THE BILITERATE WRITING DEVELOPMENT OF EMERGING BILINGUAL STUDENTS

AT THE WORD, SENTENCE, AND DISCOURSE LEVEL IN A PAIRED LITERACY

PROGRAM IN GRADE LEVELS 1–5

by

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Abstract

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Education)

The Biliterate Writing Development of Emerging Bilingual Students at the Word, Sentence, and

Discourse Level in a Paired Literacy Program in Grade Levels 1–5

Thesis directed by Associate Professor Kathy Escamilla

The purpose of this study was the examination of emerging bilingual students' (EB)

biliterate writing development at the word, sentence, and discourse levels within and across

languages and across grade levels when attending a paired literacy program in grade levels 1–5.

Current statistics indicate that the number of EB students attending the school systems in the

United States is rapidly increasing. According to national statistics (NCELA, 2007), 79 percent

of these students come from Spanish-speaking homes, and 76 percent are elementary-age

children who were born in the United States. Nonetheless, the effective education of EB students

who are learning English as an additional language continues to be a challenge, particularly in

the subject of writing (NAEP, 2011). In addition, recent research syntheses have documented the

need to investigate how EB students develop writing skills in two languages, and how the

interaction of their two languages could inform biliteracy development.

Using a mixed-methods approach, paired writing samples in English and Spanish of 150

EB students were qualitatively and quantitatively examined for linguistic measures of: textual

productivity, lexical diversity, syntactical complexity, cohesion and coherence (i.e., discourse

level). Linguistic outcomes were compared within and across languages and across grade levels

1–5. Findings for textual productivity, lexical diversity, and syntactical complexity resulted in

comparable measures across languages and across grade levels, suggesting that students attending a paired literacy program positively develop writing skills in a coordinated manner. At the discourse level, for linguistic measures of lexical and syntactical cohesion, findings indicated that students relied on same-word repetition, collocation, anaphoric personal reference, and the use of additive and causal conjunctions to unify their texts. For linguistic measures of coherence, findings indicated that students in grade levels 1–5 used topic sentences and additive and explicative logical relationships to organize their texts; in grade levels 2–5, students use of textual deviations increased; and students attending grade levels 3–5 relied on resultative, illustrative, transitional words and conversational markers to organize their texts. Implications for theory, educational policies, and biliteracy instruction are discussed.

Dedicatoria

Quiero agradecer a mi familia, en especial a mi esposa Sophia y a mis hijos Isaac y Eliza, por su paciencia, cariño y apoyo incondicional. Este trabajo fue creado siempre pensando en ustedes.

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Chapter 1

Introduction

One of the most misunderstood issues in Pre-K–12 education today is how to educate and

assess children who are learning English as an additional language (García, Kleifgen, &

Falchi, 2008). According to Gándara and Contreras (2009), Latinos[1] are the largest and most

rapidly growing minority group in the United States, "but academically, they are lagging

dangerously behind" (p. 1). According to the National Clearinghouse for English Language

Acquisition (NCELA, 2007), English language learners are the fastest growing segment of

the public school system. In 2008–2009, the number of students labeled as ELLs in the

United States was approximately 5.3 million (NCELA, 2009), a majority of this population

(79 percent) are Spanish speakers (Payán & Nettles, 2008), and 76 percent of elementary

school ELLs are U.S. native born (Capps, Fix, Murray, Ost, Passel, & Herwantoro, 2005).

The rapid and quick increase in the number of ELLs attending U.S. schools makes it

impossible to continue ignoring their linguistic and instructional demands. It has become

imperative to provide the best instruction and assessment practices to educate EB students

attending various types of instructional programs in the public education system (Bauer &

Gort, 2011).

      Another major challenge in educating English language learners (ELLs) in the United

States is effectively teaching literacy skills, reading, and writing. Developing competent

reading and writing skills is one of the most important milestones of one's educational

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[1] Not all Latinos in the United States are second language learners and not all second
language learners are Latinos, however about 80 percent of all English Language Learners
are Spanish-speaking Latinos.

success; however, national statistics indicate that our ELL population in the United States does not fare well when compared to other subgroups (Thompson, 2004; Panofsky, Pacheco, Smith, Santos, Fogelman, Harrington, & Kenney, 2005). For example, research reveals the worrisome number of nonnative English-speaking college freshmen who are failing introductory writing assessments despite their years of schooling in the United States (Panofsky, Pacheco, Smith, Santos, Fogelman, Harrington, & Kenney, 2005). Given the rapid increase of ELL students in the school system and their low performance in the acquisition of literacy skills, current trends in the education of ELL students highlight the importance of high quality literacy instruction for this population.

Although the term ELL is widely used, in this study I will use the term "emerging bilingual students" (EBs) to refer to simultaneous bilingual Spanish-speaking students born in the United States who have been exposed to two languages since birth. This term better represents the students who have the potential to become biliterate, and it better represents the population for this study. EB students also represent the "new normal," and instructional programs and assessment systems should be designed with the children's unique linguistic and literacy experiences in mind (Escamilla, Hopewell, Butvilofsky, Sparrow, Soltero-González, Ruiz-Figueroa, & Escamilla, 2014).

Research that has investigated how EBs develop writing skills in English and Spanish is scant (August & Shanahan, 2006; Dworin & Moll, 2006). However, there is abundant knowledge about early literacy development for Spanish- and English-monolingual children (Clay, 1991; Goodman, 1986; Ferreiro & Teberosky, 1979). For example, studies on monolingual writing development in English and Spanish suggest that writing development follows three important stages: (1) children can discern between written text and drawings or

pictorial productions, (2) the children's writing includes qualitative and quantitative variation of letters; and (3) the child's writing presents one-to-one sound-letter correspondence (Ferreiro & Teberosky, 1979; Goodman, 1986). However, for children who experience two languages in their homes, communities, schools, and society, information about how they develop early literacy skills and write in two languages simultaneously is an under-researched and misunderstood phenomena (Escamilla et al., 2013; Gort, 2006). This lack of scientific knowledge about how EB students who are learning two languages simultaneously develop biliteracy skills presents a challenge for educators and practitioners working with this growing population.

Another challenge to the effective development of high literacy skills for EBs is the use of a valid assessment that truly measures students' linguistic competencies. In the United States as well as in other parts of the world where bilingualism and multilingualism are more accepted, research in the field of valid and reliable bilingual assessment instruments to measure EB students' linguistic and literacy skills is almost nonexistent (Hopewell & Escamilla, 2013; Shohamy, 2011). Historically, monolingual assessments have been used to test monolingual and EB students on the same linguistic or academic measures. Then, comparisons performed across groups have produced unfair and invalid results, which have led to inaccurate conclusions of students' true levels of academic (e.g., literacy) and linguistic achievement (Shohamy, 2011), and to the narrative of the achievement gap. For example, the No Child Left Behind (NCLB, 2001) legislation has required schools to continually test all students through monolingual standardized testing and to hold their schools accountable for students' scores and performance (Gándara & Contreras, 2009).

Research in bilingual education has concluded that teaching EB students to read and

write in both English and Spanish supports their biliteracy development, higher levels of literacy achievement in English skills, and provides cognitive advantages (August & Shanahan, 2006; Bialystok 2001; Lindholm-Leary & Genesee, 2010; Thomas & Collier, 2002). However, such constructive discussions about the benefits of bilingual teaching and learning have been ignored in the field of assessment (Shohamy, 2011).

This study is part of a larger study on a paired literacy instruction approach called Literacy Squared®. Literacy Squared is conceived as a holistic biliteracy program consisting of four components (instruction, assessment, professional development, and research) and is being used to investigate the biliteracy development of Spanish- and English-speaking children in grades K–5. The instructional component includes three mandatory instructional approaches: Spanish literacy, literacy-based English Language Development (ELD), and cross-language connections. The time allocations for Spanish literacy and literacy-based ELD are provided in biliteracy blocks, and these blocks change and vary across grade levels K–5. A common trait in Literacy Squared, as in many other types of bilingual programs, is that Spanish instruction decreases across grade levels while English instruction increases (see Appendix A). The instructional component of cross-language connections is always encouraged in the biliteracy block in order to maximize the bidirectional transfer of students' knowledge and literacy skills across languages. Thus, children in classrooms using the Literacy Squared approach learn to write in both English and Spanish at the kindergarten level while at the same time learning about the differences and similarities for English and Spanish, or cross-language connections.

This study also builds from the Literacy Squared writing assessment system. Data sources, analytical tools, and analytical approach are obtained and informed by the Literacy

Squared assessment system. The Literacy Squared assessment framework is founded on the holistic bilingualism theory (Grosjean, 1989) and designed to observe students' language systems (English and Spanish) as a unified whole. Students attending Literacy Squared classrooms are assessed in two languages—reading and writing—in order to measure their progression and plan for future instruction. In writing, the Literacy Squared assessment system has two components: a set of eleven writing tasks for each language and each grade (see Appendix B) and a rubric to interpret students' responses. The Literacy Squared writing rubric contains two components: (1) a quantitative portion that holistically assesses students' compositions for content, structural elements (i.e., punctuation), and spelling (see Appendix C); (2) the qualitative side of the rubric that is intended to identify and categorize students' linguistic approximations (i.e., linguistic hypothesis as students concurrently develop two languages simultaneously), including aspects of crosslinguistic transfer at the rhetorical, sentence, word, and phonetic levels (see Appendix D). Both sides of the rubric are useful in measuring and monitoring students' positive trajectory towards biliteracy (Escamilla et al., 2013).

Because we need to further our understanding of how to educate and assess students who are growing up with two languages simultaneously, the topic of biliterate writing development for EB students warrants research attention. Empirical evidence in students' writing development within and across languages can advance our understanding about the relationships between students' literacy trajectories in both languages. Furthermore, research that examines writing development in English and Spanish can advance the design of more effective classroom practices in literacy, and improve literacy assessments by making them flexible and more responsive to students' writing development.

Problem Statement and Need for the Study

This study addresses a few major problems related to the education of EB students. One is the need for research on EB students' biliterate writing development, which could have the potential to further inform biliteracy instruction in a paired literacy program to improve the education of EB students. Another is the improvement of the Literacy Squared assessment system. I also mention other problems related to the education of EB students, including the need for this study. As noted before, EB students in the United States are academically behind their international peers, and their writing performance is worrisome. According to the National Literacy Panel on Language-Minority Children and Youth there is the need for new studies that highlight the processes through which EBs acquire and develop writing skills in two languages (August & Shanahan, 2006). However, I argue that the adoption of accountability systems and standards-based instructional approaches founded on monolingual ideologies create difficulty to design environments where research on bilingual writing and bilingual assessments can be conducted. This study and subsequent research on biliterate writing development have the potential to not only inform instruction for EBs but also to challenge current standards-based approaches in instructing EBs in the United States.

I argue that there is a scarcity of educational environments providing instruction that uses EB students' synergetic relationships to acquire literacy skills in two languages, which makes it difficult to conduct studies on biliteracy development. I believe this is because educational reforms in the United States, such as the NCLB, and standards-based reforms, such as the Common Core State Standards (CCSS) are founded on monoglossic language ideologies that continue to perpetuate the English language as the main language for instruction, learning, and assessment. As a result, biliteracy development as the norm for

teaching, learning, and assessing is not a priority, which constrains the creativity in and examination of the learning environments that promote it.

Despite the great linguistic and cultural diversity in our school system, the current sociolinguistic landscape in the United States has been grounded in monoglossic language ideologies where Standard English is the norm for teaching and assessing. Currently the CCSS, a standards-based educational reform initiative, is being implemented in 43 states, including Colorado. The purpose of the CCSS is to set high academic expectations for all students to ensure they acquire the necessary skills to go to college (Council of Chief State School Officers, 2015). The CCSS initiative proposes the collaboration among states to enable and provide educators with textbooks, comprehensive assessments, and other tools, thereby ensuring students would learn the new standards. However, the CCSS has already been criticized for ignoring the linguistic diversity of students who are growing up speaking other languages besides English and for promoting an English-only instruction (Flores & Schissel, 2014). The CCSS is founded on a monolingual ideology that ignores linguistic diversity, keeping teachers from providing instructional contexts that capitalize on students' linguistic resources in a language besides English. Therefore, it is necessary to conduct research that highlights EB students' advancement in their literacy skills within a restrictive policy, in order to challenge dominant and monolingual approaches for teaching, learning and assessment.

Another challenge in the education of EB students is the use of assessment to measure EB students' reading and writing skills in English only. Historically, monolingual assessments have been used to test monolingual and EB students on the same linguistic or academic measures. For instance, assessment within bilingual settings has followed two main

approaches: (1) assessing EB students only in English, and (2) assessing EB students using monolingual approaches in two languages. An example of this practice is observed in the NCLB testing approach, which has required schools to continually test all students through monolingual standardized testing and to hold their schools accountable for students' scores and performance (Gándara & Contreras, 2009). Testing occurs without taking into account EB students' language proficiency in English or proficiencies in other languages, and without providing valid and reliable assessments to measure EB students' literacy and language skills (Van Roekel, 2010).

The continued use of testing practices from monolingual approaches has greatly impacted the academic, social, and economic advancement in students' lives and communities (Shohamy, 2011). Measuring and comparing monolingual students and bilingual students in English using invalid tools has led to inaccurate conclusions about EB students' true levels of academic (e.g., literacy) and linguistic achievement (Shohamy, 2011). Typically, English assessment instruments only provide a fractional view of the EB students' linguistic and literacy capabilities and "often underestimates the cognitive and academic strengths of Spanish-speaking students" (Escamilla & Coady, 2001, p. 43). As a result, assessment tools from monoglossic ideologies, especially in the subject of literacy, have aided: (1) the construction of a very limited and restrictive view of student strengths and needs, (2) have created a negative discourse toward EB students, in terms of their academics, and (3) have served to limit and marginalize Latino bilingual students from experiencing more meaningful and rigorous learning environments that support their cognitive and linguistic resources. "Underperforming" students are more likely to be placed in reductive literacy learning environments that will decrease their educational opportunities (Hostetler,

2005). As a consequence, we need new assessment tools for Latino EB students that will solve present inequities in their education in order to improve their academic achievement and academic use of language—both in English and Spanish (García & Torres-Guevara, 2010). We need bilingual assessments that have the inherent possibility to see the dynamic relationships across students' languages as mutually reinforcing, to document cross-language comparisons and students' biliteracy trajectories, and to perceive students' linguistic variation and different levels of performance across languages as normal development of EB students' literacy skills (Escamilla et al., 2013). This is the potential of this work.

Perhaps, the participation of Spanish- and English-speaking EB students in reductive literacy learning environments is now being reflected in the National Assessment of Educational Progress (NAEP, 2011) writing report card. Statistics indicate the need for better writing instruction for students from Latino backgrounds. The NAEP (2011) writing report card described the performance for eighth- and twelfth-grade students in the United States, including segregated data for different ethnic groups, and the results are problematic. (Interestingly, segregated data with specific information about the performance for ELLs was not provided in the report). In the NAEP writing assessments, students are asked to write to persuade, to explain, and to convey experience. These assessments provide three categories of achievement levels: basic, proficient, advanced. Scale scores for each category are not provided in the report; the only item that was reported was the average for fifth graders—150 points out of 300. According to the NAEP (2011), only 27 percent of the eighth graders in the United States scored at proficient or above proficient. On a scale of 0–300, Hispanics scored an average 136 points, 22 points on average below their white counterparts (average points = 158). In terms of achievement-level results, 55 percent of Hispanics scored at the

basic level, 13 percent at the proficient level, and only 1 percent at the advanced level; surprisingly, 31 percent of Hispanic eighth graders scored below the basic level. In sum, Hispanic students are performing below the basic performance and way behind the White students in the eighth grade. It is evident that the need for better writing instruction to improve writing performance is not only an issue for Hispanic students but for all students attending schools in the United States. Research that examines writing development in Spanish-speaking students with the aim to improve writing instruction is greatly needed, given the national statistics about students' performance in writing.

Research on EB students' biliterate writing development is limited and inconclusive, which limits the design of more effective, research-based biliteracy approaches. Therefore, I believe it is necessary to conduct research that includes students' unique linguistic repertoires and their sociolinguistic and sociocultural contexts of instruction. This would help further our understanding of how children, who are learning two languages within supportive contexts, learn to read and write. A review of the literature shows that there is little research on early biliterate writing development for EB students attending formal contexts of instruction. Some studies have examined EB students' biliteracy development in English by using only a parallel, monolingual approach (Peyton, 1990; Urzua, 1987). However, these studies are considered inconclusive at best because they ignore how students' native language influences composition skills in their second language (Gort, 2006).

Other studies have examined EB students' writing development within bilingual settings that use a sequential bilingualism approach (e.g., early-exit transitional programs, late-exit bilingual programs, and two-way bilingual Education [TWBE]) (Edelsky, 1982; Lanauze & Snow, 1989; Lindholm-Leary, 2001; Thomas & Collier, 2002). An instructional

difference between these programs is that for late-exit and TWBE programs, biliteracy is an outcome and expectation, whereas for early-exit programs, transitioning to English is the main instructional objective. These studies are considered limited because they suggest that EB students transfer skills in a unidirectional manner (e.g., early-exit programs) from Spanish to English, and they provide limited insights about what synergistic interactions exist across languages in EB students (Gort, 2006).

Research examining EB students' biliterate writing and biliteracy development within paired literacy instruction is also very sparse. Technically, paired literacy programs teach children to read in both English and their native language at different times during the day, different days during the week, and for a few years until children develop the skills in English to succeed (Slavin & Cheung, 2005). However, there are other types of paired literacy programs, such as Literacy Squared—a comprehensive biliteracy framework—that continues instruction in English and Spanish from kindergarten to the fifth grade. Some studies conducted by the Literacy Squared research team have longitudinally examined EB students' biliteracy development and processes using holistic bilingualism approaches, which have examined the relationships across languages (Butvilofsky, 2010; Soltero-González, & Cano-Rodríguez, 2012; Soltero-González, Escamilla & Hopewell, 2010, 2011; Sparrow, Butvilofsky, & Escamilla, 2012). Findings from these studies suggest that EB children participating in a paired literacy approach use their entire linguistic repertoire to achieve communication and develop positive trajectories towards biliteracy (Escamilla et al., 2013). However, these studies have been limited in scope because they have been conducted in grade levels 1–3 using small samples, or cases studies. Research and scientific knowledge about biliteracy instruction and biliteracy development from a perspective that accounts for

an interaction between the development of the two languages remains an unexamined phenomenon (Bauer & Gort, 2011; Dworin & Moll, 2006). I argue that further research within paired literacy instruction is needed in order to continue improving biliteracy instruction and assessment practices for EB students who are learning two languages simultaneously.

The developmental patterns of young writers in English-as-a-second-language (ESL) are highly unpredictable, which increases the complexities of designing more appropriate educational approaches (Leki, Cumming, & Silva, 2008). I argue that what we know about EB students' writing development in two languages is limited because research has been conducted in different instructional settings with different populations, resulting in inconsistent findings. For example, in terms of students' biliterate writing development across grade levels, research in TWBE schools has suggested that students presented a native language effect in grades 3–5 (meaning that students' writing skills were stronger overall in their native language) (Serrano & Howard, 2007). I assert that a native effect is observed in writing in the upper grade levels because formal instruction in English within TWBE programs usually starts in the second or third grade when students' have acquired a level of proficiency in their native language (L1). Literature suggests that L1 dominant bilinguals tend to perform better in their L1 than in their L2 (Manchon, 2012). On the other hand, for children in grade levels 1–3 in Literacy Squared classrooms, when formal English instruction starts in the kindergarten, issues of the native language effect in students' writing disappeared in the second grade, suggesting EB students' bilingual writing development progresses in a coordinated manner (Sparrow, Butvilofsky, & Escamilla, 2012). Consistent with the literature, the greater the competence that bilinguals have in L2, the less they will use their

L1 (Manchon, 2012). I argue that research within paired literacy instruction is inconclusive and further research is warranted.

Studies conducted in paired literacy instruction suggest that further research is needed to help students, teachers, and leaders to understand trajectories toward bilingualism and to see students' emerging bilingualism as a cognitive, academic, and social advantage (Escamilla et al., 2013; Butvilofsky, 2010). Research on teacher evaluation of students' emergent biliterate writing concluded that teachers continue underestimating the writing strengths of EBs in both English and Spanish (Soltero-González, Escamilla & Hopewell, 2010, 2011). Similary, Butvilofsky (2010) denoted that the lack of a biliterate pedagogy contributed to teachers underestimating EB students' biliterate writing potential. My contention is that through additional information about students' biliterate writing development, we can assist educators in recognizing bilingualism and improving biliteracy instruction to best capitalize on students' cognitive and linguistic resources.

