw. April 26, 2020.</p> <p>(https://www.nytimes.com/2020/04/26/arts/television/archie-panjabi-run.html). “Alice Wu’s Lesbian Rom-Com Was Influential, but Her Follow-Up Wasn’t Easy.” By Robert Ito. April 29, 2020.</p> <p>(https://www.nytimes.com/2020/04/29/movies/the-half-of-it-alice-wu.html).</p> |
| 11-15 (500 AS- units) | Sports: Print Journalism | <p>The New York Post. “Vegas bullish on Bill Belichick leading Patriots to playoffs.” By Josh Appelbaum. May 6, 2020.</p> <p>(https://nypost.com/2020/05/06/vegas-bullish-on-bill-belichick-leading-patriots-to-playoffs/). The New York Times. “In the Din of the Dome, the Rams Beat the Saints in Overtime.” By Ben Shpigel, Scott Cacciola and Zach Schonbrun. January 20, 2019.</p> <p>(https://www.nytimes.com/2019/01/20/sports/football/nfl-playoffs-live-nfc-championship-rams-vs-saints.html). “Wary of Other Leagues’ Battles, N.F.L. and Players Agree on Terms to Return.” By Ken Belson. July 24, 2020.</p> <p>(https://www.nytimes.com/2020/07/24/sports/football/nfl-players-regular-season-start.html). “No Punishment for Russia Over Delay on Doping Data.” By Kevin Draper. Jan. 22, 2019.</p> <p>(https://www.nytimes.com/2019/01/22/sports/olympics/wada-russia.html). “Soccer’s River of Money Isn’t Flowing, Worrying Teams Downstream.” By Rory Smith. May 5, 2020.</p> <p>(https://www.nytimes.com/2020/05/05/sports/soccer/soccer-transfer-market.html). “Another Tennis Leader Supports Idea of Merging Women’s and Men’s Tours.” By Christopher Clarey. May 5, 2020.</p> <p>(https://www.nytimes.com/2020/05/05/sports/merger-wta-atp.html). “Baseball Hall of Fame Inductions Will Wait Till Next Year.” By Tyler Kepner. April 28, 2020.</p> <p>(https://www.nytimes.com/2020/04/28/sports/baseball/cooperstown-baseball-hall-of-fame-pandemic.html).</p> <p>“Alex Ovechkin Scores Goal No. 700 in a Loss to the Devils.” By Andrew Knoll. February 22, 2020.</p> <p>(https://www.nytimes.com/2020/02/22/sports/hockey/alex-ovechkin-700-goals.html?searchResultPosition=4). “Knicks Make Tim Hardaway Jr. and Courtney Lee Available for Trade.” By Marc Stein. January 24, 2019.</p> <p>(https://www.nytimes.com/2019/01/24/sports/knicks-trade-tim-</p> |

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|-----------------------------|-------------------------------------|---|
| | | hardaway-courtney-lee.html?searchResultPosition=3). |
| 16-18 (300 AS- units) | Pop Culture: Tabloids | <p>Radar Fresh Intelligence. Radaronline.com. "The 18 Most Bitter Real Housewives Feuds." By Eli Lippman. April 10, 2020. Updated February 2, 2021. (https://radaronline.com/photos/real-housewives-feuds/). "Lilly from The Princess Diaries is gorgeous in real life." By Christine-Marie Liwag Dixon. March 29, 2019. (https://www.thelist.com/149013/lilly-from-the-princess-diaries-is-gorgeous-in-real-life/).</p> |
| 19-20 (200 AS- units) | Vocational: Plumbing Handbook | <p>Practical Plumbing Handbook. California Urban Water Conservation Council. May 2001. "The ABCs of plumbing" & "Preventive Maintenance." (https://p2infohouse.org/ref/36/35594.pdf).</p> |

Table 38

Category 2B: Non-academic, written, unedited sources

| # | Description | Details |
|----------------------|---|---|
| 1-5 (500 AS-units) | Gaming: Blogs and Comments | <p>Wordpress.com. “Never growing up: too old for gaming?” By Kim, Later Levels. Mar 9, 2020. Including comments. (https://wordpress.com/read/blogs/120069635/posts/15944).</p> <p>“Streets of Rage 4.” By Gaming Omnivore. May 3, 2020. Including comments. (https://wordpress.com/read/blogs/158650025/posts/2257). “7 Thoughts on the Final Fantasy 7 Remake.” By Gaming Omnivore. April 29, 2020. (https://wordpress.com/read/blogs/158650025/posts/2223).</p> <p>“Gaming: Final Fantasy 7 Remake.” By Plai, Undertheweather. April 12, 2020. (https://wordpress.com/read/blogs/115047647/posts/397).</p> |
| 6-10 (500 AS-units) | Sports: Blogs and comments | <p>Medium.com. “Fantasy sports it’s where elves play soccer or what?” By MyDFS. March 16, 2018. (https://medium.com/mydfs/the-pleasures-and-sorrows-of-fantasy-sports-4151c232ab79). Including responses. (https://medium.com/p/4151c232ab79/responses/show). Holdout Sports. “Things To Know Before Using Your Ping Pong Paddle: The Ping Pong Basics.” May 20, 2020. (https://www.holdoutsports.com/2020/05/ping-pong-basics.html).</p> <p>“How To Start Playing Badminton Perfectly” April 23, 2020. (https://www.holdoutsports.com/2020/04/how-to-start-playing-badminton-perfectly.html). Wordpress.com. “Football, Cricket, Death – A2Z – Sports.” By Bloggeray. April 6, 2020. (https://wordpress.com/read/blogs/99160856/posts/7086).</p> <p>Wordpress: Pacific Paratrooper. “Wartime Football.” By GP. December 5, 2019. (https://wordpress.com/read/blogs/40099923/posts/14840). “The Internet of Football.” By Al Williams, Hackaday. Jan 31, 2020. Including comments. (https://wordpress.com/read/blogs/156670177/posts/396995).</p> |
| 11-14 (400 AS-units) | Pop Culture: Comments on print journalism | <p>Comments on the article “Spike Lee and the Battlefield of American History.” By Reggie Ugwu. May 21, 2020. (https://www.nytimes.com/2020/05/21/movies/spike-lee-da-5-bloods.html#commentsContainer).</p> |
| 15-16 (200 AS-units) | Personal Narrative: Personal letters | <p>Shine, N. (2007). <i>When You Come Home: A Wartime Courtship in Letters, 1941-45</i>. Wayne State University Press. Original letter excerpts drawn from Chapter 1: Basic Training.</p> |
| 17-20 | Personal Narrative: Diary entries | <p>My-diary.org. “Mr. G. and Anna.” (https://www.my-diary.org/read/e/546006445/being-subdued#blue). “My First Boyfriend Kissed Me.” (https://www.my-diary.org/read/e/546121881/period-like-cramps#blue). Both these diary entries are either no longer public or have been removed.</p> |