Finally, another difficulty that this study attempted to explore is the clustering of grade levels 1–5 students at the content score 5 in the Literacy Squared writing rubric. The Literacy Squared Biliterate Writing Rubric has helped teachers, educators, and researchers document cross-language comparisons and document EB students' biliteracy trajectories (Escamilla et al., 2013). However, student outcomes studied thus far have demonstrated that students in grades 1–5 are clustered at level 5 in the analytical dimension of content (see Appendix E). Qualitative analyses suggest that changes in students' writing samples across grade levels are not reflected numerically in the area of content in the rubric (Soltero-González & Cano-Rodríguez, 2012). However, it is unclear whether the rubric is not sensitive enough to capture different levels of writing performance across grade levels (see

Appendix F), or instead, the writing prompts themselves may not be eliciting an adequate and representative sample of students' writing ability. This study examined aspects of the Literacy Squared assessment system and had a secondary purpose of comparing whether students' responding to the same prompt in grade levels 1–5 scored differently than students responding to different prompts across grade levels.

There is still much to learn about how young EB students progress as writers within and across languages and across grade levels when receiving systematic and sustained instruction in two languages (Genesee, Geva, Dressler & Kamil, 2006). We need to continue documenting how EBs construct literacy in order to create quality programs and more robust learning contexts that capitalize on students' abilities (Bauer & Gort, 2011), and we need to improve our assessment tools and practices, particularly in the area of formative assessment.

Purpose of the Study

The purpose of this study was to better understand EB students' biliterate writing development at the word, sentence, and discourse levels while participating in the Literacy Squared program in grade levels 1–5. I investigated students' biliterate writing development within each language as well as the linguistic resources that students shared across their languages in the construction of written texts.

Given that students' scores clustered around a single level when their writing samples were rated using the Literacy Squared writing rubric, this study's secondary purpose examined whether using the same writing prompt across grade levels would produce different outcomes when compared to using different writing prompts in Spanish and English across these same grade levels.

Examining EB students' writing development within and across languages and investigating ways to improve the Literacy Squared assessment were the impetuses for this research work. Empirical research and assessments that recognize EB students' unique linguistic, literate, and cognitive qualities as assets have the potential to solve some of the present inequities in the education of EB students in the United States.

Conceptual Framework

One of the central issues addressed in this dissertation is EB students' biliterate writing development within and across languages and across grade levels at the word, sentence, and discourse levels when attending a paired literacy program in grade levels 1–5. Because it is important to examine the psycholinguistic processes as well as the linguistic resources in the production of texts in bilingual children, I examined biliterate writing at the micro-, macro-, and superstructure levels (Kintsch & van Dijk, 1978; Levelt, 1989). Further, because a monolingual perspective does not suffice for understanding bilinguals and their biliteracy development (Grosjean, 1989), I applied a bilingual perspective to the examination of biliterate writing development within and across languages. In addition, I also considered students' sociolinguistic contexts (i.e., instruction within a paired literacy instruction) and cross-linguistic transfer. Figure 1 illustrates this idea.
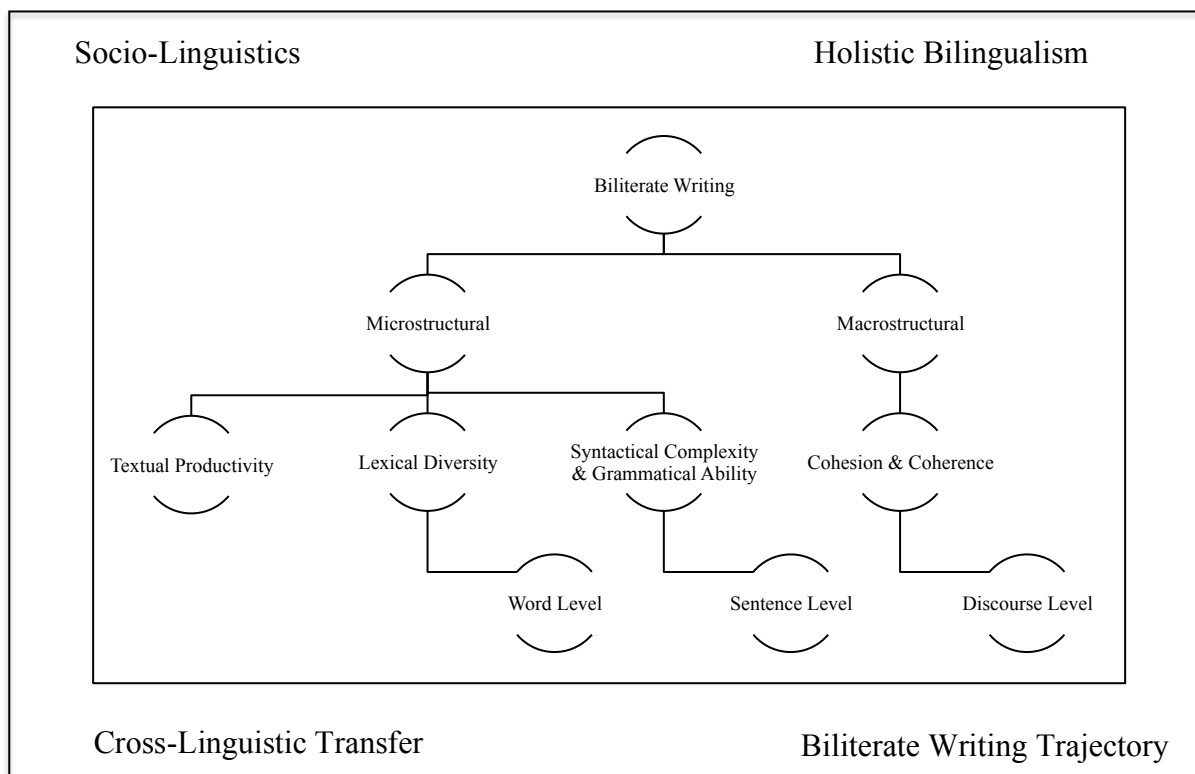
Figure 1. **Conceptual Framework**

Psycholinguistic processes in language production. In order to understand the concepts of micro-, macro-, and superstructure in the context of text production, we need to first review the basic notions of language production. In his review of the psycholinguistic processes involved in language production, Levelt (1989) proposes a model for language production that is intended to explain the speakers' cognitive and linguistic resources in language production. According to Levelt (1989), the production of speech consists of three major modules: conceptualizer, formulator, and articulator. (Modules are understood as subsystems included in the linguistic system such as phonology, morphosyntax, and lexicon.) Briefly, the conceptualizer is primarily deciding on what to express—or the content of the message. In this module, there is a preverbal message, which is then passed onto the second module, the formulator. The formulator performs two operations: grammatical encoding and

phonological/phonetic encoding. According to Levelt (1989), in order to encode a message linguistically, the individual must retrieve appropriate words for their lexical concepts, and then these words are ordered and morphologically shaped in order to meet syntactic requirements, or "syntactic unification" (p. 17). After a particular lexicon is recovered, the speaker retrieves the phonological properties of the lexicon (phonological encoding), which in turn activates each of the individual's "mental syllabary" (p. 20) (phonetic encoding). This phonetic encoding contains an articulatory gesture for each phonological syllable generated by the speaker, which is in turn expressed as audible speech that an observer can study.

This same logic of language processing and production suggested by Levelt (1989) is applicable to the process of written language production. In the context of writing research, the psycholinguistic processes in language production discussed by Levelt (1989) can be furthered examined by using the model of text comprehension and production, or the semantic structure model of texts proposed by Kintsch and van Dijk (1978). First, it is worthwhile to consider that Levelt's overview of psycholinguistic processes involved in language production could be distinguished at two different levels: *conceptual* processes and *linguistic* processes (Sanders & Schilperoord, 2006). Conceptual processes include the macroplanning , which is the underlying textual representation and the text structure and discourse coherence are such characteristics of textual representation (Sanders & Schilperoord, 2006). On the other hand, the linguistic processes include the syntactic formulation, which are considered lower levels of texts such as syntax, or the use of connecting words (Sanders & Schilperoord, 2006).

In terms of analyzing textual production, both the conceptual processes and linguistic processes in language production included in Levelts' model can be further examined by

using The Semantic Structure Model of Texts proposed by Kintsch and van Dijk (1978). The Semantic Structure of Text is a model that intends to represent the mental operations that underlie the processes in text comprehension and production. According to Kintsch and van Dijk (1978), text representation can be examined at three different levels: microstructure, macrostructure, and superstructure. In short, the micro- and macrostructure levels represent text content and logical organization whereas the superstructure level deals with the global structure that is characteristic of a text type (i.e., genre). The theoretical notions of these three levels including analytical approaches are further explained below.

  Microstructure, macrostructure, and superstructure. Briefly, the semantic structure of texts can be described and examined at the micro-, macro-, and superstructural levels (Kintsch & van Dijk, 1978). Theoretically, the microstructure is a network of propositions (e.g., representations), which represent the textual information in a "bottom-up fashion: sentence-by-sentence" (Sanders & Schilperood, 2006, p. 387). In other words, the microstructure of texts is the local level of discourse, including its individual propositions and their relations, or an abstract text base on which the macrostructure levels builds (Kintsch and van Dijk, 1978). On the other hand, the macrostructure is of a more global nature, that is, the global meaning structure, which represents the gist of the text (Sanders & Schilperoord, 2006). Therefore, the semantic structure of discourse must be described not only at the microlevel but also at the more global macrolevel. Kintsch and van Dijk (1978) indicate that the theoretical and linguistic reason for this description derives from the fact that a text base (microlevel) must be connected to what is intuitively called a *topic of discourse* (macrolevel) (pp. 365-366). The superstructure, also known as scripts, is the form in which the macrostructure is presented (Sanders & Schilperoord, 2006). For example, news

discourse includes the following superstructural categories: headlines, lead, context, and event (Sanders & Schilperoord, 2006, p. 387).

In my research, I consulted both microstructural and macrostructural constructs as well as the analysis of texts to examine EB students' writing development at the word, sentence, and discourse levels in English and Spanish when responding to an explanatory writing prompt (i.e., superstructure). Previous studies have demonstrated that microstructural and macrostructural analyses are both applicable to English and Spanish (Montaño-harmon, 1988; Rojas & Iglesias, 2013).

Text Analysis: In writing research**,** text analysis can be defined "as the unfolding of a unity, the text, in its constituent parts" (Sanders & Schilperoord, 2006, p. 387). In order to examine EB students' writing development at the micro- and macrostructural levels when responding to an explanatory writing prompt (i.e., superstructure), I used the following linguistic measures for each of the analytical categories:

Microstructural text analyses. According to Heilmann et al. (2010), microstructural analysis mainly focuses on children's textual productivity, linguistic content, and form. Measures of textual productivity are used to document the amount of information (e.g., total number of words and total number of sentences) in children's texts (Heilmann et al., 2010). Linguistic content is usually used to document children's productive vocabulary skills, whereas linguistic form in written text is measured by examining children's syntactical and grammatical ability (Heilman et al., 2010). In my research, I consulted the following constructs in order to examine EB students' written texts for textual productivity and for word and sentence level development:

Textual productivity. The measures used to document the amount of information in EB students' texts were total number of words and total number of modified c-units.

Word level, lexical diversity. A common measure to examine children's lexical diversity is quantifying the total number of different words in their written texts. The number of total words is a direct index of vocabulary diversity and a measure of syntactical performance (Miller, Andriacchi, & Nockerts, 2012).

Sentence level, syntactical complexity. I consulted three measures to examine syntactical development and complexity: the mean length of an utterance (i.e., T-units, communicative units), the subordination index, and grammatical accuracy. The measured mean length of utterance is a long-established measure of syntactical complexity and indicates the average number of words that children use per utterance (Rojas & Iglesias, 2013). The subordination index is a measure of clause density intended to value syntactical complexity in children's written texts, and it is calculated by providing a ratio of the number of clauses—main and subordinate—within the utterance. The third measure is grammatical accuracy, and it entails the total number of morphosyntactic approximations recognized by a native speaker of English and Spanish (Tilstra & McMaster, 2007), or the "well-formedness of sentence" (Hickman, 2004, p. 108). Within this construct we have intralinguistic approximations (i.e., grammatical errors unique to each language) and crosslinguistic approximations (approximations common to students who are developing two languages simultaneously) (Grosjean, 2012; Soltero-González et al., 2010).

Macrostructural text analyses. In contrast to measures of microstructural analyses, the analyses of written texts at the discourse level are commonly performed using the macrostructural analysis. Studies concerning children's discourse organization refer to

cognitive macrostructures to explain children's representations of events sequences (Hickmann, 2004). Macrostructures, then, provide a general account of children's verbal and nonverbal knowledge about event sequences. According to Hickmann (2004), there are two linguistic devices that children use to organize their texts: cohesion and coherence. Cohesion is defined as the "unity in a text by the use of lexical and syntactical elements" (Montaño-harmon, 1988, p. 29), whereas coherence corresponds to properties of the content of the discourse and its organization (Hickmann, 2004).

In the literature, there are two main types of macrostructure that explain written organization: "*scripts,* which guide the organization of familiar event sequences, and *story grammar*, which are specialized in for the organization of stories (Hickmann, 2004, p. 86) (i.e., setting, complication, and resolution). In order to examine EB students' writing development, I consulted the concepts of script, discourse patterns, cohesion and coherence.

Superstructure or Scripts. Because children in this study responded to writing prompts that elicited an explanatory text, the concept of scripts is more appropriate to understand children's textual organization than the concept of story grammar. Scripts correspond to cognitive structures that make it possible for children to illustrate common behavioral routines (i.e., who is your best friend? Who would you like to be if you could be someone else?), "which typically involved a sequential ordered set of familiar events, the structure of which is determined by a logical, chronological, and/or conventionally agreed upon type of sequence" (Hickmann, 2004). To conclude, discourse in this study is defined as a piece of extended language, written or spoken, that has a meaning and purpose, "a unit higher than the sentence, for example the paragraph, of some larger entity such as episode or topic unit" (Halliday & Hassan, 1976, p. 19).

Discourse patterns. According to Kaplan (1972), the discourse pattern is the rhetoric and sequence of thought used in the organization and development of a text (as cited in Montaño-harmon, 1988, p. 29). According to Montaño-Harmon (1988), "the logical development in texts is not universal but is rather language/culture specific" (p. 7). When writing, children who function in languages other than American English may use other discourse patterns and other discourse features that are influenced by their native language (Montaño-Harmon, 1988). This study consulted the construct of discourse patterns in EB students' written texts in order to investigate whether or not the organization of texts differed across languages.

Cohesion. According to Halliday and Hassan (1976), cohesion is the lexical and grammatical relationship between different elements of a text that hold it together. One basic concept that is employed in analyzing a text's cohesion is a *tie*. According to Halliday and Hassan (1976), cohesive ties are necessary components of written texts because they contribute to meaning and interpretability by eliminating ambiguity and narrowing text predictability (Guthrie, 2008). Halliday and Hassan remarked that, "[A] tie is a complex notion, because it includes not only the cohesive element itself but also which is presupposed by it" (1976, p. 329). For example, the use of a pronoun to bind individual elements within a text depends on, or presupposes, another linguistic element (i.e., noun). My study examined cohesion to explore the lexical and grammatical linguistic features that children use to connect their texts.

Lexical cohesion. Lexical cohesion is the "cohesive effect achieved by the selection of vocabulary" (Halliday & Hassan, 1976, p. 276). Halliday and Hassan (1976) suggest that there are two types of lexical cohesion: reiteration and collocation. Lexical reiteration

includes the use of the same word, synonyms or near-synonyms, superordinate words, general class words, and collocation includes words that are semantically related.

Syntactical cohesion. According to Halliday and Hassan (1976), syntactical cohesion is the linkage of sentences together using grammatical features of languages such as reference, substitution, ellipsis, and conjunction. In short, syntactical cohesion is not just about the way sentences are organized in a text, but it also explains how sentences are linked together to form a cohesive whole (Jackson, 1982).

Coherence. According to Sanders & Maat (2006), coherence is the way a text makes sense to the reader, the mental representation of the text, or the sense of connectedness. A text is both cohesive and coherent (Montaño-Harmon, 1988), and "refers to the organizational properties of texts, based on the arrangement of ideas expressed in the relationships of one sentence or clause at the idea level with the subsequent sentence or clause" (Montaño-Harmon, 1988, p. 259). My study examined coherence to examine the logical relationships children used in their written texts to provide organization.

Bilingualism. For this study I applied the concepts of holistic bilingualism (Grosjean, 1989) and crosslinguistic transfer in the examination of EB children's written texts.

Holistic bilingualism. This study used the theory of holistic bilingualism, which postulates that the language and literacy development of EB students is different from that of monolinguals (Grosjean, 1989). Bilinguals achieve and maintain a necessary level of communicative competence by developing linguistic and literacy competencies in their two language systems (and possibly in a third by the combination of the first two) (Grosjean, 1989). Because bilinguals' language environments affect their language needs (functions), it also affects their linguistic competency in one language or the other, which is why bilinguals'

linguistic competencies are different from those of monolingual learners. This theory acknowledges students' linguistic and cultural repertoires, and literacy skills in two languages as resources for learning (Bauer & Gort, 2011). In this study, I used a holistic bilingual lens to examine students' writing systems as a whole in order to further understand: (1) students' biliterate writing trajectory, for which it has been hypothesized that students attending paired literacy instruction positively develop Spanish and English writing competencies in a coordinated manner, and (2) EB students use their knowledge of one or both of their languages as a resource to construct texts.

Crosslinguistic transfer. Recent studies of crosslinguistic transfer of skills have been important to further the understanding of how bilingual students develop literacy skills in one or two languages, and how their language and literacy development in both languages may be interrelated (Genesee et al., 2006). A recent research synthesis on crosslinguistic transfer concluded, "aspects of writing skills that have been developed in one language can be accessed for writing in the other" (Genesee et al., 2006, p. 16). Cummins (1981) proposed the interdependence hypothesis, a widely renowned theory of first-language transfer, which suggests that students' development in their native language facilitates the development of the second language.

A more recent theory of transfer highlights a bidirectional transfer of literacy skills when students are given opportunities to develop literacy in two languages (Dworin, 2003; Reyes, 2006). The concept of bidirectionality suggests, "language and literacy development for bilinguals are bidirectional" and "mediated through the use of two languages . . . what is learned in either language may 'transfer' to the other language" (Dworin, 2003, p. 179).

Using this idea of bidirectionality, I would expect students using similarly developing writing skills and strengths in their writing across languages and across grade levels.

Sociolinguistic perspective on bilingualism. A sociolinguistic perspective on societal bilingualism posits that EB students in the United States belonging to bilingual communities are developing bilingualism and biliteracy skills in a society where monolingualism is the norm, and their home language is associated with a low prestige (Sebba, 2011). Within this perspective, the theory of languages in contact helps to conceptualize the role both English and Spanish may play in the shaping or acquisition of the child's biliteracy skills and English acquisition. This concept of language in contact is explained in the following section.

Sociolinguistics, languages in contact. Within this theoretical perspective, biliteracy is situated within a sociolinguistic context where students' biliterate writing development is being shaped and mediated by: (1) the use of both languages that come in contact within formal and informal settings, and (2) participating in social interactions and collaborations embedded in the school context instructional practices (e.g., biliteracy routines). Because students participated in a paired literacy instruction in grade levels K–5, both of their languages are in continuous contact, and children use both languages to approach academic learning (Escamilla, 2000). The interaction of both languages is represented in their writing as linguistic variation, or overgeneralization, a term in sociolinguistics that describes a phenomenon where one overextends one rule to cover instances to which that rule does not apply. Examples of overgeneralization are included in the qualitative section of the Literacy Squared writing rubric and is also described in the following section, biliterate writing behaviors.