Table 39

Category 3B: Non-academic, spoken, prepared sources

| # | Description | Details |
|-----------------------|--|--|
| 1-5 (500 AS-units) | Sports: TV program panel conversation | Sports Today. October 22, 2018. “[Full] FOX NFL Sunday FOX Oct 21, 2018.” [Full] FOX NFL Sunday FOX Oct 21, 2018 - YouTube . |
| 6-10 (500 AS-units) | Sports and Pop Culture: Radio journalism | NPR. “Washington State Allows Golfers To Get Back To The Courses.” By Tom Goldman. May 7, 2020. (https://www.npr.org/transcripts/852319558). “Oakland A's To Stop Paying Minor League Players During The Pandemic.” By Tom Goldman. May 27, 2020. (https://www.npr.org/2020/05/27/863422729/oakland-as-to-stop-paying-minor-league-players-during-the-pandemic). “Notre Dame Basketball Coach Muffet McGraw Wants To See More Women Coaching.” By Alisa Chang. April 24, 2020. (https://www.npr.org/transcripts/844188536). “College Athletes Return To Campuses For Voluntary Training Despite Safety Concerns.” By Tom Goldman. June 3, 2020. (https://www.npr.org/transcripts/869053495). “‘The Power Of A Group’ Moves Sharon Horgan, Kristin Scott Thomas In ‘Military Wives.’” By Scott Simon. May 23, 2020. (https://www.npr.org/transcripts/861438264). “In ‘She-Ra And The Princesses Of Power,’ True Strength Is In Being Yourself.” By Victoria Whitley-Berry. May 15, 2020. (https://www.npr.org/transcripts/854610573). “Clubbing In The Time Of COVID-19: Berlin Clubs Are Closed, So DJs Are Livestreaming.” By Ron Schmitz. April 18, 2020. (https://www.npr.org/transcripts/833068482). “The Show Must Go Online: Theaters Closed By COVID-19 Get Creative.” By Jeff Lunden. April 11, 2020. (https://www.npr.org/transcripts/830390452). “Wanted: Stories With Happily Ever Afters - Here's Where To Start Looking.” By David Greene and Glen Weldon. March 26, 2020. (https://www.npr.org/transcripts/821005625). |
| 11-12 (200 AS-units). | Vocational: TV Commercials | TV commercials from [Full] FOX NFL Sunday FOX Oct 21, 2018 - YouTube & FOX NFL Sunday Nov 11, 2018 - YouTube . |
| 13-14 (200 AS-units) | Vocational: Weather reports | The Weather Channel. “Today’s national weather forecast.” September 18, 2013. (https://www.youtube.com/watch?v=t2aWyRtnRCg). KHOU 11. January 9, 2020. “National Weather Service expands severe weather risk for Houston area this Friday evening.” (https://www.youtube.com/watch?v=pUj-eVZ1I9k). KHOU 11. September 17, 2019. “Tropical Storm Imelda will hover over Houston area for next few days.” (https://www.youtube.com/watch?v=mLKwv5oF5oQ). WPLG Local 10. “Tropical Storm Jerry forms.” September 19, 2019. (https://www.youtube.com/watch?v=Nq-m5r23Ms4). WPTV News - FL Palm Beaches and Treasure Coast. September 19, |

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|-----------------------------|---|--|
| | | 2019. "Jerry now a hurricane with winds of 75 mph." (https://www.youtube.com/watch?v=MqDgCx4UsxE). WPTV News - FL Palm Beaches and Treasure Coast. September 19, 2019. "5 p.m. Thursday Hurricane Jerry update." (https://www.youtube.com/watch?v=aobvtZHNFIJ). |
| 15-16 (200 AS- units) | Pop Culture: Award acceptance speeches | Rock & Roll Hall of Fame. "Ice Cube of N.W.A Accepts Rock and Roll Hall of Fame Award." June 15, 2016. (https://www.youtube.com/watch?v=rUfUtPWFIKY). SnoopDoggTV. "Snoop Dogg's UNEDITED Rock & Roll HOF Speech - Tupac Shakur Induction." May 16, 2017. (https://www.youtube.com/watch?v=b3I5jLdWQJw). |
| 17-18 (200 AS- units) | Personal Narrative: Moth stories | The Moth. "Customer Care." By Zellia Enjoli Tatiana. February 4, 2019. (https://themoth.org/storytellers/zellia-enjoli-tatiana). "Invisible Toronto." By Falen Johnson. March 12, 2015. (https://themoth.org/stories/invisible-toronto). |
| 19-20 (200 AS- units) | Vocational: Home cooking show | Tsui Hon-Lung. "Gordon Ramsay's Home Cooking S01E11." November 2, 2013. (https://www.youtube.com/watch?v=4ItN-eaPx1Y). This video is blocked in the United States. |

Table 40

Category 4B: Non-academic, spoken, unprepared sources

| # | Description | Details |
|----------------------|--------------------------------|---|
| 1-4 (400 AS-units) | Personal Narrative: Interviews | LAHWF. "Chatting with an Ex-Convict." July 7, 2019. (https://www.youtube.com/watch?v=WxZeP0PiFzI). |
| 5-9 (500 AS-units) | Personal Narrative: Interviews | Steez Vault. "Tupac Shakur: Clinton Correctional Facility Prison Interview, September 1995." September 25, 2016. (https://www.youtube.com/watch?v=nhpq0MEcYzg). |
| 10-14 (500 AS-units) | Personal Narrative: Interviews | Federal Writers' Project. (1941) Slave narratives: a folk history of slavery in the United States from interviews with former slaves. Type-written records prepared by the Federal Writer's Project, 1938, assembled by the Library of Congress Project, Work Projects Administration, for the District of Columbia. Sponsored by the Library of Congress. Illustrated with photographs. Washington. Volume 2 Arkansas, Part 1, Abbot-Byrd. "Silas Abbot, Age 73; Lucian Abernathy, Marvall, Arkansas, Age 85; Laura Abromson, Age 74; Aunt Adeline, Age 89; Rose Adway, Age 76; Liddie Aiken Age 63." (https://www.loc.gov/item/mesn021/). |
| 15-16 (200 AS-units) | Personal Narrative: Interviews | Matthew Siegfried. "Fannie Lou Hamer Speaks! 1965 Pacifica Radio Interview." May 17, 2015. (https://www.youtube.com/watch?v=dSxkYBbvGjs). Richard Johnson. "Interview with Fannie Lou Hamer (1968)." May 19, 2017. From <i>The Heritage of Slavery</i> . (https://www.youtube.com/watch?v=Nhu_uxRR2og). Paul Richards. "Fannie Lou Hamer Tells Her Story 1963." March 30, 2011. (https://www.youtube.com/watch?v=PIZ2a2J5v3g). Mississippi Public Broadcasting. "Fannie Lou Hamer: Stand Up." October 5, 2017. (https://www.youtube.com/watch?v=CxTReRmH2jA). |
| 17-20 (400 AS-units) | Personal Narrative: Interviews | Biggie72971. "Rare Biggie Smalls Interview + Freestyle!" March 19, 2012. (https://www.youtube.com/watch?v=Lv8PdI477ks). Eazy-E Ruthless Records. "Ice Cube 1993 Rare & Raw Interview." December 31, 2016. (https://www.youtube.com/watch?v=B2BP5xAkxKw). X+. "Ice Cube interviewed on CNBC during the early 90's." April 26, 2016. (https://www.youtube.com/watch?v=hRYJTKUabhc). |

Appendix C: Tasks for establishing coder reliability

Task 1: Nouns

| Task 1: Nouns | Element to code for | Details / Description | Example(s) | How to label them |
|------------------|---------------------|---|---|------------------------------|
| | Lexical nouns | <ul style="list-style-type: none"> Not a pronoun or nominalization | e.g., John, Boston, book, table, house <u>Ann</u> is a great <u>teacher</u> . | Underline them. |
| | Pronouns | <ul style="list-style-type: none"> Exclude relative pronouns | e.g., I, you, he/she/it, we, they <u>She</u> loves to teach. | Circle them. |
| | Nominalizations | <ul style="list-style-type: none"> A noun formed from a verb, adjective, other part of speech, or clause | e.g., integration, investment, righteousness Her (investment) in her work is profound. | Put parentheses around them. |

Task 2: Noun phrases

| Task 2: Noun phrases | Element to code for | Details / Description | Example(s) | How to label them |
|-------------------------|----------------------------------|---|---|--|
| | Appositive noun phrases | <ul style="list-style-type: none"> A noun or noun phrase that renames a noun or noun phrase preceding it | The weed biological control agent, [<u>Arytainilla spartiophila</u>] [(Hemiptera: Psyllidae)], was given high priority for introduction... | Put square brackets ([...]) around them. |
| | Numbers of words per noun phrase | <ul style="list-style-type: none"> A tally of all words governed by the head noun of a noun phrase | (⁵ The weed biological control agent), Arytainilla spartiophila (Hemiptera: Psyllidae), was given (² high priority) for (¹ introduction)... | Put parentheses (...) around the full noun phrase (except for the appositive noun phrases with already have square brackets around them) and then put the count number above the opening parenthesis / square bracket. |

Task 3: Modifiers

| Task 3: Modifiers | Element to code for | Details / Description | Example | How to label them |
|----------------------|--|---|--|--|
| | Attributive adjectives pre-modifying nouns | <ul style="list-style-type: none"> Pre-modifying but <i>not</i> post-modifying Not comparatives or superlatives | As the string is unwrapped from the surface, a point on the string (point P) traces an <u>involute</u> profile. | Circle them. |
| | Participles pre-modifying nouns | <ul style="list-style-type: none"> Both -ing and -ed participles Not comparatives or superlatives | 1. Villette places interiority in an intimate connection with (object-filled) interiors even as it hopes for an inner life that eludes the varied fetishisms of Thing City. 2. In contrast, (pre-modifying) nouns are much less common in humanities writing... | Put parentheses around them. |
| | Nouns pre-modifying nouns | | [Biocontrol] programmes offer unparalleled opportunities to study the [invasion] process... | Put square brackets ([...]) around them. |

Task 4: Comparatives and superlatives

| Task 4: Comparatives and superlatives | Element to code for | Details / Description | Example | How to label them |
|--|------------------------|--|---|----------------------------------|
| | Comparatives | <ul style="list-style-type: none"> As adjective, adverb or noun | In contrast, pre-modifying nouns are much (less common) in humanities writing... | Put parentheses around them. |
| | Superlatives | <ul style="list-style-type: none"> As adjective, adverb or noun | This mixture of vagueness and sheer incompetence is [the most marked] characteristic of modern English prose... | Put square brackets around them. |