Biliterate writing behaviors. Drawing from sociolinguistics, issues of language in contact and theories of transfer, recent studies have documented that biliterate writing behaviors are unique to EB students (Gort, 2006; Grosjean, 2010; Soltero-González et al., 2010). While conducting research, I used the concept of biliterate writing behaviors as a theoretical stance to examine EB students' biliterate writing development as they responded to writing tasks (English and Spanish) in a monolingual mode. According to Grosjean (2010), as bilinguals interact in a monolingual mode[2], bilinguals may sometimes code switch, and they regularly produce interferences. Although the literature suggests the term *interference*, in this study it was replaced by the term *approximation*. Soltero-González et al. (2010) use the term *approximation* rather than *interference* to refer to the bilingual strategies that students use to achieve written communication. The authors consider bilingual strategies as cognitive, linguistic, and academic strengths that EBs use at the phonetic, word, sentence, and discourse levels to achieve written communication. In this study, bilingual strategies at the phonetic level were not considered. The bilingual strategies included in this study were the following:

- Discourse level bilingual strategies: crosslinguistic transfer of punctuation (¡Hi!)
- Sentence level bilingual strategies: bidirectional syntax transfer (the application of syntactic structures from one language to the other); word order (literal translations [word-by-word translation from the deactivated language to the language base]); inter-sentential code switching (code switching that occurs between sentences)
- Word level bilingual strategies: code switch ("the use of one language while engaged in the other" [Gort, 2006, p. 342], that is, function words such as conjunctions); code

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[2] EB students in this study were asked to write a composition in a monolingual mode

switch loan word (i.e., content words such as nouns); and nativized words (that is,

words originating in one language were changed morphologically to incorporate the

structure of the other language [such as, *troca*/truck])

Grosjean (2010) asserts that approximations can "flow straightforward, from the stronger

language influencing the weaker language" (p. 75), or, in a bidirectional manner, if a child's

two languages are equally strong or proficient.

As bilinguals continue to develop their linguistic (or literacy) skills, bilinguals present

intralanguage approximations that reflect the person's linguistic knowledge in a language

(Grosjean, 2010). These deviations are also called language-specific approximations

(Soltero-González et al., 2011) resembling those made by native-speakers of the target

language (Genesee et al., 2006). For example, students may present overgeneralizations

(using irregular verbs as regular), simplifications (simplifying syntax), and hypercorrections

(the overuse of a perceived rule of grammar [Grosjean, 2010, p. 69]). Such deviations can

occur in EBs' stronger or weaker language, especially within instructional settings where

biliteracy is the means of instruction.

In sum, for this study I adhere to the constructs of microstructure and macrostuture

analyses of texts, the theory of holistic bilingualism, crosslinguistic transfer, and

sociolinguistics to examine EB students' biliterate writing development at the word,

sentence, and discourse level. I adhere to the idea that EBs' biliteracy development is a

complex phenomenon, not linear in nature, and children may traverse different paths to

achieve it (Bauer & Gort, 2011; Escamilla et al., 2013). The bilinguals' sociolinguistic

contexts, use of both languages, and crosslinguistic transfer impact their early language and

literacy development (Escamilla et al., 2013). However, students' linguistic variations, or

hybrid practices in their writing, are considered resourceful, which means children are making strategies that they can use to achieve communication (Genesee & Riches, 2006; Soltero-González et al., 2010). For those reasons, I assert that research and assessments using holistic and bilingual perspectives enable us to better understand the development of biliterate writing as an asset and not as deficient-oriented.

Research Questions

EBs' writing development at the word, sentence, and discourse level while attending a paired literacy instruction in grade levels 1–5 were at the core of this study. The research questions that guided this study are the following:

1. How do EB students participating in a paired literacy program in grades 1–5 progress at the word, sentence, and discourse level in writing across grade levels and within languages (Spanish and English)?

2. How do EB students participating in a paired literacy program in grades 1–5 progress at the word, sentence, and discourse level in writing across grade levels and across languages (Spanish and English)?

3. How does the rating in content for students who responded to the *same* writing prompt compare to students who responded to *different* writing prompts in grades 1–5?

Significance of the Study

This study provides information about EB students' biliterate writing development at the word, sentence, and discourse level to policymakers who formulate policies about literacy programs for writing instruction, to educational biliteracy program designers in charge of

designing biliteracy environments, and to biliteracy teachers who participate in the academic and social welfare of EB students.

This study also responds to the need to investigate biliterate writing development for EB students when attending paired literacy instruction in grade levels 1–5. By using a holistic bilingual lens to examine biliterate writing across time within and across languages, this study can contribute to theory:

- through the holistic bilingualism theory and writing development for students attending a paired literacy program;
- by informing the developmental patterns in EB students' writing, or biliterate writing trajectories when attending a paired literacy program in grade levels 1– 5 (Escamilla et al., 2013);
- by increasing our understanding of how EB students who are learning two languages within supportive contexts use their two writing system to construct texts.

With increased scientific knowledge about students' biliterate writing development, this study can also contribute to practice by:

- providing empirical evidence that supports the effectiveness of paired literacy programs in developing EB students' biliteracy skills in writing as well as increasing the possibility of implementing this type of instructional program where supported;
- identifying specific writing strengths that EB students use to construct texts as well as improving pedagogical practices for writing instruction for Spanish- and English-speaking EB students within Literacy Squared schools;

- identifying discrete linguistic features that EB students' use in both languages to construct texts, which establishes a starting point for the improvement of the Literacy Squared assessment system.

More scientific knowledge about Spanish- and English-speaking EB students' writing development has the potential to inform literacy instruction as well as to improve writing assessment tests, which could solve present inequities in their education and improve their academic achievement—both in English and Spanish (García & Torres-Guevara, 2010). In addition, research on EB students' biliterate writing development has the potential to challenge current monolingual standards-based curriculum by highlighting students' academic and cognitive potential in both languages when constructing texts. By exploring the complexities in EB students' writing development, I hope that this study will contribute to the field of biliteracy instruction for this population attending bilingual programs.

Summary

The use of the three theoretical perspectives I described above provides the stances for understanding how EB students progress as writers within and across grade levels 1–5. A sociolinguistic perspective gives insights about students' linguistic variations in their writing. A holistic bilingualism and the theory of crosslinguistic transfer provide a firm theoretical basis for scrutinizing writing development and the relationships across languages. All three perspectives are useful in the examination of students' biliteracy trajectories when attending a paired literacy program.

Chapter 2

Literature Review

Overview

Research in bilingual education has concluded that teaching emerging bilingual (EB) students to read and write in both languages does not inhibit their English literacy development. In fact, teaching EB students to read and write in both English and Spanish supports both their biliteracy development and their higher levels of literacy achievement in English skills, and it provides cognitive advantages (August & Shanahan, 2006; Bialystok 2001; Lindholm-Leary & Genesee, 2010; Thomas & Collier, 2002). Research in bilingual settings has identified important relationships between students' native home language and their academic and literacy development in English in terms of phonological awareness skills (e.g., decoding), language-related skills (e.g., vocabulary), literacy-related skills (e.g., knowledge of alphabet), and language processing skills (e.g., inferring) (Lindholm-Leary & Genesee, 2010). In other words, literacy in the students' native language is considered an asset because what students know in one language can positively apply to the learning of the other language (Cummins, 1981; Genesee, Geva, Dressler, & Kamil, 2006).

Aside from the research mentioned above, the opportunity to learn a native language and later a second language is the "potential to become biliterate—a skilled reader and writer of two languages" (Escamilla, 2000, p. 101). Empirical research in literacy as a second language has supported the notion that literacy development in EB students does not mimic that of monolingual English speakers (Dworin & Moll, 2006; Escamilla & Coady, 2001, Coady & Escamilla, 2005; Bauer & Gort, 2011). However, notwithstanding the years of

research that supports biliteracy development, biliteracy continues to be an unexamined and misunderstood phenomena in the United States (Dworin, 2003; Escamilla et al., 2013).

This literature review is divided into three sections: (1) writing development for EB students attending transitional bilingual programs (TBE), two-way immersion programs (TWI), and paired literacy instruction, (2) studies examining textual productivity, lexical development, syntactical complexity, and discourse in bilingual children, and (3) studies that have investigated writing prompts and writing quality.

Methods

For this literature review I selected studies based on a two-step process that involved: (1) conducting an inclusive search for all articles and empirical studies that might be appropriate, and (2) applying a selection criteria to determine which articles should be included in this literature review. I attempted to find the related literature on EB students' writing in both languages, including studies that provided information about the rubrics used to assess writing development. For this review, I included those studies that focused on writing assessments of students acquiring ESL, acquiring Spanish as a native language, and students developing biliteracy skills in both English and Spanish. I included scholarly journals, empirical studies, reports, and dissertations that were concentrated in grades K–5 and that were either conducted or published in the United States or in other countries.

English and Spanish Writing Development in Transitional Bilingual Education, Two-Way Immersion, and Paired-Literacy Instruction Programs

The following studies about EB students' biliterate writing development have been conducted in transitional bilingual programs. In some studies, students' crosslinguistic transfer has been acknowledged as a unidirectional transfer (Edelsky, 1982; Lanauze &

Snow, 1989), while others suggest a closer relationship across languages (Coady & Escamilla, 2005; Hernández, 2001).

Edelsky (1982) researched bilingual Spanish- and English-speaking students attending grade levels 1–3 in an elementary sequential bilingual program where students' initial literacy was instructed only in Spanish. Although students had not been formally instructed in English, Edelsky analyzed students' writing samples in both languages in order to examine the relationship between first language and second language writing. The sample included nine children selected from a first, a second, and a third grade. Edelsky analyzed a total of 477 Spanish and 49 English samples that she collected at four different times during the 1980–81school year. In order to understand the relationships across languages, the researcher analyzed students' writing in six different dimensions: (1) instances of code switching, (2) invented spelling, (3) nonspelling conventions, (4) structural features, (5) content features, and (6) rater's subjective impressions of attributes of content and quality (Edelsky, 1982, p. 213).

Overall findings suggest that students in the study were able to apply writing skills learned in Spanish to their writing in English, suggesting a unidirectional transfer from students' native language (L1) to their second language (L2). According to the authors, what was applied from L1 to L2 writing was: general strategies (i.e., the use of linguistic resources available in both languages to construct texts), "higher level" knowledge (i.e., that texts are contextually constraint) (Edelsky, 1982, p. 225), and the crucial process of orchestration where students use the grapho-phonic, syntactic, and semantic systems to construct texts. More specifically, for example, some of the text similarities that students shared across languages were a strategy for text ending, or personal text style, and code switching. Code

switching mostly occurred intrasententially, where students switched items such as address terms, nouns, and adjectives. Code switching was mainly observed when writing in Spanish and rarely when writing in English. Overall findings suggested that students' varied language proficiency in English did not impede them from writing in the target language; however, it influenced the complexity of students' second-language writing. Because students' in the study were only formally instructed in Spanish, cross-language relationships from English writing to Spanish writing were not examined in this study.

Lanauze and Snow (1989) researched the Spanish and English writing skills of 38 fourth and fifth graders from working-class Puerto Rican origin who attended a transitional bilingual program that followed a pairing model. All content areas were taught in English and Spanish. Students in the sample were categorized into three different groups according to teachers' perceptions about students' linguistic competence in both languages: good in both languages (GG) (n= 17), poor in English and good in Spanish (PG) (n= 12), poor in both (PP) (n= 9). Students were given 30 minutes to describe a picture in English and Spanish. Students samples were examined for measures of complexity and sophistication (i.e., total number of words, total number of T-units, mean length of T-units), linguistic variety (i.e, type-token ratio of different words to total number of verbs, and color type-token ratio if different colors over total number of words), and semantic content (i.e., use of colors for general description, specific description, positional statement [of location], and action statement). The purpose of the study was to examine what certain academic and linguistic skills in students' L1 (e.g., Spanish) would be transferable to English (L2) and how linguistic transference would be different within groups.

Overall findings suggest the PG group scored much more like the GG group in all

three measures of complexity, sophistication, and semantic content. The PP scored the lowest in all three measures. For measures of textual complexity and sophistication, all three groups scored higher in Spanish in the following measures: number total of words, number total of T-units, mean length T-unit, number of NPs. In terms of cross-language correlations, significant and moderate correlations for linguistic variety occurred with the PG group, whereas the GG group correlations were generally low, and the PP group correlations were negative. Positive correlations across languages for the PG group suggests that during this early period of their L2 acquisition, students' English skills relied heavily on the Spanish writing skills students had already mastered. On the other hand, negative correlations for the PP suggest students were not transferring skills, whereas the lack of crosslinguistic correlation for the GG group suggests that their English and Spanish skills, both relatively well developed, have become independent from one another.

This study points to the conclusion that students' in the sample were able to transfer Spanish writing skills to their English writing (at least if those skills were developed beyond a certain point in L1) during the early stages of L2 acquisition. Findings in this study confirm previous conclusions that suggest students use what they know from what they had mastered in writing in their L1 when performing in L2 (Edelsky, 1982). Opportunities for developing skills in students' native language can be expected to improve performance in their second language (Cummins, 1979).

Hernández (2001) analyzed English writing samples of four students, one a native English-speaking student and three Spanish-English bilingual students born in Mexico, who were attending the fifth grade in an early-exit transitional program. Two bilingual students were categorized as "weak" writers, while the other bilingual and native English speaker

were considered as "strong" writers, according to teachers' recommendations. The researcher analyzed students' writing samples using a multidimensional approach that included the analysis of content, organization, sentence complexity, and mechanics. The purpose of the study was to compare and contrast the writing proficiencies of bilingual students with those of native English speakers.

Overall findings indicate that English writing skills of strong bilingual children were very similar to those of English native speakers, and the writing skills of "weak" students did not lag significantly behind those considered "strong" students. In terms of content, all four students were able to present a variety of ideas persuasively. For organization, all four students did not present a topic sentence consistently but presented introduction and conclusion sentences and a similar number of paragraphs. Interestingly, the numbers of topic sentences, although not always effective, were more frequently present in the writing of a "weak" student. For sentence complexity, a measure for syntactical growth, all four students constructed ideas in a sophisticated way using simple, compound, and complex sentences showing some variety in lexical construction. According to the author, students' spelling abilities were more aligned with teachers' initial categories of "weak" and "strong," suggesting that issues of spelling and mechanics were more likely to affect teachers' judgments about students' writing skills.

Hernández (2001) documented that students in the sample were able to compose written text in Spanish even though they had been instructed only in Spanish in the early grades. She suggests that students' exposure to both languages informally leads to a transfer of writing skills in a bidirectional manner, suggesting that Cummins' (1981) relationship between L1 and L2 may be bidirectional ($L1 <-> L2$) rather than unidirectional ($L1 -> L2$).

Coady & Escamilla (2005) explored the issues of linguistic transfer and the interrelated nature of students' first and second language in literacy development. The purpose of the study was to help bilingual teachers to focus on students' complex ideas, or voices, on students' writing rather than to exclusively focus on language, or linguistic features (e.g., spelling, syntax, grammar). For their study, fourth and fifth grade students attending a transitional bilingual program responded to two different prompts, one in each language—English and Spanish; students had 30 minutes to respond. Researchers collected and evaluated 110 writing samples using a writing rubric designed for this project.

Findings suggest that students' native language, such as orthography, phonemic system, and rhetorical structure, does not transfer neatly to the second language (Montano-Harmon, 1984). For example, students' transferred rules from Spanish to English, which is often misunderstood as a language problem rather than a natural progression of how EB students develop second language literacy (Escamilla & Coady, 2001). According to the authors, as students continue developing literacy skills across languages and instructional contexts, language transfer is dynamic and continuous. Further understanding of biliteracy development and the nature of crosslinguistic transfer will assist teachers in their work with EB students and will facilitate students' acquisition of English literacy. To conclude, in terms of assessment, researchers highlight the importance of assessing writing competencies in both languages and the need to use a bilingual lens to look at bilinguals' writing.

Most empirical findings about writing development in bilingual students were derived from studying bilinguals in their L2; however, there are few studies that have researched bilingual students' writing products in their two languages (August & Shanahan, 2006; Manchon, 2012).

The concept of biliteracy is widely used but very few researchers have explicitly defined or addressed it in the literature (Hornberger, 1989; Reyes, 2012). Some researchers define biliteracy as the acquisition and mastery of literacy skills, the continua of biliteracy (i.e., sequential and/or simultaneous), and the attainment of different levels of linguistic competency (Dworin, 2003). Hornberger (1989) adds to the definition by including oral language proficiency, and she defines biliteracy and bilingualism as the acquisition of literacy skills in two languages. However, I. Reyes (2006) adds that a more comprehensive definition of biliteracy includes the use of all of the students' languages and linguistic repertoires to read, write, speak, think, and, considering their attitudes, to communicate within contextual factors and experiences. Recent research in biliteracy development continues to suggest, "Biliteracy must be understood as a special form of literacy that is distinct from the literacy experiences and processes of monolinguals" (Bauer & Gort, 2011, p. 3). The inclusion of more than one language in the process of becoming literate certainly adds more complex layers to its definition, acquisition, instruction, and assessment.

More recent studies conducted within TWI programs and paired literacy programs have examined biliterate writing development of both Spanish-English EB students and English-native speaker students. These studies have examined the students' use of writing skills/processes across languages and across grade levels, including the nature of the crosslinguistic transfer and patterns of transfer. Because monolingual lenses are not enough to examine EB students' writing in two languages, most of these studies here used a multilingual or holistic perspective on bilingualism to examine students' biliterate and trilingual writing development.

Serrano and Howard (2007) examined biliterate writing over time of two bilingual

students attending TWI programs from the beginning of third grade to the end of fifth grade. The purpose of their research study was to illuminate patterns of the English writing development of a native Spanish speaker (NSS) and the Spanish writing development of an English native speaker (ENS) attending a TWI program. Researchers collected students' samples three times a year, for a total of nine times in grade levels 3–5. Researchers examined students' biliterate writing using the Arlington County Spanish Partial Immersion Program Writing Rubric to examine the following aspects of written discourse: composing, style, sentence formation, usage, and mechanics.

According to Serrano and Howard (2007) their findings are aligned with those found within the context of two-way bilingual education (TWBE): (1) There seems to be a clear increase in writing ability in both languages over time, (2) "There seems to be a native language effect" (p. 153), students tend to perform better in their L1, and (3) NSSs and ENSs present different patterns in developing biliteracy skills; for example, ENSs show a dominance in their native language, and NSSs reach a more balanced bilingualism (p. 153). Finally, the NSS's growth in English was more evident in grammar and mechanics than in composition, suggesting that for NSS students, composition or writing skills should be explicitly taught. For the ENSs, growth in Spanish was visible in all three areas, but grammar scores showed the least development, suggesting that ENS students' exposure to the second language (Spanish) was not as extensive as English exposure was for the NSSs. Both focal students in these case studies demonstrated comparable composition skills across languages, thereby supporting the notion of positive transfer across languages.

In a cross-case analysis study, Gort (2006) investigated the writing processes of four English-dominant and four Spanish-dominant first-grade EB students attending a TWI

program. Within this program second grade students received literacy instruction in their L1 and formal literacy instruction in their L2. The purpose of the study was to examine and document children's crosslinguistic and language processes, behaviors, and development within and across grade levels while using the the First Steps Writing Developmental Continuum (FSWDC), as a coding tool. Compositions were collected during Writing Workshops (WW) in both English and Spanish for a period of six months.

Briefly, findings in this study support the notion that bilingual writers use their full linguistic repertoire when writing in both languages (Edelsky, 1986; Lanauze & Snow, 1989; Soltero-González, Escamilla, & Hopewell, 2010), apply appropriate processes and writing skills crosslinguistically (i.e., positive literacy application), and may also temporarily apply linguistic elements in writing conventions of one language to the other (i.e., issues of interliteracy). Positive literacy application relates to specific writing skills that are developmental and temporary, or mature and permanent (e.g., the use of conjunction "y" in the early grades and then using more sophisticated coordinating elements such as transitions.) In her study, the transfer was dependent upon students' strengths in their L1 and L2. On the other hand, instances of interliteracy were observed when students applied linguistic elements (i.e., syntax) and print conventions (orthography) from one language to the other. According to the author, the components of interliteracy present different patterns of transfer, including bidirectional transfer (Dworin, 2003), and usually occurred in students' L1 only, then temporarily in L1 and L2, and then in L1 only. According to Gort (2006), interliteracy represents a normal behavior that EBs display as they advance toward standard production in each language or biliteracy growth and not a backward developmental progression. In terms of code switching, or writing in one language while engaged in the other, the texts that EB

students created were generally monolingual. There were some exceptions where students used English vocabulary in their Spanish writing when it related to an American cultural term that had no equivalent in Spanish.

In a different study, Cenoz and Gorter (2011) reported findings from an exploratory study on the development of writing skills in three languages: Basque, Spanish, and English. The researchers used a focus-on-multilingualism approach to look at the three languages and their interactions rather than examining specific languages in isolation. The participants for this study were 165 secondary school students who had Basque and/or Spanish as their native language (L1) and lived in the Basque country (Spain). The researchers collected three compositions written at school, one in each language, to investigate the relationships among the compositions by looking at the scores achieved in different dimensions of writing. Students' samples were scored for content, organization, vocabulary, language use and mechanics using the ESL composition profile assessment tool (Jacobs, Zingraf, Wormuth, Hartfiel, and Hughey, 1981).