Task 5: Verb tense and aspect

| Task 5: Verb tense and aspect | Element to code for | Description / Details | Example(s) | How to label them |
|--|-----------------------------|---|--|---|
| | Present simple | <ul style="list-style-type: none"> Active or passive | He <u>cooks</u> ^{1.1} dinner | Circle verb phrase and write 1.1 by circle. |
| | Present progressive | | He is <u>cooking</u> ^{1.2} dinner | Circle verb phrase and write 1.2 by circle. |
| | Present perfect | | He <u>has cooked</u> ^{1.3} dinner | Circle verb phrase and write 1.3 by circle. |
| | Present perfect progressive | | He <u>has been cooking</u> ^{1.4} dinner | Circle verb phrase and write 1.4 by circle. |
| | Past simple | | He <u>cooked</u> ^{2.1} dinner | Circle verb phrase and write 2.1 by circle. |
| | Past progressive | | He <u>was cooking</u> ^{2.2} dinner | Circle verb phrase and write 2.2 by circle. |
| | Past perfect | | He <u>had cooked</u> ^{2.3} dinner | Circle verb phrase and write 2.3 by circle. |
| | Past perfect progressive | | He <u>had been cooking</u> ^{2.4} dinner | Circle verb phrase and write 2.4 by circle. |

Task 6: Voice

| Task 6: Voice | Element to code for | Description / Details | Example(s) | How to label them |
|------------------|---------------------|---|---|---|
| | Active voice verbs | <ul style="list-style-type: none"> Transitive and active | Figure 7.1 <u>shows</u> ^{ACT} several gear types. | Circle verb phrase and write ACT by the circle. |
| | Passive voice verbs | <ul style="list-style-type: none"> Transitive but passive | The weed biological control agent, <i>Arytainilla spartiophila</i> (Hemiptera: Psyllidae) <u>was given</u> ^{PAS} high priority for introduction... | Circle verb phrase and write PAS by the circle. |
| | Stative voice verbs | <ul style="list-style-type: none"> Intransitive, cannot take an object (e.g., <i>to be</i>, <i>to become</i>) Verb may have transitive meanings, but with this meaning it is intransitive | A biological control programme for broom (<i>Cytisus scoparius</i> (L.) Link) <u>began</u> ^{STA} in New Zealand in 1981. | Circle verb phrase and write STA by the circle. |

Task 7: Modal verbs and mood

| Task 7: Modal verbs and mood | Element to code for | Description / Details | Example | How to label them |
|------------------------------------|-----------------------|---|---|---|
| | Expressed modal verbs | <ul style="list-style-type: none"> All expressed modals, including <i>do</i> / <i>does</i> / <i>to</i>. | He <u>will</u> / <u>would</u> help. He <u>can</u> / <u>could</u> help. He <u>shall</u> / <u>should</u> help. He <u>may</u> / <u>might</u> / <u>must</u> help. He <u>does</u> / <u>did</u> help. He wants <u>to</u> help. | Underline the modals. |
| | Indicative verbs | <ul style="list-style-type: none"> The indicative mood pertains to what is REAL in the world. It is used to make factual statements and ask factual questions. Most often, verbs occur in the indicative mood. (Aside from the infinitive to make, all the verbs in this description are indicative in mood.) | He (is) a man. They (walk) to school. He (likes) pizza. She (<u>doesn't</u> like) pizza. (<u>Doesn't</u>) she (like) broccoli?  She (<u>can</u> swim). When she <u>was</u> five, she (<u>could</u> already read). You (<u>may</u> go) [<i>permission</i>] to the bathroom. They (<u>will</u> go) to a party tonight. | Put parentheses around the verb phrases. If a verb phrase is divided by a subject, put parentheses around both parts and connect with a line, as in the broccoli example to the left. |
| | Subjunctive verbs | <ul style="list-style-type: none"> The subjunctive mood pertains to the UNREAL. In the world, people talk about both real (indicative) and unreal (subjunctive) phenomena. The subjunctive mood is used to discuss possibilities, hypotheticals, wishes, and contrafactuals. | We [<u>could</u> go] to a movie. We [<u>might</u> go] to a movie. If he were] here, he [<u>would</u> help] you. I wish I [was / were] rich. He [<u>may</u> be] [<i>possibility</i>] on time. If he [<u>had</u> studied], he [<u>would</u> have passed] the test. | Put square brackets ([...]) around the verb phrases. |

Task 8: Prepositional phrases

| Task 8: Prepositional Phrases | Element to code for | Description / Details | Example(s) | How to label them |
|----------------------------------|---|--|---|--|
| | Prepositional phrases | <ul style="list-style-type: none"> • All prepositional phrases • Prepositional phrases may take infinitival phrases or noun clauses as objects | Students writing chemistry lab reports engage (in elaborated discourse) (with a high degree) (of specificity)... | Put parentheses around the prepositional phrase. |
| | Prepositional phrases as noun post-modifiers | | If Neo-Confucianism is generally to be distinguished (from earlier <u>forms</u>) (of Confucian thought) (by its <u>adaptation</u>) (of Daoist and Buddhist views)... | Underline the noun being post-modified by a prepositional phrase. |
| | Prepositional phrases as discourse markers (indicating transitions or organizing signals, temporal or sequential relations, causal or inferential relations, overall frames, initial or concluding relations, etc.) | | <p>1. {In contrast}, conversation has long been described (as grammatically simple) (in these terms).</p> <p>2. {For example}, a neutral calcium atom, (with 20 protons and 20 electrons), readily loses two electrons.</p> | Strike through (<...>) the parentheses surrounding the prepositional phrase. |