Overall findings indicate that multilingual speakers share some skills across their different languages, establishing "soft boundaries between languages, even in the case of written language, and they take the elements needed from other languages" (p. 366). Further, researchers conclude that a multilingual person can have similar strengths and weaknesses in different dimensions of writing (e.g., content, structure); therefore, students will use similar general strategies across languages to solve the task of writing.

Most current studies carried out by Literacy Squared have shed some light about EB students biliterate writing development, including insights about the importance of using bilingual assessment to evaluate EB students' biliterate writing (Butvilofsky & Sparrow,

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2012; Soltero-González et al., 2010; Escamilla et al., 2013).

Soltero-González et al. (2010) utilized the qualitative part of the Literacy Squared writing rubric to illustrate the concept of holistic bilingual writing assessment. The qualitative side is intended to identify and categorize students' linguistic approximations (i.e., errors) including aspects of crosslinguistic transfer at the rhetorical, sentence, word, and phonetic levels (see Appendix D). The authors have used the Literacy Squared writing rubric with over 2,000 children and 120 teachers in order to gain insights of how EB children develop as writers.

Overall findings recognize that (1) EB students' draw on either language for various communicative purposes because their linguistic and literacy abilities and knowledge about language are shared across both languages and cultures, and (2) students develop biliterate writing skills in both languages in a coordinated manner (Escamilla et al., 2013). One of the most important findings suggests that EB students use "multiple strategies to express themselves in Spanish and English" (p. 228). Bilingual children have and utilize multiple skills and abilities when writing in English and Spanish, which are considered "cognitive, linguistic, and academic strengths" (p. 228). In their analysis of EB students' writing samples, researchers identified that students in the study employed bilingual strategies in their writing at the phonological level (e.g., use of the Spanish orthographic system to spell in English), word level (e.g., instances of code switching), sentence level (e.g., students' use of Spanish syntax when writing in English), and rhetorical level (e.g., the use of rhetorical questions to engage the reader).

Sparrow, Butvilofsky, and Escamilla (2012) explored the longitudinal writing behaviors in both English and Spanish of 25 Spanish-English EB students attending paired

literacy instruction in grade levels 1–3. Researchers qualitatively and quantitatively explored the cross-language transfer of writing behaviors and examined the complexity of students' ideas across grade levels and across languages. Researchers segmented the texts in T-units for textual analysis (Hunt, 1965).

Overall findings showed that all students made gains in the syntactical complexity of their written expression in both languages over the three-year period. In the first grade, students' mean value of words per T-unit was more complex in Spanish than it was in English, and the difference in means was statistically significant ($p > .05$). In the second grade, both mean words per T-unit were comparable in both languages, and the difference was not statistically significant. Interestingly, in the third grade, the mean of words per T-unit was greater in English than it was in Spanish and was statistically significant ($p > .05$).

Researchers presented findings for a single case study illustrating students' writing development and crosslinguistic transference. In the first grade, findings showed the student clearly communicated his ideas in two languages. In the second grade, the student was able to communicate ideas in both languages by including a beginning, middle, and end. In the third grade, the student described personal experiences with detailed description. Interestingly, in English in the third grade, students presented more sophisticated vocabulary and linguistic structures (i.e., similes). Across languages, they used the same rhetorical structures to sequence events, and overall linguistic complexity improved. Researchers explained that as students' are more exposed to English instruction, their linguistic ability in this language increases. It also suggests that greater exposure to the societal language influences English development (Serrano & Howard, 2007).

These studies provide research and scientific knowledge about biliteracy instruction

and biliteracy development from a perspective that accounts for an interaction between the development of the two languages. However, the information they provide for biliteracy development is limited to particular grade bands (i.e., 1–3, 4–5, middle school) and do not provide a greater scope about biliterate writing in the elementary grade levels1–5. There is still the need to examine the ways in which children who are growing up with two languages at the elementary grade level use both of their languages and cultural resources to develop biliteracy skills, and the study proposed herein attempts to partially fill this gap.

Bilingual Students' Textual Productivity, Lexical Development, Syntactical Complexity, and Discourse Development

In the literature, I found very few studies that examined EB students' biliterate writing development at the microstructural (i.e., textual productivity, lexical diversity, and syntactical complexity, and macro-structural levels (i.e., discourse development) in a single study. A great amount of literature, particularly in the fields of speech, language, and hearing research (Danzak, 2011; Gutiérrez-Clellen & Hofstetter, 1994), communication disorders (Tilstra & McMaster, 2007), child development (Rojas & Iglesias, 2013), learning disabilities and applied linguistics (Simon-Cereijido & Gutiérrez-Clellen, 2009) have examined bilingual children's oral and written production for productivity, lexical, syntactical, and discourse development as a means to identify language impairment of disability. Others used contrastive rhetoric studies (Montaño-Harmon, 1988) and holistic bilingualism (Escamilla & Coady, 2001) to examine bilingual students' writing. Some of the measures I used in this study to examine students' writing development at the microstructural and macrostructural levels were drawn from such studies.

The studies presented employed a variety of methodological approaches to examine students' writing and oral productions. A common methodological approach was to elicit oral production, mostly narratives, by asking children to retell a story depicted in a wordless picture book. Then, oral productions were transcribed and transcriptions were examined. For analyses of written text, all studies included in this review used a writing prompt to elicit students' written products (Escamilla & Coady, 2001; Montaño-Harmon, 1988; Danzak, 2011).

Researchers in these studies used a variety of linguistic units to parse text for analyses as well as linguistic measures to examine textual productivity, lexical diversity, and syntactical complexity: T-units (Hunt, 1965), C-units (Loban, 1976), and Modified c-units (Gutiérrez-Clellen & Hofstetter, 1994). Hunt (1965) defines T-units for written English as a single main clause and any independent constituents, and Loban (1976) defines c-units as the independent clause and all its modifiers. Modified c-units were created to accommodate for the pro-drop[3] nature of the Spanish language (Gutiérrez-Clellen & Hofstetter, 1994; Danzak, 2001; Rojas & Iglesias, 2013).

The literature consulted described several language measures used to examine children's lexical, syntactical, and discourse development. Textual productivity (i.e., amount of text or information) can be measured by calculating the total number of words (NTW), and the total number of T-units, c-units, or modified c-units (MCu) the children produce, orally or written. According to Tilstra and McMaster (2007) measures of textual productivity increase developmentally in school-age children. A common measure to examine children's

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[3] Pro-drop language is a language that drops subject-form pronouns because the noun/pronoun is implicit in the verb conjugation.

lexical diversity is the number of different words (NDW), a measure that reflects the diversity of children's lexicon, which is a type-token ratio of the total number of words and total number of different words produced by the child (Rojas & Iglesias, 2013). Syntactical development in bilingual children has been measured by examining (1) the mean length of words in utterances, which is the average number of words per utterances (MLUw), (2) subordination index (SI), the average number of clauses, main and subordinate, per utterance (i.e., the total number of clauses over total T-units) (Gutiérrez-Clellen & Hofstetter, 1994), and (3) grammatical ability, total number of utterances grammatically correct (Fiestas & Peña, 2004; Tilstra & McMaster, 2007). According to Tilstra and McMaster (2007), developmentally, school-age children use longer utterances, more clauses per utterance, and display fewer grammatical errors as they move along grade levels. All these measures are shown to be developmentally sensitive and positively correlate with bilingual reading achievement, and can be directly compared across Spanish and English (Simon-Cereijido and Gutiérrez-Clellen, 2009; Rojas & Iglesias, 2013). Discourse development in bilingual students was examined by using writing rubrics (Escamilla & Coady, 2001), narrative and explanatory text scales (Danzak, 2011), frequency-count of discrete discourse features of cohesion and coherence (Montaño-Harmon, 1988), and narratives elements (i.e., setting, characters, events, problems, solution) (Fiestas & Peña, 2004). The following sections describe some studies that have examined bilingual children' lexical, syntactical, and discourse development.

In a longitudinal study, Rojas and Iglesias (2013) used growth curve modeling to determine change over time or the shape of language growth trajectory of 1,723 Spanish-speaking children learning English as a second language by examining 12,248 oral narratives

produced by students during their first three years of schooling (K–2). Students in the sample were asked to retell in Spanish and English wordless picture storybooks, commonly known as Frog Stories, then oral transcriptions were electronically transcribed for textual analyses. The researchers collected the following expressive language skills outcomes in English and Spanish: NDW, mean length modified c-unit (MLUw), and words per minute (WPM). Overall findings demonstrated that students' language growth was similar within language for all three measures but different across languages in all three measures. For example, in Spanish, students' shape of language growth across grades denoted acceleration and decelerations in averages, indicated increase and decrease in averages, and showed continuous and consistent average changes. For instance, all language measures accelerated during kindergarten and second grade while in the first grade, they decelerated. Researchers suggested that a deceleration in outcomes in the first grade may be attributed to students undergoing a restructuring reorganization in their Spanish domains or as a result of the development of their second languages system. In English, children demonstrated constant, linear growth in their outcomes measures in kindergarten, first, and second grades. On the other hand, a constant linear growth in English may be associated with systematic support and exposure to English in the classroom. Sudden changes in averages in English and Spanish occurred in kindergarten and second grade.

In a different study, Simon-Cereijido and Gutiérrez-Clellen (2009) examined the within- and across-language relationships between lexical and grammatical domains by focusing on grammatical complexity and lexical diversity in English and Spanish. Researchers examined lexical diversity by measuring NDW and the number of total verbs (NDV), while grammatical complexity was measured by examining mean length of words in

the T-units (MLUw), and by examining the use of verbs with complex argument structure (DITR). The researchers examined the oral narratives in English and Spanish of 196 bilingual Latino children with a mean age average of 5 years and 7 months; 126 children with typical language development (TLD); and 70 with language delay (LD). Students in the sample were asked to retell a story depicted in a picture book (Frog Stories). Pearson correlations were used to explore the within-languages relationships for NDW, NDV, MLUw, and DITRs, while across languages relationships were only performed for NDW and MLUw. Only results for students who provided narratives in both languages, 35 TLD and 9 with language delayed (n= 44) are reported.

Findings showed that means values for this subset of children were very similar in both languages, NDW (English= 74.6; Spanish= 73.9) and MLUw (English= 6.13; Spanish= 5.74). Interestingly, cross-language correlations across domains for the subset of bilingual students (n= 44) were not significant for either of the measures (i.e., Spanish NDW and English MLUw). The lack of relationship between lexical and grammatical ability across languages, according to the authors, may be associated with other measures not controlled in the study. Because there was a positive correlation in Spanish between NDW and MLUw, findings do support the interdependence hypothesis within a language only. To conclude, an interesting finding in this study was that children produced a smaller variety of English verbs than Spanish verbs even though 69 percent of the children were considered more proficient in English. Researchers suggest that students' low vocabulary may be due to students' sociolinguistic characteristics. That is, students coming from low socioeconomic backgrounds tend to arrive at school with vocabularies below age expectations. On the other

hand, Bedore and Peña (2008) also suggest that students' exposure to each language influences the number of words children know in each language.

Gutiérrez-Clellen & Hofstetter (1994) examined Spanish syntactic complexity in the movie retellings of 77 school age Mexican American and Puerto Rican Spanish-English bilingual children attending preschool (n= 28), first grade (n= 26), and third grade (n= 23). Children were enrolled in different bilingual classrooms in three different schools in New Jersey and California where they received Spanish instruction most of the day and one hour of English-as-a-second-language instruction through a pullout approach. Researchers produced oral transcriptions and segmented the texts into modified C-units. Researchers compared children's syntactical complexity by comparing total number of MCus, MLMCus, SI, number of clauses per modified c-units, and the use of clauses (i.e., relative, nominal, infinitive, adverbial, prepositional) as cohesive devices across groups.

Findings showed developmental change with age in the MLMCu—kindergarten (*M*= 6.5), second grade (*M*= 6.9), and third grade (*M*= 7.3). According to researchers, the developmental changes indicated by the increasing number of words per modified c-units suggest that with age, children embed information within their utterances, providing more descriptive information to their narratives. Similarly, the students displayed a developmental trend with age by showing increments in the subordination index, kinder garten (1.11), first grade (1.18), and third grade (1.23). Another interesting finding indicated that older children, third graders, used significantly more prepositional phrases to provide textual coherence to their stories (i.e., "al principio" [in the beginning] or "al final" [in the end]). In sum, researchers concluded that both measures, MLMCu and SI, may be useful linguistic measures to examine bilingual children's syntactical complexity in Spanish.

Fiestas and Peña (2004) investigated the effect of language on twelve Spanish-English bilingual children's oral production of narrative samples in English and Spanish. Children in the sample were considered to have equal language proficiency in English and Spanish and their ages ranged from 4 years old to 6 years old and 11 months. Children were asked to respond to two different tasks in each language, and a total of four narratives for each child were collected. The first task was responding to a wordless book (Frog Stories); the second task was a rich picture task representing a traditional Mexican American family birthday party. The texts were segmented into MCus as described in Gutiérrez-Clellen & Hofstetter (1984) and Rojas and Iglesias (2013). Students' narratives were examined at the microstructural level by examining measures of textual productivity that included total number of c-units, mean length of c-units, NTW, and grammatical ability. For grammatical ability each utterance was coded for grammatical [G], ungrammatical [U], and influenced [I] (i.e., Spanish- and English-influenced grammatically incorrect modified c-units). At the macrostructural level, children´s narratives were examined for story grammar elements: setting, initiating event, internal response or plan, attempts, consequences, and ending (Applebee, 1978; as cited in Fiestas & Peña, 2004, p. 5). Narratives were scored 0 or 1 for each story grammar element present at least once. Narrative complexity raged from 0 to 7, where a score of 0 indicated the least complex. Because the picture task provided mixed findings, only findings related to the book task are discussed in this section.

Overall findings for story grammar showed that students provided narrative that were relatively equal in complexity (Spanish *M*= 5.08; English *M*= 4.75). Students also presented differences in the inclusion of narratives elements. For instance, students in Spanish used more initiating events whereas in English students included consequence. Researchers

indicated that the bicultural differences in the narrative styles might be due to students'

exposure to home narratives and school narratives (Bedore & Peña, 2008). For productive

measures, students' performance was comparable in both languages. For grammaticality,

Spanish narrative had a slightly greater percent of grammatically correct utterances; however,

students had more Spanish-influenced English utterances (e.g., code-switching) than English-

influenced Spanish utterances. According to Bedore and Peña (2008), there are instances in

which knowledge in one language influences morphosyntax production in the other.

Similarly, Escamilla (2000) adds that because Spanish speaking EB children are in contact

with both English and Spanish daily, students systematically use both of their languages to

approach academic learning and assessment. Escamilla (2000) also indicates that EB students

using both of their languages during academic activities is not a source of confusion but one

of support, and students understood the relationships between Spanish and English

(Escamilla, 2000; Genesee & Riches, 2006). Fiestas and Peña (2004) concluded that as

students attempted to create more complex utterances, students relied on their Spanish. This

study also shows that EB students growing up with two languages present similar linguistic

performance in both languages as measured by textual productivity, syntactical complexity,

and grammar story.

In terms of differences in language discourse organization and evaluation, Montaño-

Harmon (1988) asserts that Spanish speakers and English-as-a-second-language (ESL)

learners use their native language discourse to write in English. In her transnational study,

Montaño-Harmon (1988) analyzed the similarities and differences in discourse features of

text written by ninth-grade high school students from four different linguistic groups: (1)

Mexican Spanish speakers living in Mexico writing in Spanish, (2) ESL Mexican Spanish

speakers writing in English, (3) Mexican American/Chicano students who are dominant speakers of English, writing in English, and (4) Anglo-American students who are native speakers of English writing in English. These four groups had to answer a prompt and were given 30 minutes to complete an expository text; the researcher collected a total of 850 compositions. Compositions were read and rated by expert readers, and then discourse features were analyzed using qualitative and quantitative approaches. The researchers analyzed and contrasted writing samples in five areas: basic information about text, type of sentences, lexical cohesion, syntactical cohesion, and coherence.

For basic information about text, findings demonstrated that all Spanish language Mexican compositions were the longest for total number of words and had the greatest average length of sentences in words. For types of sentences, Mexican students had the highest number of run-on sentences while Anglo students had the highest number of simple and complex sentences. According to Montaño-Harmon (1988), the Mexican American/Chicano group had instances of subordination but these were not correctly manipulated grammatically. For lexical cohesion, findings showed that Mexican and Anglo students used same-word repetition and collocation more than ESL and Chicano students. Overall, there were few instances of superordinate words and general class words in all four groups. An interesting finding was the overuse of conversational markers by the Chicano group, which denoted an oral tone in their written texts, and indicated that students were not able to distinguish between the oral code and the written code. For syntactical cohesion, the students in all groups relied on personal reference used anaphorically—the use of personal pronouns to refer to a noun occurring previously in the text. There were few instances of demonstrative and comparative reference and of ellipses and substitutions. Overall, additive

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and causal conjunctions were more commonly used for all groups than temporal and adversative conjunctions.

For coherence, a notable difference was that American English compositions had a linear, deductive, and enumerative organization whereas the Mexican Spanish did not. The compositions in Mexican Spanish tended to be organized via additive relationships, which "introduce[d] a statement of similarity with that what has preceded," or explicative, which "introduce[d] an explanation or reformulation of what preceded" (Montaño-Harmon, 1988, pp. 260–261). According to Montaño-Harmon, "the logical development of text is not universal but language/culture specific" (1991, p. 425). It is imperative that language teachers and test developers be aware of differences in discourse features across languages so they can address them while teaching or creating and improving assessment tools.

Similar findings to Montaño-Harmon (1988) were found by Escamilla & Coady (2001) as they examined and scored writing samples from 409 students in grades K–5 using a Spanish version of the Grosse Point, Michigan writing assessment rubric. Researchers examined Spanish writing samples from EBs who were instructed in Spanish, and English writing samples were collected from English native speakers instructed in English and EBs who had transitioned to English classes. The samples of students analyzed in the study demonstrated that students often switched from one topic to another, or digressed from the main topic, and then returned to the main topic. The authors used Kaplan's (1992) schema of Spanish discourse to explain that students' discourse organization was not disjointed or lacking of logical sequence, but rather students' organizational discourse style was appropriate to Spanish speakers. Despite the divergent nature of Spanish texts, Spanish speaking students overall wrote complex and interesting stories, however, they also struggled

with spelling, punctuation, and the use of conventions. In terms of discourse patterns, the authors emphasize that when EB students are learning to write, students must be explicitly taught English linear logic and the rhetorical discourse patterns used in academic English (Escamilla & Coady, 2001) since these cultural specific patterns are not acquired automatically. Similar to Coady and Escamilla (2005), researchers emphasized that assessing students in two languages enables us to see EB students as more competent writers who use both of their languages to develop their biliteracy skills and to enable us to identify strengths and instructional needs.

On a different study, Danzak (2011) examined the lexical, syntactical, and discourse features of sequential bilingual students attending middle school grade levels, ages 11–14. Twenty students answered to four different prompts, two expository and two narratives, each in both English and Spanish, for a total of 8 writing samples each (n= 148). Writing samples were electronically transcribed and segmented into MCus (Gutiérrez-Clellen & Hofstetter, 1994). Students' lexical level was examined via lexical sophistication using Ravid's (2006) noun scale and by calculating NDW (as cited in Danzak, 2011, p. 496). Syntactical level was examined by calculating MLMCus and clausal complexity. Discourse level was examined using a 0–6 scale score from the analytic scales for assessing students' expository and narrative writing skills developed by the Center for Study of Evaluation (CSE) at the University of California Los Angeles.

Overall findings suggest that students' performance at the three levels was very similar across languages providing evidence of language transfer and common underlying proficiency across languages and genres. Another key finding was the influence of topic on rank differences for language measures across languages and prompts. For example,

students' used less abstract nouns and less sophisticated syntactical structures when responding to narratives with the "family memory" topic than when responding to the explanatory topics. Danzak (2011) further suggests that topic choice may play an important role in writing assessment. The author concludes by emphasizing the need to examine the synergistic relationship between lexical, syntactical, and discourse levels in the instruction and assessment of bilingual students' writing.

The studies reviewed provided important insights about bilingual students' oral and written development at the lexical, syntactical, and discourse levels, as well as the use of specific linguistic measures to examine writing development. Overall findings suggested that bilingual children tend to have similar performance in English and Spanish at all three levels, indicating the transference of productivity skills as well as higher order writing skills (i.e., textual organization) across languages (Bedore & Peña, 2008). Some differences across languages were mainly observed in the type of linguistic features bilingual children used to connect discourse, indicating that their cultural and linguistic backgrounds play a key role in how they organize texts across languages. A key finding in this review is the need for studies that examine biliterate writing development at the word, sentence, and discourse levels for students attending elementary school. Therefore, this study adds to the literature by examining EB children's biliterate writing development in English and Spanish while attending paired literacy instruction in grade levels 1–5.

The Influence of Writing Prompts on Writing Quality

Studies reviewed in the previous section discussed some of the challenges that written tasks pose to the examination of written language (Fiestas & Peña, 2004; Danzak, 2011).

These studies suggested that topics that were very familiar to children, or were not that engaging to students, resulted in students' presenting less diverse vocabulary and less complex syntactical ability (Lanauze & Snow, 1989; Fiestas & Peña, 2004; Danzak, 2011). Some studies that discussed the "writing task" variable and the "reader" variable in the examination of written tasks and students' quality of writing were consulted, and key findings are reported in the following sections.

Hamp-Lyons (1990) stated that content quality and quantity in written essays are significantly affected by the topic of the prompt. According to Jacobs, Zingraf, Wormuth, Hartfiel, and Hughey (1981), studies performed with native language speakers indicate that writers' abilities vary across different forms of discourse. Similarly, Arena's (1975) study of university-level ESL students suggests that students' proficiency in narrative or descriptive mode does not carry to expository modes. Hinkel (2002) found differences in text features used by ESL students at the lexical, syntactical, and discourse levels when responding to six different topic/genre prompts (i.e., argument, exposition, persuasive, and informative) included in ESL placement tests. According to Hinkel (2002), there are four themes that influenced students' writing quality: familiarity with the prompt, wording in the prompt, thematic content, and contextual content. For instance, the more relevant and familiar prompts are to students' personal experiences, the more personal the essays become. Therefore, it may be the case than when students respond to less familiar topics, students are more likely to produce less personal and more objective and academic texts. The wording in the prompt also influenced writing quality because those words included in the prompt were repeated verbatim in students' essays. In terms of thematic content, the researcher found that when students respond to an argumentative or expository essay, students chose the easiest

position to defend in their argument while drawing from their personal experience. That is, the easier the position for which students had to defend in their argument, the simpler their lexical and syntactic productions were. And finally, researchers suggested that students produced larger responses but invested little effort and thought in their writing when the context of the prompt was familiar to students. For example, when students responded to a prompt with the context applying for college, the prompt did not require students to do any rigorous work but to state what they already knew.

Literature has suggested that raters' consistency in rating students' writing ability is also influenced by the topic they score. A study on the reliability of scores for the Advanced Placement Examination in American History suggests that readers' reliability or consistency of scoring may vary due to the topic they are scoring (Swineford, 1964). However, the same study and others have indicated that evaluators could be consistent in scoring the same test topic (Callaway, 1980). From this we can infer that evaluators scoring prompts for the same topic may be more consistent than evaluators scoring prompts with different topics.

In conclusion, this study seeks to examine whether students' responses to the same topic elicit a more adequate and representative sample of students' writing skills and whether raters are more consistent in scoring the same topic across grade levels. This dissertation seeks to further examine the components (e.g., writing rubric and prompts) of the Literacy Squared assessment system. The topic of biliterate writing development is worth pursuing because it has the potential to acknowledge EB students' academic, linguistic, and cognitive potential and to inform biliteracy instruction.

Chapter 3

Methods

The purpose of this study was to examine the patterns of writing development in English and Spanish of emerging bilingual (EB) students who were attending grade levels 1–5 and participating in a paired literacy bilingual program titled, "Literacy Squared®. I examined students' biliterate writing development within each language at the word, sentence, and discourse levels, as well as examined instances of crosslinguistic transfer in the construction of written texts.

This study is built on the Literacy Squared assessment system and has the secondary purpose of examining whether students' writing outcomes when answering to different writing prompts differed from the outcomes of students answering to the same prompt across grade levels. More specifically, because students are clustering at score 5 in the analytical dimension of content in the Literacy Squared writing rubric (see Appendix E), this study examines whether the Literacy Squared writing rubric becomes more sensitive in capturing different levels of writing performance when students across grade levels 1–5 responded to a single prompt.

Examining EB students' biliterate writing development within and across languages and investigating ways to improve the Literacy Squared assessment is the impetus for this research work. Empirical research and assessments that recognize EB students' unique linguistic, literate, and cognitive qualities as assets in the construction of texts have the potential to improve literacy instruction for EB students and solve some of the present inequities in the education of EB students in the United States.

The following are the research questions that guided this study:

1. How do EB students participating in a paired literacy program in grades 1–5 progress at the word, sentence, and discourse level in writing across grade levels and *within* languages (Spanish and English)?

2. How do EB students participating in a paired literacy program in grades 1–5 progress at the word, sentence, and discourse level in writing across grade levels and *across* languages (Spanish and English)?

3. How does the rating in content for students who responded to the *same* writing prompt compare to students who responded to *different* writing prompts in grades 1–5?

Strategy of Inquiry

The strategy of inquiry for this work resulted in the need to combine different research methodologies and theory in order to attain a detailed examination of EB students' writing development at the word, sentence, and discourse levels. In this work, I employed a concurrent, mixed-method methodology for collecting and analyzing data. In addition, I employed both a deductive approach to research in order to examine EB students' writing development at the word, sentence, and discourse levels as well as an inductive approach to examine EB students' grammatical ability (i.e., sentence level analyses). Additionally, the theory of holistic bilingualism supported the examination of Spanish and English writing interaction, including students' use of their knowledge of one or both of their languages as a resource to construct texts at the word, sentence, and discourse level.

   Mixed methods. According to Creswell (2009), concurrent mixed methods procedures "are those in which the researcher converges or merges quantitative and qualitative data in order to provide a comprehensive analysis of the research problem" (p. 14). Accordingly, written texts in English and Spanish from students attending Literacy Squared schools in a large city on the

West Coast and in a large city on the Front Range of the Rocky Mountains served as both quantitative and qualitative data sources. For instance, I obtained numeric values by using the Literacy Squared rubric and qualitatively scoring students' texts in English and Spanish. The combination of both procedures was needed to examine EB students' patterns of writing development at the word, sentence, and discourse levels.

Inductive approach to research. I initially planned to use an inductive approach for the entire study by using research approaches derived from grounded theory methodology (GT). However, I found it not to be the best approach for this study; for example, initial data analyses of first-grade EB students' written texts resulted in an overly broad and unmanageable number of codes (see Appendix G). I found the need to narrow the scope of the study. Therefore, instead of using this methodology for this study as a whole, I decided to use a few research techniques proposed by this methodology to examine students' grammatical ability and to investigate the types of grammatical approximations in students' writing. Grammatical ability was examined as part of EB students' writing development at the sentence level (Tilstra & McMaster, 2007). The GT systematic design provided detailed and rigorous procedures for analyzing and coding data (Strauss & Corbin, 1998, p. 24). The elements of the GT systematic design for data analyses included open coding, axial coding, and selective coding. In addition, I utilized the key analytic assumption of constant comparison. These GT methodological components are detailed below.

Deductive approaches to research. After I made the decision not to continue using GT for the entire study, I decided to take a more deductive approach for textual analyses and went back to the literature to explore other measures that could better explain and describe students' writing growth at the word, sentence, and discourse levels. A brief review of literature indicated that analyses of texts for EB students could be examined at the micro-, macrostructural, and

superstructural levels. Briefly, microstructural analyses examine syntactical form and lexical content whereas macrostructural analyses examine texts beyond the sentence and concentrate on textual cohesion, coherence, discourse features, and so on.

Consequently, I decided to examine writing development at the word and sentence level by using microstructural textual analyses that included measures for textual productivity, lexical diversity, and syntactical complexity. Measures of microstructural analyses are considered to be sensitive to subtle differences across languages and are indicators for linguistic growth in monolingual and bilingual children (Tilstra & McMaster, 2007, p. 45). For the macrostructural textual analyses, I employ Montaño-Harmon's (1988) analytical framework and coding categories. In her study, Montaño-Harmon investigated the discourse features of high school students' written texts by examining lexical cohesion, syntactical cohesion, and coherence (Halliday & Hassan, 1976; Jackson, 1982; Montaño-Harmon, 1988). I applied Montaño-Harmon's (1988) analytical framework to the analyses of discourse features in written texts because it illustrates a highly useful research method, applies to both English and Spanish, and is considered a seminal work in the research topic of discourse features in bilingual students. The categories I used for micro- and macrotextual analyses are described in Table 3.5.

Theory of holistic bilingualism. I used the theory of holistic bilingualism (Grosjean, 1989) as a theoretical lens that will inform the examination of EB students' progress in writing within and across languages in grades 1–5. The biliterate writing development in the EB child is better understood when using a holistic bilingual lens to examine the synergistic interaction of students using both languages (Grosjean, 1989).

Settings and Participants

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Instructional context. This study is part of a larger research project called Literacy Squared, a research-based biliteracy model. Literacy Squared investigates the simultaneous biliteracy development of EB students attending paired literacy instruction from kindergarten to fifth grade. The Literacy Squared model includes three mandatory instructional components that focus on developing both receptive (listening and reading) and productive (speaking and writing) language skills in EB students: Spanish literacy, explicit cross-language connections between Spanish and English, and literacy-based English language development (ELD). Appendix A shows the instructional language and time allocations at each grade level as recommended by the Literacy Squared framework, which helps us understand the instructional time allocations for literacy in both languages, including the opportunities for students to develop their biliterate writing skills.

Schools. For this study, three schools currently implementing the Literacy Squared framework and utilizing the accompanying writing rubric and writing samples for at least two years were purposefully selected. Two schools are situated in a large city on the West Coast, and the third school is located in a large city on the Front Range of the Rocky Mountains. All three schools have similar demographics and are representative of the larger context in which EB students are currently instructed in grade levels K–5. For the school year 2013–2014, all three schools had an enrollment of more than 500 students, 74 percent or more of the population qualified for Free and Reduced Lunch (FRL), 60 percent or more of students were labeled as English language learners (ELL), 68 percent or more of students were from minority backgrounds, and 60 percent or more of the students labeled as minority were identified as Hispanic. This information is summarized in Table 3.1.

Table 3.1. *Participant Schools Demographics for the School Year 2013–2014*

School	Enrollment (K–5)	FRL (%)	ELL (%)	Minority (%)	Hispanic (%)
West coast					
School 1	662	74.1	60.0	68.9	60.2
School 2	565	79.5	62.0	77.4	69.3
Front range					
School 1	607	95.7	62.3	96.5	92.9

Note: FRL= Free and Reduced Lunch; ELL= English language learner.

Students. At the time of data collection, all student-participants in this study were attending Literacy Squared classrooms in the research schools noted above. All student-participants for this study are considered Spanish-English EBs who are developing biliteracy skills simultaneously within Literacy Squared classrooms. The majority of student-participants are from Latino descent and come from homes where either Spanish or both English and Spanish are spoken. A very small percent of students self-reported as white, and all students have been identified as ELLs as required by federal law.

Not all data collected from student participants were included for data analyses. Twelve students attending participating classrooms were removed from the data for one or more of the following reasons: a student was labeled as special education or had an Individual Education Plan (IEP); a student had incomplete pairs of samples because he or she was absent during data collection; or a student had both writing samples written in the same language. A limitation in this study was the lack information that could have indicated the number of years each of the student-participants had been attending Literacy Squared classrooms at each of the selected schools. The number of participants included for data analyses by state, school, and grade levels is listed in Table 3.2.

Table 3.2. *Number of Participants by State, School, and Grade Level*

State	Schools (n)	Grade level	Frequency (n)	Total frequency (n)
West coast	2	1	46	250
		2	47	
		3	39	
		4	66	
		5	52	
Rocky Mountain	1	1	24	105
		2	19	
		3	17	
		4	25	
		5	20	
Total	3			355

Data Collection

Written tasks. Written samples were the main source of data used to examine EB students' writing development at the word, sentence, and discourse levels for grade levels 1–5 in English and Spanish. Two weeks apart**,** students in the sample were asked to respond to one task in Spanish and one task in English. Table 3.3 displays the writing prompts used in this study.

Table 3.3. *Literacy Squared*® *Fourth-Grade Writing Prompt*

Spanish	English
¿Quién es tu mejor amigo en todo el mundo? Escríbenos por qué esa persona es tu mejor amigo. (Who is your best friend in the entire world? Explain why that person is your best friend.)	If you could be someone else for a day, who would you be? Why would you want to be that person?

Within the original Literacy Squared assessment system, both writing prompts were given to students attending the fourth grade. For this study, though, both writing prompts were given to all students attending grade levels 1–5 for two reasons: (1) the topic addressed in the fourth-grade prompt is appropriate for all grade levels, and (2) responding to the same prompt was needed to answer research question 3, which asks how does the rating of students answering to the same

writing prompt in English and Spanish across grade levels 1–5 differ from those students

answering to different prompts in both languages and across grade levels?

The writing prompts used for this study asked students to write an explanatory personal

narrative. The Common Core State Standards (CCSS) for English Language Arts includes three

types of writing genres: argument, informational/explanatory, and narrative. According to the

CCSS (Council of Chief State School Officers, 2010), "narrative writing conveys experience,

either real or imaginary, and uses time as deep structure" (p. 23). In addition, an explanatory text

is an informational text that conveys information accurately. To produce this kind of writing,

students are expected to draw from what they already know and from other sources; to include

relevant examples, facts, and details; to express information such a naming, describing,

comparing and contrasting; and to provide scenarios to illustrate a point. And more importantly,

explanatory texts "start with the assumption of truthfulness and answers questions about why and

how" (Council of Chief State School Officers, 2010, p. 21). Therefore, I considered that both

writing prompts ask students to express personal narratives that can be real or imaginary, while at

the same time asking students to respond to the question, "why," which prompts students to

include relevant examples, details, and facts. A table that compares the criteria required for each

type of writing, narrative and expository for grade levels 1, 3, and 5 is displayed in Appendix H.

After the writing prompts were selected for this study, I proceeded to generate the written

tasks for all students attending all three schools. Prompts were typed on a double-sided lined

paper, except for grade level 1, which was typed on a paper that included an additional

rectangular blank space in which to draw. Then, writing prompts were printed and photocopies

were made for each student in the sample. Once I was granted permission from principals and

teachers from each school, I scheduled visits two-weeks-apart to collect my data.

Writing task administration. First, I collected students' writing samples in Spanish; then I came back two weeks later to administer the English prompt. To promote consistent test administration across sites and classrooms, I administered the writing task following a standard procedure developed for the Literacy Squared project: I read the prompt aloud to students, and then students were given 30 minutes to respond to each prompt (see Appendix B). Because fourth-grade students in the selected schools had already answered fourth-grade prompts as a part of the Literacy Squared assessment requirements, data collection occurred in grade levels 1–3, and 5. Fourth-grade students' written samples were collected from classroom teachers and the Literacy Squared coordinator. After collection, students' writing samples were copied, scanned, and saved electronically. I first collected written tasks in both languages from schools located on the West Coast, and then from the school located on the Front Range. Students' writing samples were collected over a period of four weeks in March and April 2014.

After all writing samples from all participant schools were collected, I reorganized all writing samples by grade level, school, and ID. In order to preserve students' privacy, I deleted students' names and made sure only students' ID numbers were readable and clear.

Sampling. To answer research questions 1 and 2—analyses at the word and sentence levels—I performed a random selection of 30 writing samples per grade level, which translated to a total of 150 students' paired writing samples for grades 1–5. In the early stages of data analyses and transcription, 27 pairs of writing samples for grade levels 1–5 with bad handwriting were removed from initial sampling and replaced with students randomly selected from the same grade level. The final random selection of 150 cases by gender, school, and grade level is displayed in Table 3.4.

Table 3.4. *Demographic Characteristics of Participants by Grade Level—Random Selection*

Characteristic		Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Total n
Gender							
	Female	16	12	18	15	15	76
	Male	14	18	12	15	15	74
School							
	School 1	7	10	11	10	8	46
	School 2	10	10	8	13	14	55
	School 3	13	10	11	7	8	49

Note: Total sample size = 150.

For data analyses at the discourse level, 15 individuals attending the first grade were excluded on the basis of not having more than one sentence in their narrative. Writing samples needed to have two or more sentences written in order to provide information about discourse development (Halliday & Hassan, 1976). Consequently, analyses at the discourse level was conducted for 135 pairs of written samples for grade levels 1–5.

To establish levels of inter-rater reliability (IRR) for textual segmentation of total number of modified c-units (TNMCu), clause density (which is the number of clauses within a modified c-unit [subordination index]), and grammatical ability (i.e., correct versus incorrect modified c-units), a subset of 15 pairs of transcripts for grade levels 1–5 (10 percent of 150) were randomly selected. Likewise, to establish levels of IRR for the analytical dimension of content in the rubric—research question 3—a subset of 91 samples for grade levels 1–5 (25 percent of the total sample of n = 355) were randomly selected to be scored by a member of the Literacy Squared team.

Numeric scores. In order to answer research question 3, I collected extant writing numeric scores in the analytical dimension of content from the 2010–2011 data set (n= 1,485). This set of numeric scores was used to compare descriptive and inferential statistics across groups—that is, a group of students who responded to different prompts across grade levels (n=

1,485), and a group of students who responded to the same prompt across grade levels (n= 355) and who were attending literacy schools in the school year 2013–2014. New numeric scores for the 2013–2014 data set were obtained by scoring all written samples in the data using the Literacy Squared writing rubric (see Appendix C).

Instruments. The Literacy Squared writing rubric was used to quantitatively and qualitatively examine students' writing samples. Briefly, the Literacy Squared writing rubric uses a holistic bilingual framework to evaluate EB students' biliterate writing in grades K–5. The writing rubric includes two main sections: a quantitative evaluation and a qualitative evaluation. The quantitative evaluation section measures three different constructs: content, structural elements, and spelling. Each analytical dimension has different weights: content (10 points), structural elements (5 points), and spelling (6 points).

The qualitative evaluation section asks teachers to categorize students' bilingual strategies and approximations at the discourse, sentence, and word levels and at the phonetic level. Thus, this section of the rubric, in combination with some elements of GT, was used to only examine students' bilingual strategies and grammatical ability at the word level (e.g., instances of code switching, loan words, and nativized words), sentence phrase level (e.g., intra- and inter-sentential code switching, literal translation, and word order), and at the discourse level (e.g., code switches in the use of punctuation) (see Appendix D). Analyses at the phonetic level suggested in the rubric were not examined.

Finally, validity for this rubric was established via construct validity and content validity. Construct validity was established by comparing the rubric to similar writing rubrics created for children who are learning to write in Spanish and English (e.g., 6+1 traits, Culham 2003; Authentic Literacy Assessment System [ALAS], García, 2005; as cited in Butvilofsky &

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Sparrow, 2012). Content validity was established via expert review, and reliability was established via inter-rater reliability (Butvilofsky & Sparrow, 2012). The next section will describe the different categories I used to examine EB students' writing development at the word, sentence, and discourse level.

Data Analyses

EB students' written texts were orthographically transcribed word by word to electronic files. Then, transcriptions were segmented into modified c-units for data analyses. To answer research questions 1 and 2, dependent measures for micro- and macrostructure elements of writing were examined. Microstructural elements of texts included measures of textual productivity, lexical diversity, and syntactical complexity. These measures were coded and calculated using the Systematic Analysis of Language Transcript software (Miller & Iglesias, 2012; Miller, Andriacchi, & Nockerts, 2010). The macrostructure elements of texts were examined using the categories of lexical cohesion, syntactical cohesion, and coherence in English and Spanish (Montaño-Harmon, 1988). To code and analyze instances of lexical and syntactical cohesion and coherence, I used the atlas.ti qualitative software (v. 7.5). The micro- and macrostructure elements of texts examined in EB students' writing are displayed in Table 3.5. To answer research question 3, I used the Literacy Squared writing rubric to score all writing samples included in the data for the analytical dimension of content in English and Spanish (n= 355). Data management and analyses were performed using IBM SPSS Statistics 22.0 for Mac (SPSS Inc., 2013).