Task 9: Subjects, objects, adverbials

| Task 9: Subjects, Objects, Adverbials | Element to code for | Description / Details | Example(s) | How to label them |
|--|--|--|--|--|
| | Number of phrases per subject | <ul style="list-style-type: none"> Only the subjects the finite verbs of clauses and predicate nominatives Subjects may consist of: <ul style="list-style-type: none"> ✓ Noun phrases: head noun may govern determiners, adverbs, adjectives, and other nouns ✓ Prepositional phrases: count both the preposition itself and the phrase(s) of its object ✓ Non-finite verbs / infinitival phrases: count both the non-finite verb phrase and any phrase(s) of its complement Do not include clauses that modify words within a subject. | When (atoms of nonmetal elements) ³ form ions . . . [= 3 phrases: noun phrase <i>atoms</i> ; preposition <i>of</i> ; noun phrase <i>nonmetal elements</i>] | Put full subject in parentheses and write the number of phrases beside the closing parenthesis. |
| | Number of phrases per object | <ul style="list-style-type: none"> Objects may consist of the same elements as subjects (listed above). Include only the objects of finite and non-finite verbs. Do not include the objects of prepositions (though prepositional phrases may be parts of objects). | . . . and you can often predict [the charge of the resulting ion.] ³ [= 3 phrases: noun phrase <i>the charge</i> ; preposition <i>of</i> ; noun phrase <i>the resulting ion</i>] | Put full object in square brackets ([...]) and write the number of phrases beside the closing bracket. |
| | Adverbials as discourse markers (indicating transitions or organizing signals, temporal or sequential relations, causal or inferential relations, overall frames, initial or concluding relations, etc.) | <ul style="list-style-type: none"> Adverb phrases, noun phrases, and infinitival phrases (examples 1, 2 and 3 at right, respectively) may function as adverbials. Do not include adverbials that complement verbs; only include those that function as discourse markers. | 1. <u>Moreover</u> , yeast centromeres cluster near the membrane-embedded spindle pole body. 2. <u>The next day</u> , she went to the hospital to check on her mother. 3. <u>Having finished eating dinner</u> , he washed the dishes. | Underline the adverb/adverbial functioning as a discourse marker |

Task 10: Infinitival phrases

| Task 10: Infinitival phrases | Element to code for | Description / Details | Example(s) | How to label them |
|------------------------------------|--|--|--|--|
| | -ing or -ed infinitival phrases | <ul style="list-style-type: none"> To constitute an infinitival phrase, the non-finite verb heading it must govern at least one other phrase. These infinitival phrases are commonly called participial phrases. They may be initiated by an adverb (see examples 2 and 3 at right). | 1. However, an equally important – but less often noticed – aspect of conversational grammar is that it is complex, (relying heavily on dependent clauses.) 2. (When questioned about this by the detective) who asked . . . 3. (As illustrated by this example,) we are vulnerable to the power of suggestion . . . | Put parentheses round -ing & -ed infinitival phrases. |
| | noun + -ing or -ed infinitival phrases | <ul style="list-style-type: none"> Infinitival phrases that modify nouns Modified noun may not immediately precede infinitival phrase. | 1. <u>Students</u> (writing chemistry lab reports) engage in elaborated discourse with a high degree of specificity . . . 2. . . . and the <u>work</u> (presented here) comprises a 6-year, large-scale, <u>field experiment</u> (based around a weed biological programme in New Zealand.) | Underline the noun modified by the -ing or -ed infinitival phrase (which has been put into parentheses). |
| | to- infinitival phrases | <ul style="list-style-type: none"> To-infinitival phrases may modify nouns, complement verbs, function as subjects, or function adverbially (e.g., answering the question <i>why?</i> or <i>for what purpose?</i>). Include all phrases governed by the to-infinitival phrase, including prepositional phrases and subjects (see examples 3 & 4 at right). | 1. [To learn more,] you can visit http://www.innocenceproject.org . 2. Gary Wells and Deah Quinlivan (2009) assert it's suggestive police identification procedures, such as stacking lineups [to make the defendant stand out,] telling the witness [which person to identify,] and... 3. When atoms of nonmetal elements form ions, they generally gain enough electrons [to give them the same number of electrons as an atom of the next noble gas in the periodic table.] 4. He believes [Mary to be a pathological liar.] | Put square brackets ([...]) around the to-infinitival phrases. |

Task 11: Clauses

| Task 11: Clauses | Element to code for | Description / Details | Example(s) | How to label them |
|------------------|--------------------------------------|--|--|---|
| | Independent clauses | <ul style="list-style-type: none"> In this study, clauses are only governed by finite verbs. Non-finite verbs govern infinitival phrases. An independent clause does not begin with a relative pronoun or a relative adverb. It can stand alone as a sentence. Include infinitival phrases only if they are constituent elements of the clause (i.e., its subject or object, its verb's complement, or the object of a preposition within it). Do not include noun phrases or adjective phrases. If an independent clause is divided by an adjective clause, connect the two parts with a line (see example 2 at right). | 1. As the string is unwrapped from the surface, <u>a point on the string (point P) traces an involute profile.</u> 2. <u>The man</u> who is wearing a yellow hat <u>is his father.</u> | Underline the independent clauses. |
| | Dependent clauses: adverb clauses | <ul style="list-style-type: none"> Adverb clauses begin with a relative adverb and modify a verb or adjective. | 1. (As the string is unwrapped from the surface,) a point on the string (point P) traces an involute profile. 2. Recall is what we most often think about (when we talk about memory retrieval.) | Put adverb clauses into parentheses. |
| | Dependent clauses: adjective clauses | <ul style="list-style-type: none"> Adjective clauses begin with a relative pronoun (perhaps a null pronoun) and modify a noun or a whole clause. | Episodic memory is information about events [we have personally experienced.] | Put square brackets ([...]) around adjective clauses. |
| | Dependent clauses: noun clauses | <ul style="list-style-type: none"> Noun clauses begin with a relative pronoun and function as a subject or object. Dependent clauses that complement verbs are noun clauses. If you can replace a full clause with a pronoun (e.g., something) and it still works syntactically, then consider it a noun clause (see example 2 at right). | 1. Recall is <what we most often think about> when we talk about memory retrieval. 2. Currently, scientists believe <that episodic memory is memory about happenings in particular places at particular times...> | Put inequality signs (<...>) around noun clauses. |

Task 12: Clause initializers

| Task 12: Clause initializers | Element to code for | Description / Details | Example(s) | How to label them |
|------------------------------------|--|--|---|--|
| | Clause-initial conjunctions | <ul style="list-style-type: none"> Include conjunctions that begin sentences. | 1. Let's say you graduated from high school 10 years ago, and you have returned to your hometown for your 10-year reunion. 2. You may not be able to recall all of your classmates, but you recognize many of them based on their yearbook photos. | Circle clause- initial conjunctions |
| | Clause-initial relative adverbs | | 1. (As) the string is unwrapped from the surface, a point on the string (point P) traces an involute profile. 2. Recall is what we most often think about (when) we talk about memory retrieval. | Put parentheses around clause- initial relative adverbs |
| | Clause-initial relative pronouns | | 1. Recall is [what] we most often think about when we talk about memory retrieval. 2. Currently, scientists believe [that] episodic memory is memory about happenings in particular places at particular times... | Put square brackets ([...]) around clause- initial relative pronouns. |

Task 13: Sentence type

| Task 13: Sentence type | Element to code for | Description / Details | Example(s) | How to label them |
|------------------------------|------------------------|---|--|---|
| | Simple sentences | <ul style="list-style-type: none"> One independent clause only (no dependent clauses or infinitival phrases) Every finite verb heads its own clause. However, if two or more finite verbs share the <u>exact</u> same subject (i.e., it is stated only once) and, if applicable, object, then the finite verbs may co-head the same clause. Only finite verbs head clauses. Non-finite verbs head infinitival phrases. For a non-finite verb to head an infinitival phrase, it must govern at least one other phrase. | <u>Figure 7.1 shows several gear types.</u> (1 independent clause only) | Underline simple sentences. |
| | Compound sentences | <ul style="list-style-type: none"> Two or more independent clauses only Independent clauses are often connected by conjunctions (e.g., <i>and, but, or, yet, so</i> (when it means ‘and therefore’ or ‘with the result that’)) | 1. (Now it’s back on your desktop, and you can work with it again.) (2 independent clauses only) 2. (He ate dinner but skipped dessert.) (2 independent clauses only) | Put parentheses around compound sentences. |
| | Complex sentences | <ul style="list-style-type: none"> One independent clause and one or more dependent clauses / infinitival phrases. Dependent clauses are initiated by relative pronouns (e.g., <i>that, which, what</i>) and relative adverbs (e.g., <i>when, while, if, as, because, and</i>, when it means ‘in order that,’ <i>so</i>) | [As the string is unwrapped from the surface, a point on the string (point P) traces an involute profile.] (1 independent clause & 1 dependent clause) | Put square brackets ([...]) around complex sentences. |

| | | | | |
|--|----------------------------|--|--|---|
| | Compound-complex sentences | <ul style="list-style-type: none"> Two or more independent clauses and one or more dependent clauses / infinitival phrases. | <p>1. <Let's say you graduated from high school 10 years ago, and you have returned to your hometown for your 10-year reunion.> (2 <i>independent clauses</i> & 1 <i>dependent clause</i>)</p> <p>2. <You may not be able to recall all of your classmates, but you recognize many of them based on their yearbook photos.> (2 <i>independent clauses</i> & 1 <i>infinitival phrase</i>)</p> <p>3. <Biocontrol programmes offer unparalleled opportunities to study the invasion process (Memmet <i>et al.</i> 1988) and the work presented here comprises a 6-year, large-scale, field experiment based around a weed biological programme in New Zealand.> (2 <i>independent clauses</i> & 3 <i>infinitival phrases</i>)</p> | Put inequality signs (<...>) around compound-complex sentences. |
|--|----------------------------|--|--|---|

Task 14: Conditionals

| Task 14: Conditionals | Element to code for | Description / Details | Example(s) | How to label them |
|--------------------------|--|---|---|--|
| | Present real conditionals | <ul style="list-style-type: none"> Present indicative in <i>if</i>-clause, present indicative in <i>then</i>-clause | (If it gets cold enough, (then) water freezes.) ^{#1} | Put parentheses around present real conditionals and write #1 beside the closing parenthesis. |
| | Future real conditionals | <ul style="list-style-type: none"> Present indicative in <i>if</i>-clause, future indicative or imperative in <i>then</i>-clause | (If he comes, (then) she will leave.) ^{#2} | Put parentheses around future real conditionals and write #2 beside the closing parenthesis. |
| | Present unreal conditionals | <ul style="list-style-type: none"> Present subjunctive in <i>if</i>-clause, present subjunctive in <i>then</i>-clause | (If he were here, (then) he would help us.) ^{#3} | Put parentheses around present unreal conditionals and write #3 beside the closing parenthesis. |
| | Past / present unreal conditionals | <ul style="list-style-type: none"> Past subjunctive in <i>if</i>-clause, present subjunctive in <i>then</i>-clause | (If he had studied, (then) he would be happy right now.) ^{#4} | Put parentheses around past/present unreal conditionals and write #4 beside the closing parenthesis. |
| | Past / present-perfect unreal conditionals | <ul style="list-style-type: none"> Past subjunctive in <i>if</i>-clause, present-perfect subjunctive in <i>then</i>-clause | (If he had studied, (then) he would have passed the test.) ^{#5} | Put parentheses around past/present-perfect unreal conditionals and write #5 beside the closing parenthesis. |

Appendix D: Examples of grammatical features identified in samples from the data set