　　　　Data transcription. Starting in the first grade, I orthographically transcribed all 150 pairs of written texts included in the sample using the SALT software conventions (see Appendix I). A key step in the data transcription was writing the standard orthography for every misspelled word

in the transcription, for example, *huse|house*. In Spanish, verbs had to be written in the inflected form and in the infinitive form, for example, *cantamos|cantar* (we sing|sing). Writing words conventionally, including Spanish verbs in their infinitive form, ensured an accurate count of total number of words (NTW) and total number of different words (NDW). In contrast, allowing unconventional spelling and conjugated verbs in Spanish could have potentially inflated such measures. After each transcription, the text was segmented into modified c-units.

Table 3.5. *Language Measures for Textual Productivity, Lexical Diversity, Syntactical Complexity, and Discourse Level*

Level	Measures
Microstructure	
Productivity	1. Total number of modified c-units (TNMCu) 2. Total number of words (NTW)
Lexical diversity	3. Number of different words (NDW)
Syntactical complexity	4. Mean length modified c-unit (MLMCu) 5. Subordination index (SI) 6. Percentage of grammatically correct modified c-units (%_ACC) 7. Percentage of modified c-units with grammatical approximations (%_APPROX)
Macrostructure	
Lexical cohesion	1. Reiteration: same word, synonyms superordinate, general class) 2. Collocation
Syntactical cohesion	3. Reference type: personal, demonstrative, comparative 4. Reference by position: anaphoric, cataphoric, exophoric 5. Substitutions: nominal, verbal, clausal 6. Ellipses: nominal, verbal 7. Conjunctions: additive, adversative, causal, temporal
Coherence	8. Logical relationships: Topic sentence; enumerative, additive, summative, resultative, explicative, illustrative, contrastive, conclusion sentence 9. Transition words 10. Conversational marker

Modified c-unit segmentation. Modified communication units (MC-units) were used to segment written texts in Spanish to accommodate for the pro-drop nature of the Spanish language. Briefly, pro-drop language is a language that drops subject-form pronouns because the noun/pronoun is implicit in the verb conjugation. Although English is not a pro-drop language, English narratives were also segmented into MC-units to maintain segmentation consistency across measures in both languages. In addition, MC-units follow two rules: (1) like standard c-units (Loban, 1976) or T-units (Hunt, 1965), a modified c-unit consists of an independent clause and its modifiers, including subordinate clause, and (2) independent clauses joined by a coordinating conjunction (e.g., *and*, *but*, etc.) are segmented as two separate utterances **"**when there is co-referential subject deletion in the second clause" (Rojas & Iglesias, 2013, p. 107). That is, subordinated MC-units in both English and Spanish are not segmented as two separate utterances. See Table 3.6 as an example:

Table 3.6. *Modified C-unit Segmentation Example*

Spanish subordinated clause (1 utterance) "C Marcelo se fue *cuando* se acabó la comida"	English subordinated clause (1 utterance) "C Marcelo left *when* he finished the food"
Spanish coordinated clause (2 utterances) "C Marcelo se fue." "C y olvidó sus llaves."	English coordinated clause (2 utterances) "C Marcelo left." "C *and* forgot his keys"

Note: Example taken from Rojas and Iglesias (2012, p. 107).

In sum, after each written text was electronically transcribed in the SALT software, the transcription was segmented into modified c-units following the protocol noted in Appendix I, and in many cases, internal punctuation was ignored (see Appendix J for an example of a fully transcribed writing sample). Data segmentation and analyses systematically started in the first grade and ended in the fifth grade. Analyses at the microstructure level (i.e., word and sentence level development) occurred first, then analyses at the macrostructural level (i.e., discourse level).

Microstructure: textual productivity. Measures of textual productivity were intended to document the amount of information included in EB students' written responses. Two measures were calculated: TNMCu's and NTWs. Because texts were segmented into modified c-units, TNMCu was automatically calculated in the SALT software. Additionally, modified c-units coded as unintelligible were removed from the analyses. The NTW was calculated by adding the total number of words in each language minus any words with roots in a language other than the target language (e.g., instances of code switching) (Rojas & Iglesias, 2013). The mean values in both languages for all grade levels were calculated and reported.

Microstructure: lexical diversity. The NDW is the total number of uninflected word roots, and it is a direct index of vocabulary diversity and a measure of semantic performance (Miller, Andriacchi, & Nockerts, 2012). In addition, NDW is a developmentally and sensitive measure of narrative productivity in bilingual children that positively correlates with age and with mean length words utterances (MLUw) in bilingual speakers (Rojas & Iglesias, 2013). This measure was calculated by adding the NDW uninflected words in the target language for that sample; word roots in the nontarget language were excluded (Rojas & Iglesias, 2013). Mean values for both languages and all grade levels are reported in the findings section.

Microstructure: syntactical complexity. To reiterate, four measures of syntactical complexity were examined in order to investigate EB students' writing development at the sentence level: mean length modified c-units, subordination index, percent of grammatically correct modified c-units, and percent of modified c-units with grammatical approximation.

Syntactical complexity: mean length modified c-unit. (MLMCu). The measured mean length modified c-unit indicates the average number of words that children use per modified c-unit and is a long established measure of syntactic complexity (Miller, 1987). In addition,

MLMCu is preferred in crosslinguistic and bilingual research as it is unaffected by crosslinguistic variation (Rojas & Iglesias, 2013). This measure was automatically calculated in the SALT software by adding the total number of intelligible words produced in the sample, then dividing that total number by the number of complete modified c-units. The mean value of the mean number of modified c-units in both languages and across grade levels was calculated and reported.

Syntactical complexity: subordination index (SI). Another measure intended to value syntactical complexity is the subordination index (SI), which is a measure of clause density. I calculated the SI by counting and hand-coding the number of clauses—main and subordinate— contained in each modified c-unit. In this study, a clause is defined as containing a subject and a predicate, and those clauses that included a verb in infinitive form were not counted in order to avoid inflating the value for this measure (Gutiérrez-Clellen & Hofstetter, 1993). The SI was automatically calculated in the SALT software and reported as a ratio or composite score of the total number of clauses (main and subordinate) summed across modified-c units and then divided by the total of modified c-units in the sample. Mean values of the composite scores in both languages across grade levels were calculated and reported.

Syntactical complexity: grammatical ability. After a transcription was segmented into modified c-units, I proceeded to code whether the modified units included in the transcriptions were considered grammatically accurate (CU), grammatically incorrect (EU), an unintelligible modified c-unit (i.e., And everybody) (F), or a grammatically incorrect sentence with an acceptable approximation (CUX). An inductive and deductive approach was used to investigate the types of approximations.

Syntactical complexity: grammatically correct modified c-unit (CU). If a modified c-unit

was labeled as correct, no further coding was needed. The measure percent of accurate modified

c-units (%_ACC) was calculated by combining all the modified c-units coded as accurate (CU)

and modified c-units coded as with an acceptable grammatical error (CUX), and then dividing

this number by the number of modified c-units (e.g., [CU+CUX] /[TNMCu]*[100]). Mean

percent for this measure was calculated and reported.

Syntactical complexity: unintelligible utterances. A modified c-unit considered

unintelligible was coded as (F), and then removed from all data analyses (Rojas & Iglesias, 2013).

Syntactical complexity: modified c-units coded as with an acceptable grammatical error

(CUX). There were some cases in which the sentence was grammatically correct but the

approximation was a verb tense or a misuse of modal verbs, and the same grammatical

approximation occurred across sentences more than once within the same transcript. Therefore,

such sentences were not coded as sentences with approximations (EU) but were coded as

sentences with acceptable grammatical error (CUX) (Hall-Mills, 2010). Modified c-units coded as

CUX were further examined to investigate the type of approximation therein included in the

utterance.

Syntactical complexity: modified c-unit with grammatical approximations. A modified

c-unit that contained a grammatical approximation was coded as EU (i.e., Error in the Utterance),

and those coded as CUX were further examined using both inductive and deductive approaches to

investigate the type of approximations. Similarly, the percent of modified c-units with

approximations (%_APPROX) was calculated by dividing the total number of modified c-units

with grammatical approximations (EU) by the total number of modified c-units (TNMCu) (e.g.,

[EU]/[TNMCu]*[100]). Mean percent values for %_APPROX in both languages across grade levels were calculated and reported.

 Syntactical complexity: approximations. Within the measure of syntactical complexity, I included the examinations of students' approximations at the word, sentence, and discourse levels using the qualitative section of the Literacy Squared writing rubric and research procedure of GT. To examine students' approximations or grammatical ability, I used the analyses steps included in the GT systematic design—open coding, axial coding, and selective coding—and systematic procedures, such as the constant-comparative data analysis method, and writing memos. To analyze approximations due to crosslinguistic relationships, or bilingual strategies as they refer to observable crosslinguistic transfer (Soltero-González, Escamilla & Hopewell, 2010), I used the categories included in the qualitative side of the Literacy Squared rubric. These bilingual strategies were further divided into bilingual strategies at the discourse level, sentence level, and word level. For bilingual strategies at the discourse level, I examined reverse punctuation (e.g., Hola!). For bilingual strategies at the sentence level, I examined bidirectional syntax transfer— syntactic structures unique to one language applied when writing in the other—such as literal translations and word order. For bilingual strategies at the word level, I examined instances of code switching (e.g., *so, no teniamos que comer* [so, we didn't have to eat]), loan words (e.g., I went to Mexico to see my *abuelita* [grandma]), and nativized words (e.g., *bikas* [bicycles]). In this study, if a student used code switching loan words and the modified c-unit was grammatically correct, the modified c-unit was coded as correct (e.g., CU). Examples of each category are included in Appendix K.

 Open coding. After a sentence was coded as EU, or CUX, I examined the type of approximation deductively—whether the approximation was because the student used the

grammatical rules of one language to write in the other (i.e., code switching, literal translation)—

or inductively—whether the approximation did not have a predefined category yet. In this stage

of coding, I identified and recorded the source of information, where the approximation was

located in the sentence (i.e., verb, noun), and language—English or Spanish. The purpose for this

coding stage was to gather insights about the types of approximations that could potentially build

into themes within the data.

   Axial coding. I used axial coding to raise a code to a more abstract level, or category. As I

continued coding for approximations, themes for the types of approximations started to emerge.

For example, the themes identified were: (1) grammatical concordance in the use of verbs (i.e.,

tense, agreement), articles, modifiers, quantifiers, (2) omissions, and (3) misuse of grammatical

elements such as conjunctions, prepositions, verbs. Through this approach, I ascertained whether

the category was maintained across languages, students, or grade levels or if it changed in

frequency. See Appendix K for examples and categories of approximations from the data.

   Selective coding. Selective coding is a late phase in the analysis of GT (Strauss & Corbin,

1998). Selective coding is where the researcher selects central categories (themes) to refine

theoretical claims. In this study, selective coding (i.e., grammatical omissions) was used to select

those codes that were more meaningful in describing the types of approximations that were

present in students' written texts within languages and across languages.

   Constant-comparative data analysis. The constant comparative method is an inductive

data analysis procedure used throughout the research design and is applied as the researcher is

coding the data, identifying themes, and writing memos. It entails a systematic and recursive

analytical procedure. For example, emerging codes were constantly compared with other codes

across languages and across grade levels during data analyses, and every time a new code

emerged in the data, this code was compared to data already analyzed. In other words, if a new code emerged in the third grade, the data for grade levels 1 and 2 was revised once again to ensure the code had not been overlooked. Using the constant-comparative approach helped me to identify the code location and frequency in the data, and whether the code was present within or across languages.

Memos. Throughout my data analyses I wrote memos to help me identify patterns in the data and to identify which ideas about the patterns I could further develop. I used memos as opportunities to reflect about my data and pose questions.

After all pairs of written texts in the sample (n= 150) were coded for CU, EU, CUX, F, and approximations were made within the modified c-units, I examined EB students' writing development at the discourse level (i.e., macrostructure).

Discourse features at the discourse level. Electronic files obtained in the previous data analyses were converted to word documents and input into the qualitative analytical software (atlas.ti v. 7.5.4) for further examination. Modified c-units continued to be the unit of analyses. As data analyses at the discourse level were being conducted, I continued reviewing for word transcription, modified c-unit segmentation, SI (i.e., number of clauses in a modified c-unit), and approximations. Changes to coding were done in the original files in the ATLAS software. Data management and analyses were performed using IBM SPSS Statistics 22.0 for Mac (SPSS Inc., 2015).

As noted before, the examination of writing development at the discourse level (i.e., macrostructure) was conducted using a deductive approach. I used Montaño-Harmon's (1988) discourse features of lexical cohesion, syntactical cohesion, and coherence included in Appendix L (Appendix L provides the definitions for all categories and subcategories of lexical and

syntactical cohesion and coherence, including examples from the data.) Coding was conducted

following these procedures: (1) first, a single category with subcategories was coded for Spanish

samples across all grade levels, (2) the same single category with subcategories was coded for all

English writing samples across grade levels[4], and (3) coding for categories and subcategories

started in the first and concluded in the fifth grades.

  Lexical cohesion. I started my data analyses by identifying discourse features of lexical

cohesion: reiteration and collocation. First, I coded discourse features of reiteration in both

languages, including its subcategories: same word, synonym, superordinate, and general class.

Then, I coded for discourse features of collocation, first in Spanish then in English. Measures of

lexical cohesion were calculated by adding the total number of subcategories, then dividing by the

total number of words in the sample. Mean percent was calculated and reported.

  Syntactical cohesion. Syntactical cohesion includes five different discourse features with

subcategories: (1) reference type—personal, demonstrative, comparative, (2) reference by

position—anaphoric, cataphoric, exophoric, (3) substitutions—nominal, verbal, and clausal, (4)

ellipses—nominal and verbal, and (5) conjunctions—additive, adversative, causal, and temporal.

First, I concurrently coded for reference type and reference by position, then substitutions,

ellipses, and, lastly, conjunctions. Measures of syntactical cohesion were calculated by adding the

total number of subcategories, then dividing by the total number of words in the sample. Mean

percent was calculated and reported.

  Coherence: logical relationships. Finally, after discourse features of syntactical cohesion

were coded in the data, I coded for coherence or logical relationships across modified c-units. In

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[4] Following this procedure helped me to become more familiar with the different coding
categories, to code at a faster pace, and to be more accurate than if I had switched between coding
categories at each grade level.

addition to logical relationships, I also coded for instances of transitional words and conversational markers. First, I coded for logical relationships—additive, resultative, and illustrative in Spanish and English and across grade levels, then for transition words, and, lastly, conversational markers. See Table 3.5 for categories and Appendix L for definitions and examples. Measures of coherence were calculated by adding the total number of subcategories then dividing by the total number of modified c-units in the sample. Mean percent was calculated and reported.

After data analyses were completed, a great number of changes in the SALT software for measures of textual productivity, lexical diversity, and syntactical complexity were made. Consequently, statistical calculations were performed using the most updated files.

Research question 3. Because there could possibly be an inconsistency in the scoring of writing samples by multiple scorers when students responded to different writing prompts for data set 2010–2011, I decided to examine whether scoring consistency would improve when students responded to the same prompt across grade levels. Research question 3 asks: how does the rating in content for students who responded to the *same* writing prompt compare to students who responded to *different* writing prompts in grades 1–5? To answer research question 3, all written samples in the 2013–2014 data were scored for the analytical dimension of content using the Literacy Squared rubric. I was the only scorer for the 2013–2014 data. Research question three was answered in three phases:

(1) Scored all samples for year 2013–2014. I concurrently scored all the writing samples included in the newly collected samples for the 2013–2014 data (n= 355) for the analytical dimension of content using the quantitative section of the Literacy Squared rubric. I scored

written texts starting in the first grade, first in Spanish then in English, and concluded in the fifth grade. At the end of scoring, numeric values were entered into SPSS for statistical analyses.

(2) Collected numeric scores for the analytical dimension of content for the 2010–2011 school year. All original scores for content included in the 2010–2011 data were collected (n= 1485), saved as a new file, and then imported into SPSS for statistical analyses. These original content scores were compared to the content scores obtained from the 2013-2014 data.

(3) Compared descriptive and inferential statistics across different groups. In this phase of the data analyses, I merged data sets and compared the variable of "content" across groups for measures of frequency of distribution of scores, central tendency, and dispersion.

Statistical Analyses

After data analyses were completed, numeric values for each variable intended to answer all research questions were exported to SPSS for statistical analysis. Three major characteristics of a single variable, or univariate analysis, were computed and compared across variables and languages: the distribution (frequency of distribution of scores for content); central tendency (mean, median, and mode); and dispersion (standard deviation).

Because not all linguistic measures were normally distributed, parametric and nonparametric statistical analyses were performed. In order to examine and identify relationships across languages and within grade levels, Pearson and Spearman's bivariate correlation was performed. To test the hypothesis that students attending grade levels 2, 3, 4, and 5 were associated with more statistically significant greater values than those with the previous years, independent *t*- tests and Mann-Whitney U tests were performed. A *t*-test assesses whether the means of two groups are statistically different from each other, denoting that the difference in means between the groups is not likely to be by chance (Trochim, 2006). Likewise, the Mann-

Whitney U test is a nonparametric test that is used to compare differences between two independent groups when the dependent variable is not normally distributed.

Validity

Measures of inter-rater reliability (IRR) were calculated for three measures in English and Spanish: modified c-unit segmentation, SI, and grammatical accuracy. IRR analyses using Kappa statistic and adjacent percent agreement (Stemler & Tsai, 2008) were performed to determine consistency among raters.

To calculate IRR for modified c-unit segmentation and clause counting, 15 pairs of writing samples (15 transcripts in English and 15 transcripts in Spanish) were randomly selected and sent to one professional transcriber (who works for the company that produced the SALT software) for word-by-word transcription, modified c-unit segmentation, and clause number count (SI).

To measure IRR for grammatical accuracy, the 15 randomly selected Spanish transcriptions were given to a native Spanish speaker who was asked to read every modified c-unit and to agree or disagree whether the modified c-unit was grammatically correct (CU). The other 15 transcriptions were given to an English native speaker who performed the same task. A 30-minute training to explain each coding category was given to each rater before scoring.

To measure IRR for content scoring for the 2013–2014 dataset (n= 355), 25 percent of the data was randomly selected for grade levels 1–5 (n= 91). The randomly selected sample was scored by a Literacy Squared member who had training in scoring writing samples using the Literacy Squared rubric. Results for Kappa statistic values and adjacent percent of agreement are displayed in Table 3. 7.

Table 3.7. *Cohen's Kappa Coefficient and Adjacent Percent Agreement*

Coded variable	Kappa statistic	Adjacent percent agreement (± 1)
TNMCu-SPA	.55*	80
TNMCu-ENG	.56*	73.3
Subordination index- SPA	.61*	93.3
Subordination index-ENG	.44*	66.7
Grammatical accuracy-SPA	.78*	100
Grammatical accuracy-ENG	.73*	93
Content scoring-SPA	.45*	93.4
Content scoring-ENG	.34	89.1

Note: Kappa coefficient value significant at *p<*.001.

Value of Kappa: .31–.40 = Fair, .41–.60 Moderate; .61–.80 Good.
Adjacent percent agreement acceptable value= > 70.00.

Further examination in the difference in modified c-unit segmentation between the raters indicated that there were some inconsistencies from both raters in the use of one of the rules for segmenting modified c-units: independent clauses joined by a coordinating conjunction are segmented as two separated utterances, resulting in low IRR Kappa values and adjacent percent agreement for modified c-unit segmentation and clause number. Consequently, modified c-unit segmentation was readjusted and corrected in transcriptions where needed. Additionally, it is common to find larger differences in transcription when two independent raters transcribed the same transcription, and the differences "do not have a significant effect on the standard measures acquired in the transcriptions" (Heilman, Miller, et al., 2008, p. 185).

Researchers' Role

I am a Mexican elementary school teacher who came to the United States in 1999 and started working as a fourth-grade bilingual teacher in 2001 in the Salem-Keizer School District in Oregon. I am a great supporter of bilingual education and an advocate for our bilingual students, especially for those who are considered Spanish-English EB students. I am very aware of the

inequalities of education for our EB students in our current educational system in this country, especially in the area of literacy. I hope that through my work I was able to capture in students' writing their potential, including their strengths and areas for growth, and their abilities and resourcefulness in their use of two languages to effectively communicate.

In addition, throughout the completion of this study, I continuously reflected upon my role within this study as a Literacy Squared research team member and how that may have affected this work. My main role as a researcher was to personally collect and examine students' written responses. I solely relied on students' final products as a source of data to examine how EB students progress as writers at the word, sentence, and discourse levels within and across languages in grades 1–5.