Table 41

Examples of grammatical features identified in samples from the data set

| # | Grammatical feature | Example | Source |
|---|--|--|--------|
| 1 | Noun phrases | ¹⁰ However, <u>an empirical HB acidity and basicity calculation model</u> based on <u>the density charge</u> on <u>the cavity surface</u> has been proposed. | 1A-13 |
| | | ³⁰⁰ and its requests for <u>lawmakers</u> include <u>tax relief</u> and <u>more flexible loan programs</u> . | 1B-8 |
| 2 | Appositive noun phrases | ⁸⁸ The referee, <u>Bill Vinovich</u> , told a pool reporter that he “personally” had not seen what occurred. | 1B-11 |
| | | ¹⁹³ In this section, we examine the method of cylindrical shells, <u>the final method</u> for finding the volume of a solid of revolution. | 1A-9 |
| | | ⁹³ Body mass index (<u>BMI</u>) was calculated by diving weight in kilograms by height in meters squared, | 1A-11 |
| 3 | Average # words per noun phrase | ¹⁰ However, <u>an empirical HB acidity and basicity calculation model</u> based on <u>the density charge</u> on <u>the cavity surface</u> has been proposed. (8 + 3 + 3 = 14 / 3 = 4.67) | 1A-13 |
| 4 | Maximum # words per noun phrase | ¹⁰ However, <u>an empirical HB acidity and basicity calculation model</u> based on <u>the density charge</u> on <u>the cavity surface</u> has been proposed. (8, 3, 3 → 8) | 1A-13 |
| 5 | Attributive adjectives pre-modifying nouns | ¹⁷ Forty years ago Eugene Genovese noted that slavery rested on an intensely <u>personal</u> conflict in which slaveholders and overseers sought to exercise “mastery” by using a combination of <u>brutal</u> punishments and <u>positive</u> inducements to coerce those in bondage to accept their status. | 1A-1 |
| 6 | Nouns pre-modifying nouns | ¹⁰ However, an empirical <u>HB acidity</u> and <u>basicity calculation</u> model based on the <u>density</u> charge on <u>the cavity surface</u> has been proposed. | 1A-13 |
| 7 | Participles pre-modifying nouns | ⁷⁴ To explain the <u>emerging</u> primacy of Western Europe over other world regions, we look to the comparative growth performance of the clan and guild institutions. | 1A-16 |
| | | ⁶ The scientific method is a method of research with <u>defined</u> steps that include experiments and careful observation. | 1A-12 |
| 8 | Noun + participles pre-modifying nouns | ²³¹ — the Badu vagina-scented incense <u>immediately</u> sold out — | 1B-8 |
| | | ⁴⁹⁹ This PlayStation 4 game tells the story of a post-apocalyptic <u>zombie-infested</u> future. | 3B-10 |
| | | ¹³¹ The hardest thing I I had to overcome is really just making the transition of being a <u>street hustling</u> nigga to like a quote unquote star nahmsayin | 4B-18 |

| | | | |
|----|-------------------------------|--|-------|
| | | ¹ In mathematical biology, parameter estimation is one of the most important components of <u>model fitting</u> procedure. | 1A-10 |
| | | ³³⁵ Adults and preschoolers in communities around the world engage in <u>story-reading</u> or other <u>literacy-related</u> interactions. | 2A-19 |
| 9 | Comparatives and superlatives | ³⁰⁰ and its requests for lawmakers include tax relief and <u>more flexible</u> loan programs. | 1B-8 |
| | | ¹²⁶ Well, I think <u>the biggest</u> thing is to be yourself, believe in yourself because as women, we tend to overthink things. | 3B-7 |
| | | ¹⁷⁴ Rather the parts will last longer since their design minimizes friction and wear. | 1B-20 |
| | | ⁴⁸⁶ Well, that's an argument that will never be settled because the best ever is a powerful statement. | 3B-5 |
| 10 | Progressive aspect | ³⁰¹ Back home, though, most <u>are nervously watching</u> the calendar ³⁰² and <u>patching together</u> support for furloughed employees through T-shirt sales and GoFundMe campaigns. | 1B-9 |
| 11 | Perfect aspect verbs | ³²² the 700 sold in the last two weeks <u>has provided</u> enough cash to extend the club's life a month longer than he'd <u>estimated</u> . | 1B-9 |
| 12 | Passive voice verbs | ³⁵ Briefly, in the G-SFED model, calculation of the solvation free energy of solute s in solvent m, ΔG_{solv} , <u>is carried out</u> using three steps: | 1A-13 |
| | | ⁷⁸ They may agree to a specific wage in their homeland not knowing the prevailing wage in the new country, or <u>having been beguiled</u> by a false account of life and opportunity there. | 1A-20 |
| 13 | Subjunctive mood verbs | ⁸¹ For example, a mother's depression, teen daughter's eating disorder, or father's alcohol dependence <u>could affect</u> all members of the family. | 1A-19 |
| | | ²⁹⁷ According to Mel Hein, "If he <u>hadn't been killed</u> , he <u>could have been</u> the greatest tackle who ever played football | 2B-8 |
| 14 | Expressed modal verbs | ⁹⁰ In strategic family therapy, the goal is to address specific problems within the family that <u>can</u> be dealt with in a relatively short amount of time. | 1A-19 |
| | | ³⁰¹ Blozis was in the Army, ³⁰² and actually <u>could</u> have claimed exemption from front-line infantry duty because of his size ³⁰³ and instead put into the artillery or a support branch, ³⁰⁴ but he <u>would</u> not take the exemption. | 2B-9 |
| 15 | Imperative mood verbs | ⁵¹ Take a plate, ⁵² <u>place</u> it on top, ⁵³ and just <u>flip</u> it over ⁵⁴ and then <u>slide</u> it back in very quickly. | 3B-19 |
| 16 | Interrogatives | ⁹⁰ <u>How do you account</u> for that feature of the <i>Epic of Gilgamesh</i> ? | 3A-2 |
| | | ³⁴⁰ Do you really need to know that the halfback is running at a certain speed? | 2B-9 |
| | | ⁴⁴⁶ Any ideas how I could possibly solve that problem (relatively cheap)? | 2B-10 |

| | | | |
|----|---|---|----------------------------------|
| 17 | Prepositional phrases | ¹³ Goethe had just returned <u>from Rome</u> ³³⁵ Adults and preschoolers in communities around the world engage <u>in story-reading or other literacy-related interactions</u> . | 3A-2 2A-19 |
| 18 | Prepositional phrases as noun post-modifiers | ¹⁹³ In this section, we examine the <i>method of</i> cylindrical shells, the final <i>method for</i> finding the <i>volume of a solid of</i> revolution. ⁴⁰¹ the helmet is designed to reduce the <i>impact to</i> your brain. | 1A-9 2B-10 |
| 19 | Adverb phrases and prepositional phrases as discourse markers | ³⁵ Briefly, <u>in the G-SFED model</u> , calculation of the solvation free energy of solute s in solvent m, ΔG_{solv} , is carried out using three steps: ²⁶ Finally, we provide concluding remarks in Section 5. ¹⁰ However, an empirical HB acidity and basicity calculation model based on the density charge on the cavity surface has been proposed. ¹ In mathematical biology, parameter estimation is one of the most important components of model fitting procedure. ² With poorly estimated parameters, even the most appropriate models perform poorly. | 1A-13 1A-10 1A-13 1A-10 |
| 20 | Average # of phrases per subject/object | ²⁷ Even in portions of the borderland little affected by Southern migration, the prospect of an influx of African American migrants and the consequent economic competition exacerbated the racism of white inhabitants. ($6 + 6 + 3 = 15 / 3 = 5$) ³⁶ As Figure 1 shows, this policy assumption connects to the descriptive assumption through a standard setting study to determine the appropriate cut-score, which is the recommended best practice. ($1 + 1 + 1 + 1 + 1 + 1 + 1 = 7 / 7 = 1$) | 1A-1 1A-17 |
| 21 | Maximum # of phrases per subject/object | ²⁷ Even in portions of the borderland little affected by Southern migration, the prospect of an influx of African American migrants and the consequent economic competition exacerbated the racism of white inhabitants. (6, 6, 3 \rightarrow 6) ³¹ Moreover, the contract written with the “master” by its very nature is largely incomplete. ³² The details of what is to be taught, how well, how fast, what tools and materials the pupil would be allowed to use, as well as other aspects such as room and board, are impossible to specify fully in advance. ³³ Equally, apart from a flat fee that many apprentices paid up front, the other services rendered by the apprentice, such as labor, were hard to enumerate. (4, 14, 4, 4, 1 \rightarrow 14) | 1A-1 1A-16 |
| 22 | Ing-infinitival phrases | ²¹ This theory challenges that assumption, suggesting that economic processes are more fundamental. ²⁹⁶ The Brit, General Carlton, flat out refused as Britain “...had made that promise (of freedom) and the promise, having been given, must be honored....” ⁹⁵ Compared to European immigrants, those from China | 1A-20 2B-13 1A-3 |

| | | | |
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| | | were much less numerous, but still significant. | |
| | | ⁸⁷ <u>Rolling on the ground after jumping from the table, or landing with a parachute</u> , extends the time over which the force (on you from the ground) acts. | 1A-15 |
| | | ⁷⁴ <u>To explain the emerging primacy of Western Europe over other world regions</u> , we look to the comparative growth performance of the clan and guild institutions. | 1A-16 |
| | | ⁸ Looking out the pro shop window, course general manager Lance Satcher admonished the three on a microphone he normally uses <u>to call players to the first tee</u> . | 3B-6 |
| 23 | To-infinitival phrases | ¹⁷ Forty years ago Eugene Genovese noted that slavery rested on an intensely personal conflict in which slaveholders and overseers sought <u>to exercise “mastery”</u> by using a combination of brutal punishments and positive inducements <u>to coerce those in bondage to accept their status</u> . | 1A-1 |
| | | ¹⁹⁷ The ability <u>to choose which variable of integration we want to use</u> can be a significant advantage with more complicated functions. | 1A-9 |
| 24 | Adverb clauses | ⁷⁹ <u>And while many remember him now is some kind of thugged out superhero</u> , Tupac knew he was only human, | 3B-15 |
| | | ¹⁵⁹ He saw more potential in me <u>than I saw in myself</u> . | 3B-16 |
| | | ⁸¹ I got a lot of calls like that from people <u>who were ill or ailing</u> , from people <u>who were elderly</u> , from people <u>who were lonely and needed someone to talk to</u> . | 3B-17 |
| 25 | Adjective clauses | ⁴ After a shot was fired, a gun battle broke out <u>in which one of the inhabitants of the house was wounded in the back and one of the slave catchers had his jaw blown off</u> . | 1A-1 |
| | | ²²⁴ “IG Live wasn’t built for <u>what we’re using it for</u> ,” D-Nice said. | 1B-8 |
| 26 | Noun clauses | ³²⁰ I thought that Halliday (1993) made a lot of sense in <u>how he looked at forming a new language-based theory of learning based off of how children learn language</u> . | 2A-19 |
| | | ²⁷⁴ I never said <u>that Petruchio was cruel</u> . | 2A-3 |
| | | ⁴² I do not believe that Locke's theory of libertarianism is rational. | 2A-5 |
| | | ²⁹ <u>And</u> having been without golf made following the rules that much easier. | 3B-6 |
| 27 | Clause initial conjunctions | ²⁶⁶ <u>but</u> there were very few days over this 3 year span that we did not email or chat online. | 2B-19 |
| | | ²⁶³ <u>so</u> she could seldom stay after 2:00 anyway. | 2B-19 |
| | | ¹⁶ well, actually, <u>if we have a comparative study, if we go over to Denmark, we can count</u> the hours that women spend raising children. | 4A-19 |
| 28 | Conditionals | ³²⁹ <u>You could figure out</u> who he is <u>if you were</u> also my Facebook friend, | 2B-20 |
| | | ²⁹⁷ According to Mel Hein, “ <u>If he hadn’t been killed</u> , he <u>could have been</u> the greatest tackle who ever played | 2B-8 |

| | | |
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| | football | |
| | ⁴³⁸ if not, we can come back to it at some point. | 2A-10 |
| | ²⁹ And <u>having been without golf</u> made <u>following the rules</u> that much easier. | 3B-6 |
| 29 | Nominalizations ⁸⁴ The main purpose of this work is <u>to introduce the angle dependency of HBs to the solvation free energy density surface of the G-SFED model without scarifying the accuracy in the estimation of the experimental solvation free energies.</u> | 1A-13 |
| | ²²⁴ “IG Live wasn’t built for <u>what we’re using it for,</u> ” D-Nice said. | 1B-8 |

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