Chapter 4

Findings: Microstructure Level

The purpose of this study was to better understand the process of how emergent bilingual (EB) students attending a paired literacy program called Literacy Squared® progress as writers at the word, sentence, and discourse levels in grade levels 1–5. In this study, I investigated students' biliterate writing development within each language as well as the nature of crosslinguistic transfer in the construction of written texts. In addition, this study examined if maintaining a constant prompt (using the same prompt across grade levels), the rubric would better capture students' biliterate writing abilities than when different prompts are used in each grade level. To recapitulate, previous data analyses performed by the author showed that students' scores, when responding to different prompts in grade levels 1–5, clustered at score 5 in the analytic dimension of content of the Literacy Squared writing rubric (scale= 1 to 10 points).

This study responded to three different research questions. Research question one and two ask how EB students attending a paired literacy program in grade levels 1–5 develop as writers *within* and *across* languages at the word, sentence, and discourse levels. Research question 3 asks: "How does the rating in content compare for students who responded to the *same* writing prompt to students who responded to *different* writing prompts in grades 1–5?" Findings for research questions 1 and 2 are presented in Chapters 4 and 5, respectively. Chapter 4 discusses findings related to EB students' biliterate writing development at the word and sentence level while Chapter 5 discusses EB students' writing development at the discourse level—instances of cohesion and coherence—within and across languages. And finally, Chapter 6 will respond to research question 3.

Biliterate Writing Development at the Word and Sentence Level

EB students' biliterate writing development at the word and sentence levels was measured using microstructural analyses of text; meanwhile, students' discourse development was analyzed using macrostructural analyses of text. The microstructural analysis primarily focused on the students' linguistic form and content, which are measured within individual utterances, in this case, written sentences. According to Heilmann, Miller, Nockerts, and Dunaway (2010), linguistic form is commonly examined by analyzing children's syntactical (i.e., mean length utterance, subordination index) and grammatical abilities (i.e., grammatical approximations), whereas children's linguistic content is often assessed by examining children's productive vocabulary skills (e.g., lexical diversity). On the other hand, macrostructural analyses focuses on children's linguistic abilities beyond the sentence and may include measures of organization, cohesion, and text structure (Hall-Mills, 2009).

Accordingly, in this study, I used microstructural analyses to examine students' writing development at the word and syntactical level, including grammatical ability. In addition, measures of textual productivity were also calculated: number of total words (NTW) and total number of modified c-units (TNMCu). In other words, the NTW and TNMCu document whether or not the amount of information included in the EB students' written texts increases across grade levels in English and Spanish. Most of the linguistic measures for word and syntactical level analyses were automatically calculated in the Systematic Analysis of Language Transcript (SALT) software, others were hand-coded (i.e., grammatical ability), and statistical analyses were performed in SPSS. The measures included in this Findings section are displayed in Table 4.1.

Table 4.1. *Language Measures for Textual Productivity, Lexical Diversity, and Syntactical Complexity*

Level	Dependent measures
Microstructure	
Productivity	1. Total number of modified c-units (TNMCu)
	2. Total number of words (NTW)
Lexical diversity	3. Number of different words (NDW)
Syntactical complexity	4. Mean length modified c-unit (MLMCu)
	5. Subordination index (SI)
	6. Percentage of grammatically correct modified c-units (%_ACC)
	7. Percentage of modified c-units with grammatical approximations (%_APPROX)

Before proceeding to the description of findings, I want to make a note that preliminary findings intended to describe EB students' writing development at the word and sentence levels resulted in more variables than the ones displayed in Table 4.1. However, not all variables were included here because some of those measures indicated similar results to the ones included in Table 4.1. For instance, I calculated the variable total number of correct modified c-units (CU), however, results from this variable did not provide a different explanation of EB students' grammatical ability than the variable percent of accurate modified c-units (%_ACC). A table with the total number of measures calculated to describe writing development at the word and sentence levels is displayed in Appendix N.

Textual Productivity, Lexical Diversity, and Syntactical Complexity

Preliminary analysis of data and findings are presented in four sections. The first section provides details of preliminary analyses that were conducted to: (1) survey data, (2) check data to meet the required assumptions for the methodological procedures proposed, and (3) reduce data (e.g.,

identify outliers). Sections two through four present data on EB performance on the dependent variables intended to measure language productivity, lexical diversity, and syntactical complexity, including grammatical ability.

Data Survey

After all transcriptions were electronically transcribed into the SALT software (Miller & Iglesias, 2012) and data were coded, measures for textual productivity (NTW, TNMCu), lexical diversity (NDW), and syntactical complexity (MLMCu, SI, %_ACC, %_APPROX) were calculated. Then, raw data values were inputted into the statistical package for social science software (SPSS) and surveyed for normal distribution. Initial measures of central tendency showed that most of the variables were nonnormally distributed. Histograms showed that data tended to be positively or negatively skewed with values of skewness $|>2|$ and kurtosis $|>2|$ (see Table 4.2).

After I surveyed the data for normal distribution, I proceeded to identify outliers for all variables. I obtained boxplots to examine the distribution and to identify outliers for measures of language productivity, lexical density, and grammaticality in both languages across grade levels. Outliers in the data were identified using Tukey's boxplot outlier labeling rule (1997), a rule that assumes the data are normally distributed. My rationale for using Tukey's (1997) boxplot outlier labeling rule, even though most of my variables displayed as nonnormally distributed, is the following: For this study I used a nonprobability sampling that is a random selection of students from a convenience sample; therefore I made the assumption that the sample was drawn from an even distribution population.

Therefore, following the assumption that my convenience random sample poses an even distribution, I decided to use the boxplot outlier labeling rule (Tukey, 1997). According to the rule, any observation is considered an outlier if it lies outside the interval:

$$((Q1 - g(Q3 - Q1), Q3 + g(Q3 - Q1)).$$

In this rule, Q1 (quartile) represents the 25th percentile value and Q3 represents the 75th percentile value contained in a continuous variable. The value *g* in the formula has a value of 1.5. However, this formula seems not to be effective for small samples—less than 300 cases. Iglewicz and Banerjee (2001) suggest that Tukey's (1997) original formula that uses factor *g* with value 1.5 has a 50/50 chance of mistakenly identifying outliers (probably because the formula does not consider sample size). Instead, researchers suggest changing the *g* value of 1.5 for a *g* value of 2.2 for sample sizes between 20 and 300 (Iglewicz & Banerjee, 2001) in order to reduce the chances of mistakenly identifying outliers. After applying Tukey's oulier labeling rule, 42 outliers were found and removed in the measures of textual productivity and syntactical complexity in both languages. After outliers were removed from the data, measures of central tendency to examine normal distribution in all variables of textual productivity, lexical diversity, and syntactical complexity were calculated once again. The data surveyed show that, with the exception of one variable, SI for Spanish (SI-SPA) had a value with a kurtosis above 2 (e.g., 2.7). A summary with values for skewness and kurtosis for all linguistic measures before and after removing outliers, including the number of outliers for each variable in both languages, is listed in Table 4.2.

Table 4.2. *Normal Distribution Values for All Variables With and Without Outliers*

		With outliers			Without outliers		
Variable	Language	N	Skewness	Kurtosis	N	Skewness	Kurtosis
Productivity							
TNMCu	ENG	150	0.849	1.36	149	.566	.241
	SPA	150	1.14	*2.76	149	.71	.711
NTW	ENG	150	1.17	*2.84	149	.64	-.0001
	SPA	150	.879	.892	**		
Lexical diversity							
NDW	ENG	150	.488	-0.067	**		
	SPA	150	.389	-0.369	**		
Grammaticality							
MLMCu	ENG	150	.763	*1.99	147	.196	.789
	SPA	150	*2.81	*18.34	148	.31	.709
SI	ENG	150	1.96	*9.11	148	.416	.004
	SPA	150	.609	*4.63	148	-0.174	*2.79
%_ACC	ENG	150	-1.59	*2.03	140	-1.16	.1.17
	SPA	150	-1.01	.43	**		
%_APPROX	ENG	150	-1.63	*2.21	140	1.14	1.26
	SPA	150	-1.12	.82	**		

* = Value Greater than 2. ** = No outliers identified.
Note. TNMCu = Total Number of Modified C-units. NTW = Total Number of Words. NDW = Total Number of Different Words. MLMCu = Mean Length of Modified C-units. SI = Subordination Index. %_ACC = Percentage of Grammatically Correct Modified C-units. %_APPROX = Percentage of Modified C-units with Grammatical Approximations.

Outliers contained in each of the variables were removed and then measures of central tendency were computed to describe EB students' written language measures across grade levels and across languages. Mean and standard deviation values were computed at four different stages in order to compare data with and without outliers: (1) with outliers for all variables for all cases (n = 150), (2) with outliers for all variables for each grade level (n = 30), (3) without outliers for all variables for all cases included, and (4) without outliers for all variables for each grade level.

In order to examine and identify relationships across languages and within subjects (i.e., within the same grade level) for all measures of textual productivity, lexical diversity, and

syntactical complexity, Pearson and Spearman's bivariate correlations with and without outliers were performed. I performed Spearman's bivariate correlation coefficients because initially the majority of my variables were nonnormally distributed. However, Pearson's product-moment and Spearman's correlations with and without outliers found the same level of correlation and significance. Therefore, I am only presenting results for Pearson's product-moment correlation. To determine strength of association across variables, I used Cohen's (1988) strength of association guidelines: $0.1 < |r| < .3$ = small correlation; $0.3 < |r| < .5$ = medium/moderate correlation; and $< |r| > .5$ = large/strong correlation.

In order to examine EB students' writing development across grade levels, independent t-tests were calculated to test the hypothesis that students attending grade levels 2, 3, 4, and 5 were associated with more statistically significant mean scores than with those of their previous year for measures of textual productivity, lexical diversity, and grammaticality. All outliers for each variable were removed to run independent t-tests. Distributions for all variables were sufficiently normal for the purposes of conducting a t-test (i.e., skew $<|2.0|$ and kurtosis $<|3.0|$). Additionally, the assumption of homogeneity of variances was tested and satisfied via Levene's F test for all those variables associated with statistically significant mean scores. In some cases where the Levene's F test of equal variance was violated, the t value and the adjusted degree of freedoms were reported. Independent t-tests were only performed within grade levels and within languages. For example, grade level 1 mean score for variable X in English was compared to grade level 2 mean score for variable X in English, and so forth.

Measures of Textual Productivity

Measures of textual productivity were examined and calculated in order to document the amount of text provided in EB students' written responses in terms of the total number of words (NTW) and total number of sentences—total number of modified c-units (TNMCu). In addition, these two measures were instrumental to calculate and examine measures of grammatical accuracy, cohesion, and coherence, which are described in further sections.

The data revealed that for the measures of Spanish lexical productivity and TNMCu, there is a steady, linear, and gradual increase for mean values across grade levels. In contrast, for the same measures in English, data indicated a fluctuation of scores across grade levels. Findings revealed that fourth grade students had shorter written texts in English than third grade students, resulting in lower mean values for total number of words and modified c-units. Positive correlations across languages were found for both measures, NTW and TNMCu, at two levels: (1) for all cases included in the sample (n= 150), and (2) at grade levels 2–5 (n= 30, at each grade level). Independent *t*-test results showed that students' compositions in the total number of words and total number of modified c-units only differed statistically for grade levels 2 and 3 in both languages.

Total number of words. Briefly, the total number of words documents the amount of information provided in the students' written narratives. Data suggest different patterns in EB lexical productivity. Similar to the measure of modified c-units described above, results in Spanish show a linear, positive, and steady increase in quantitative changes in mean values for the total number of words between subjects across languages in grade levels 1–5 (n= 150). In English, results showed that there is an inconsistent growth in the mean values of the total number the words. For instance, mean scores in grade levels 1–3 show a linear, positive, and steady

increase, and then mean values decreased in the fourth grade to later increase again in the fifth grade. Also, results in both English and Spanish suggest it is in the early grades—grade levels 1–3—where the difference in mean scores for the total number of words between groups and across languages rapidly and steadily increases (see Figure 2).

Another finding suggests that there is no a continuous pattern that illustrates whether groups of students were more productive for total number of words in a single language across grade levels. Data suggests that in grade levels 1, 2, and 4, students were more productive in Spanish while in grade levels 3 and 5 students were more productive in English. Data suggests that on average there are ≈10 words difference across language and across all grade levels.

Pearson's product-moment correlations were performed, and they showed a strong and positive correlation between the variable NTW-SPA and NTW-ENG for all cases (n = 149), $r(147) = .807$, $p < .001$. In addition, strong correlations across languages were found in grade levels 2–5. There was no significant correlation in the first grade. See Table M1 in Appendix M.

Independent t-tests corroborated a statistically significant difference between mean scores for total number of words for grade levels 2 and 3 in both languages. All t-tests showed the same level of significance, $p < .001$. In addition, the Levene's test of equal variance was satisfied for all independent t-tests.

Total Number of Words Grade Levels 1-5
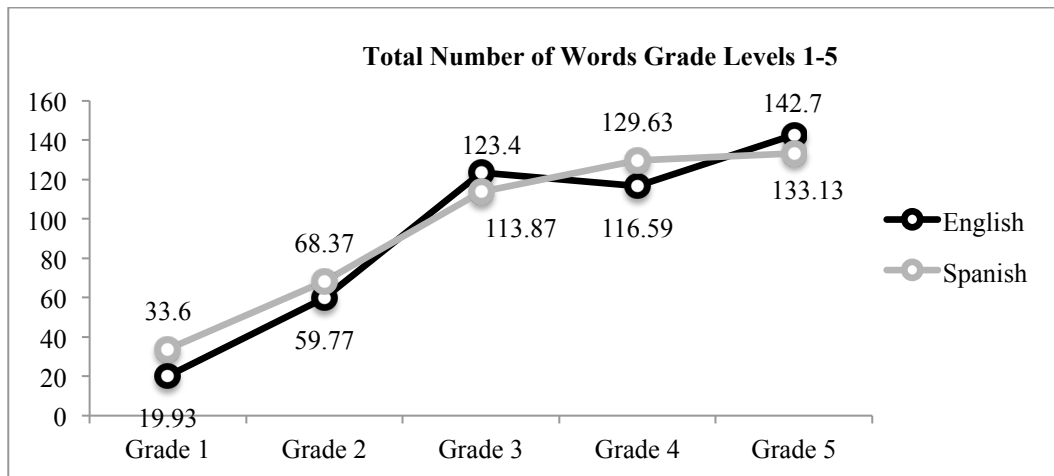
Figure 2. **Total Number of Words Grade Levels 1-5**

Total number of modified c-units (TNMCu). Briefly, the total number of modified c-units documents the amount of information provided in sentences in the students' written narratives. Overall findings indicated there was a gradual, linear, and continuous growth in the number of modified c-units in Spanish across grade levels. In English, the data shows an inconsistent growth in the number of modified c-units across grade levels. For example, mean values for modified c-units decreased in the fourth grade and then increased in the fifth grade. Another trend in the data indicated that EB students had higher mean scores for Spanish TNMCu for all grade levels 1–5. In addition, results in both English and Spanish suggested that it is in the early grades, grade levels 1–3, where the mean values of modified c-units rapidly increased. In terms of equal performance across grade languages, it is in the third grade where nearly equal mean scores in both English ($M = 13.33$, $SD = 4.11$) and Spanish ($M = 13.87$, $SD = 4.84$) are observed (see Figure 3).

Total Number of Modified C-Units Grade Levels 1-5
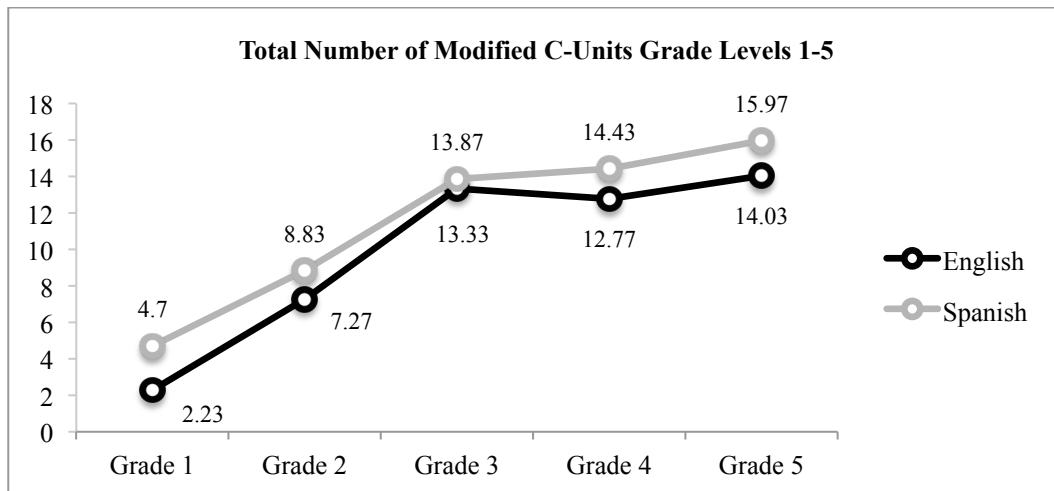
Figure 3. **Total Number of Modified C-Units Grade Levels 1-5**

Pearson's product-moment correlation and Spearman's correlation were performed to assess the relationships between total number of modified c-units in English and Spanish within grade levels. Overall, there was a strong positive correlation between the TNMCu-SPA and TNMCu-ENG for all grade levels (n = 148), $r(146) = .738$, p < .001. In addition, moderate and strong significant correlations across languages were found in grade levels 2–5. Positive correlations across languages suggest that as students produce more text in one language the textual production in their other language also increases. This information is summarized in Table M1 in Appendix M.

Independent *t*-tests were performed to test the hypothesis that students in grade levels 2–5 were associated with greater and statistically significant mean scores than with those of their previous year. That is, the mean score for TNMCu Spanish in the second grade is greater than the mean score for TNMCu Spanish in the first grade. Results showed that students' compositions in the number of modified c-units differed statistically for grade levels 2 and 3 in both languages. All *t*-tests showed the same level of significance, $p < .001$. In Spanish, all Levene's tests of equality of variance were satisfied for all independent *t*-tests that yielded statistically significant

values. In English, in the second grade, Levene's test indicated unequal variances ($F = 18.98$, $p = .001$), so degrees of freedom were adjusted from 58 to 40.0. See Table M2 in Appendix M for a summary of *t*-test results.

Biliterate Writing Development at the Word Level

In order to examine students' biliterate writing development at the word level, the measure of lexical diversity—the total number of different words in their written narratives—was measured and examined. Briefly, the total number of different words (NDW) is a direct index of vocabulary diversity and a measure of semantic performance (Miller, Andriacchi, & Nockerts, 2012). Thus, the NDW provided me with a measure that indicated whether students' vocabulary diversity increased across grade levels and across languages.

Overall findings indicated that Spanish lexical diversity mean values for students steadily increased across grade levels 1–5. Similar to measures of textual productivity noted before, the mean value for English lexical diversity decreased in the fourth grade. Data also showed that students attending grade levels 1, 2, and 4 had greater mean values of lexical diversity in Spanish while students attending grade levels 3 and 5 had greater lexical diversity in English. Positive correlations across languages were found for NDW all cases (n= 150) and for all grade levels (see Table M1 in Appendix M). Similar to measures of textual productivity, independent *t*-test results showed that students' compositions in the total number of different words differed statistically for grade levels 2 and 3 in both languages (see Table M2 in Appendix M).

Total number of different words (NDW). The pattern in the changes of mean scores across groups (i.e., grade levels 1–5) and languages for the NDW is very similar to the pattern found for the total number of words (NTW). Overall, for NDW-SPA grade levels 1–5, the data continued to show a linear, positive, and steady increase in quantitative changes in mean values (n

= 150). Meanwhile for NDW-ENG, data showed an inconsistent growth across grade levels 1–5 (n = 150). For example, for NDW-ENG there is a steady quantitative increase in mean scores in grade levels 1–3, then the mean score in the fourth decreases while increasing again in the fifth grade.

Consistently with previous measures of TNMCu and NTW, data showed sudden increases in the mean values in grade levels 1–3, while in the fourth and fifth grades mean values either decreased or decelerated. Similar to the total number of words, there is not a pattern at this grade level that illustrates students continuously showing higher mean values of lexical diversity in single language across grade levels. Data suggests that students in grade levels 1, 2, and 4 presented higher mean values of vocabulary diversity in Spanish while in grade levels 3 and 5 students' index of vocabulary diversity were higher in English. In terms of similar performance in the measure of total number of different words, the least difference in mean values is observed in grade levels 3–5 (see Figure 4).

Pearson's product-moment correlations were strong and positive between NDW-ENG and NDW-SPA for all cases (n = 150), $r(148) = .829$, $p < .001$. In addition, moderate and strong correlations across languages were found across all grade levels. Positive correlations suggest that as students' lexical productivity increased or decreased in one language, the same is observed in the other language. This information is summarized in Table M1 in Appendix M.

Independent t-tests corroborated a statistically significant difference between mean scores for total number of different words for grade levels 2 and 3 in both languages. All t-tests showed the same level of significance, $p < .001$. In the second grade in English, Levene's test indicated unequal variances ($F = 9.55$, $p = .003$), so degrees of freedom were adjusted from 58 to 44.0. In Spanish, the Levene's test of equal variance was satisfied for all independent t-tests.

Total Number Different Words Grade Levels 1-5
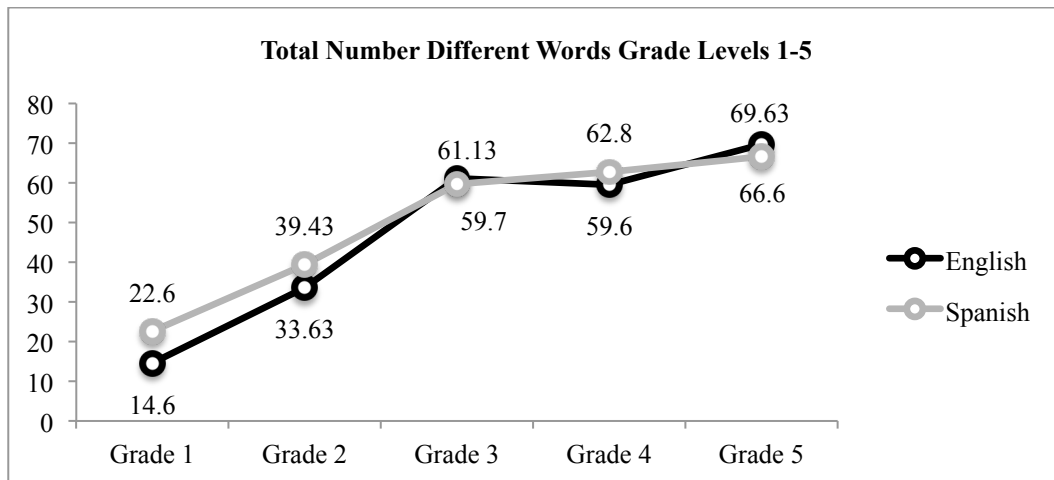
Figure 4. **Total Number of Different Words Grade Levels 1-5**

Biliterate Writing Development at the Sentence Level

Lastly, this section discusses measures of syntactical complexity and grammatical ability.

Measures of syntactical complexity were calculated to document how EB students develop as

writers at the sentence level across languages and across grade levels. EB students' writing

development at the sentence level was examined by measuring the mean length of students'

modified c-units (MLMCu), and the SI, a measure of clause density. SI reports the extent to

which sentences in a sample contain subordinate clauses, and it is reported as a ratio of the total

number of clauses (main and subordinate) summed across modified c-units and then divided by

the total number of modified c-units in the sample. In practical terms, a ratio of 2.0 would

indicate that modified c-units contained 2 clauses on average—a main clause and a subordinate

clause. A ratio of 1.5 would indicate that a fair number of sentences in the sample were

subordinate whereas a ratio of 1.10 would indicate that most of the sentences were simple.

Research in the field of language, speech, and hearing has documented that sentence length

measures are useful indicators of syntactic growth (Miller et al., 2006; Scott & Stokes, 1995). In

addition, research has also documented a slow and steady increase in the average length of

written sentences throughout elementary and secondary grade levels (Scott & Stokes, 1995). Both

measures are straightforward measures of syntactic complexity that can be used in both English

and Spanish (Miller, Andriacchi, & Nockerts, 2012). In addition, grammatical accuracy and

grammatical approximations (i.e, errors), including the type of error were also examined and

documented.

Overall findings suggest that students in grade levels 1–5 had on average longer modified

c-units in English than in Spanish, including a linear, positive, and steady increase in quantitative

changes in mean values. In Spanish, a linear and steady growth in the number of words per

modified c-units is observed in grades 1–4. For the measure of SI, there is not a clear pattern of

continuous growth in values of subordination across grade levels as we might expect (Loban,

1976; Tilstra & McMaster, 2007). However, SI mean values across languages and across grade

levels indicated that on average students had a fair number of complex modified c-units within

their written narratives—modified c-units including a main and subordinated clause.

Mean length modified c-units (MLMCu). Overall, data show that students in grade

levels 1–5 had English modified c-units with higher mean length on average than they did in

Spanish. For the variable mean length of modified c-units in English (MLMCu-ENG), the data

show a linear, positive, and slow increase in quantitative changes in mean values for grade levels

1–5 (n = 147). A similar pattern of linear, positive, and a slow increase in quantitative changes in

mean values was observed for the variable mean length of modified c-units in Spanish (MLMCu-

SPA) for grade levels 1–4 (n = 118). In the fifth grade, the MLMCu-SPA drops 0.6 points on

average ($M = 8.6$) when compared to the fourth grade mean score ($M = 9.2$). This finding

supports the fact that even though students in Spanish had greater mean values of total number of

modified c-units across grade levels, their sentences included fewer words than their sentences in English.

It is important to highlight that students in the first grade had fairly moderate values of mean length of modified c-units, English $M => 9.0$ and Spanish $M => 7.5$. According to Miller (1987), the measure of mean length utterance (MLu) significantly correlates with advancing age ($r = .71$), which therefore suggests that students attending the first grade had fairly longer modified c-units in English than expected whereas in Spanish their mean length modified c-units were closer to the expected length. Nonetheless, when I examined MLMCu mean values across grade levels in both languages, I noticed that students attending fifth grade had, on average, modified c-units one word longer in both languages (see Figure 5). If MLu significantly correlates with age, findings suggest that students in the fifth grade had on average shorter MLMCu's than expected.

In addition, the mean values across languages and across grade levels are numerically similar suggesting that students' syntactical complexity ability is not very different across languages. This finding is supported by *t*-test yielding nonsignificant differences across grade levels.

Another interesting finding related to this measure is that the largest difference in mean value was found in the fifth grade, perhaps suggesting that as Spanish instruction decreases so do the opportunities to continue creating more syntactically complex written texts. This information is summarized in Figure 5.

Pearson's product-moment correlations were moderate and positive for MLMCu-ENG and MLMCu-SPA for all cases, $r(145) = .305$, $p < .001$. For individual grade levels, preliminary analyses showed there was a large, significant, and positive correlation across grade levels in the

third grade, $r(30) = .585$, p < 0.001. A summary of correlation coefficients is listed in Table M1 in Appendix M.

Mean Length of Modified C-units Grade Levels 1-5

	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
English	9.0	9.1	9.5	10.2	10.4
Spanish	7.5	8.5	8.8	9.2	8.6
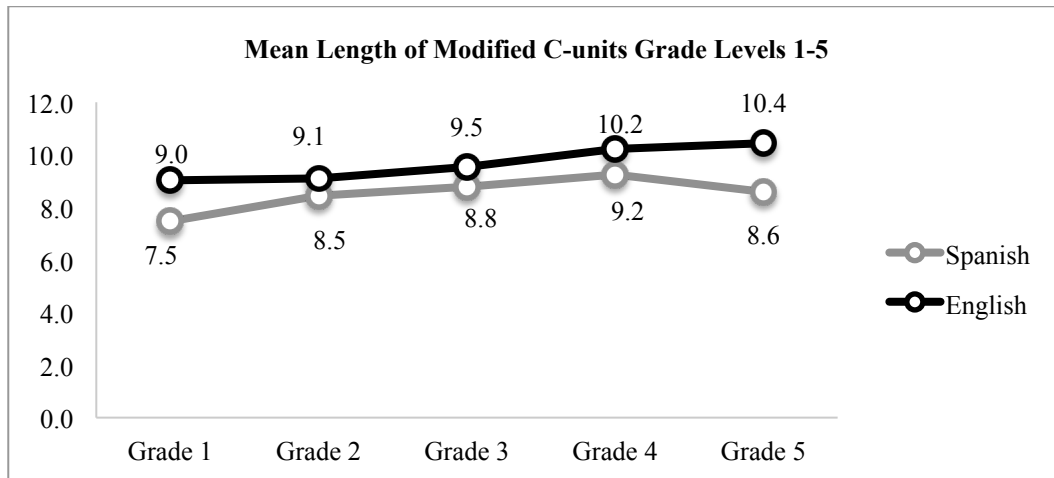
Figure 5. **Mean Length of Modified C-Units Grade Levels 1-5**

All independent *t*-tests performed across grade levels for measure MLMCu in both languages yielded a nonstatistically significant association effect with values *p >.05*. Results suggest that, although there was a very small steady increase or decrease in students' mean length of modified c-units mean scores across grade levels, this difference in mean scores is not statistically significant. This information is listed in Table M2 in Appendix M.

Subordination Index (SI). Results do not show a clear pattern of students' increasing values of SI across grade levels as it was expected and as students matured as writers (Loban, 1976; Tilstra & McMaster, 2007). Data suggests a discontinuous increase in mean values of SI composite scores across grade levels and across languages.

Interesting to note, however, is the fact that on average SI mean values for the sample (n= 148) were 1.46 in English and 1.42 in Spanish, indicating that a fair number of sentences in students' written samples were complex—containing a main clause and subordinate clause. An SI

with value 1.5 in the first grade in English may be due to the fact that there were few sentences written in the samples and a fair number of sentences were complex. For example, qualitative analyses of students' written responses indicated that a great number of students answered the prompt by using the subordinating conjunction *because*. For example, "I would like to be my friend Isaac *because* he is smart." Similar to the mean length of modified c-units, and as noted above, SI values were greater in English, with the exception of second grade. Comparable to findings for the MLMCu measures described before, data showed that the difference in mean values for SI across languages is small, suggesting that students in the sample had similar clause density across languages. It appears to be the case that literacy instruction through a paired literacy approach facilitates the opportunity for students to develop similar syntactical complexity in both languages as measured by MLMCu and SI. See Figure 6.
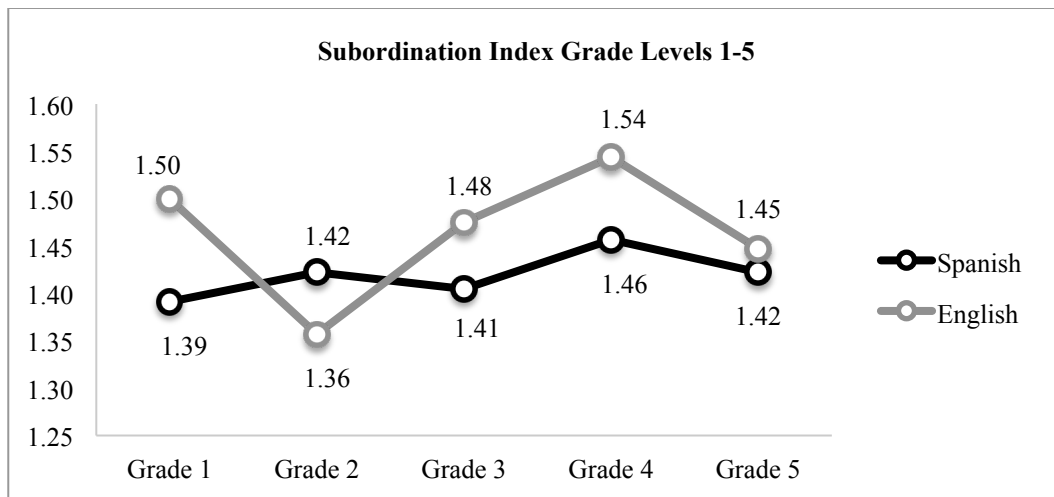
Figure 6. **Subordination Index Grade Levels 1-5**

There was a small and positive correlation between SI-ENG and SI-SPA for all cases (n = 146), r(144) = .222, p < .007. For individual grade levels, weak and nonsignificant correlations were obtained. Pearson's product-moment correlations coefficients are listed in Table M1 in Appendix M.

Independent *t*-tests for variable SI-ENG and SI-SPA yielded no significant difference between mean scores across grade levels. Mean scores fluctuate across grade level and the difference is not statistically significant. These results are listed on Table M2 in Appendix M.

Percentage of grammatically accurate modified c-units (%_ACC). As noted before, the measure of percentage of grammatically accurate modified c-units was calculated by summing modified c-units coded as correct (CU) and those with acceptable approximation (CUX), then dividing by the TNMCu. Descriptive statistics showed that all of the modified c-units coded as CUX were observed in English (n= 49).

Data findings indicated an inconsistent increment in the mean values of grammatically accurate modified c-units in both languages and across grade levels. It was noted before that as school-age children's language continues to develop, their sentences become longer and students produce more clauses per c-units (SI) with fewer grammatical errors (Loban, 1976; Tilstra & McMaster, 2007). However, for this sample of students, fewer grammatical errors across grade levels were not observed. For instance, second grade had the lowest median percent of accurate modified c-units. Surprisingly, the fifth grade had the second lowest median percent of accurate mc-units when we would have expected students to have fewer grammatical errors at this grade level. Nonetheless, a positive overall trend for this variable is that students had on average 80 percent of accurate modified c-units for grade levels 1–5 in both languages, and their median percent of accurate modified c-units was higher in Spanish—84 percent and 81 percent in English (see Figure 7).

Pearson's product-moment correlations showed a small positive correlation between both variables for all cases, r(140) = .199, *p* < .018. For individual grade levels, a small and significant

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correlation was found in the first grade, *p* < .048. Correlation coefficients are listed in Table M1

in Appendix M.
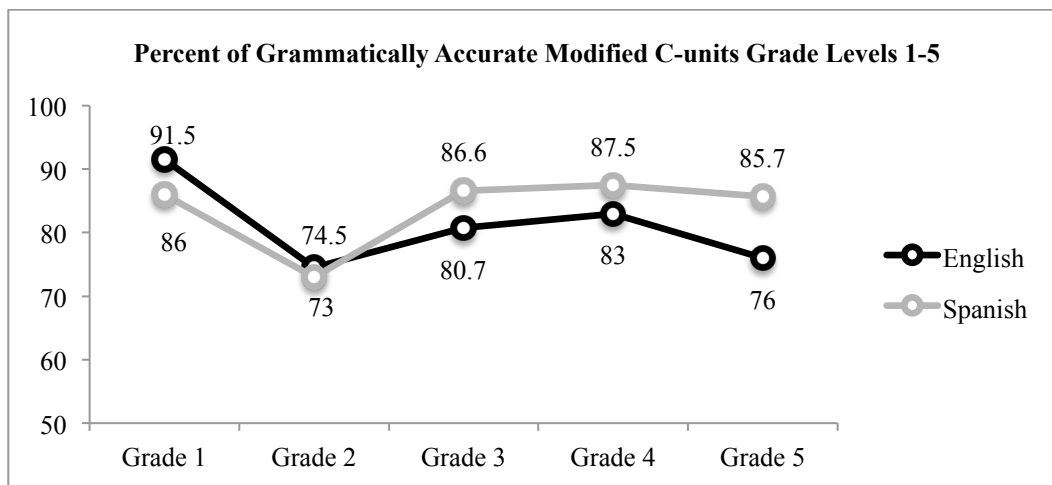
Figure 7. Percent of Grammatically Accurate Modified C-Units Grade levels 1-5

Independent *t*-tests corroborated statistically significant differences in scores for the percentage of

English grammatically correct modified c-units for grade level 2 only— *p* < .008. In Spanish,

independent *t*-tests corroborated statistically significant differences in the percentages for grade

levels 2 (*p* < .007) and 3 (*p* < .003). The Levene's test of equal variance was satisfied on all

independent *t*-tests I performed for this variable in both languages. This information is

summarized in Table M2 in Appendix M.

Percentage of modified c-units with grammatical approximations. This findings

section is mainly for illustration and corroboration, and it describes the other side of the argument

about accurate grammatical ability. If we were expecting an increase in the median percent values

for grammatical accuracy, we would then expect a continuous decrease in the median percent for

grammatical errors, which continued not to be the case for this sample of students. Figure 8

shows that grade levels 2 and 5 present the highest median percent values for grammatical

approximations, and approximations on average were greater in English than in Spanish in grades

3–5. The next section will describe the types of approximations observed in students' written samples in both languages and for grade levels 1–5.

Pearson's product-moment correlations showed a small, positive, and significant correlation between %_APPROX-ENG and %_APPROX-SPA for all cases, $r(140)= .169$, p < .046. For individual grade levels, moderate and significant correlation was obtained for the second grade, $p < .437$. Correlation coefficients are listed in Table M1 in Appendix M.

Independent t-tests corroborated statistically significant differences in the percentage of English modified c-units with grammatical approximations for grade level 2 only—$p < .007$. In addition, independent t-tests corroborated statistically significant differences in the percentage of Spanish modified c-units with grammatical approximations for grade levels 2 ($p < .018$) and 3 ($p <.003$). The Levene's test of equal variance was satisfied on all independent t-tests with statistically significant results. This information is summarized in Table M2 in Appendix M.
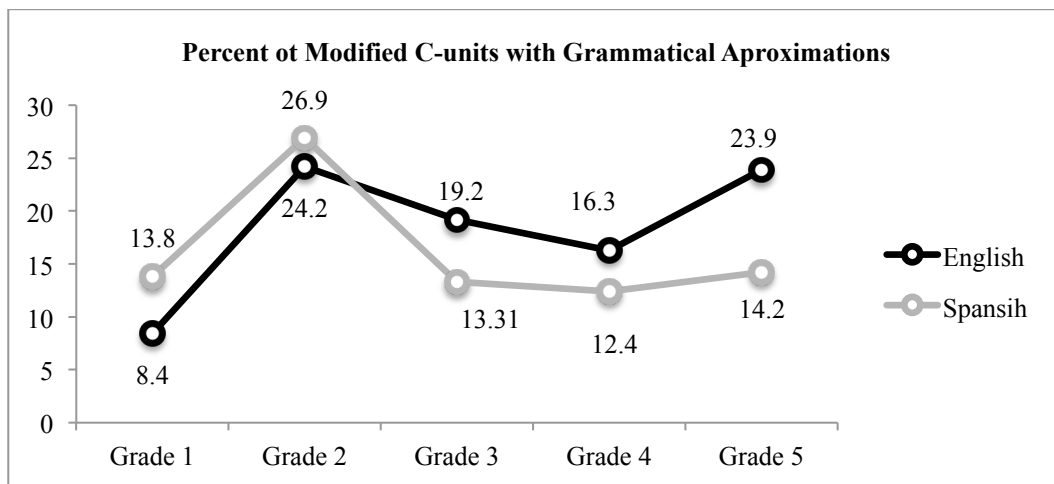
Figure 8. **Percent of Modified C-Units with Grammatical Approximations**

Frequencies for Approximations in Both English and Spanish in Grade Levels 1–5

This findings section is intended to illustrate the type of approximations observed in EB students' written responses in both languages in grade levels 1–5. Briefly, grammatical accuracy entails the total number of morphosyntactic approximations recognized by a native speaker of English and Spanish (Tilstra & McMaster, 2007), or the "well-formedness of sentence" (Hickman, 2004, p. 108). To restate, findings showed that the percent of modified c-units with grammatical approximations did not decrease across grade levels as it was expected (see Figure 7). In addition, students attending the second and fifth grade had the largest median percent of grammatically incorrect modified c-units. This section is presented in four different parts: (1) approximations grammatical concordance, (2) omission of grammatical elements, (3) misuse/substitutions of grammatical elements, and (4) approximations due to crosslinguistic relationships. Percent of students who presented each category of approximation is reported in Tables 4.3–4.6.

 Grammatical concordance. In this section, I include within languages approximations related to grammatical concordance in the use of verbs (i.e., tense, agreement), articles, modifiers, quantifiers, extraneous words in students' writing, omitted words, issues of word order, and word choice. Findings suggested that, as students moved along grade levels, the median percent of modified c-units with grammatical approximations increased as well. In English, data indicated a continuous increase in the percentage of students across grade levels 1–5 presenting instances of omitted words and word choice, although instances of subject verb-agreement started to increase in second grade. In both languages, data indicated that instances of grammatical concordance and omitted words were present in a high percentage of students in English and Spanish narratives across all grade levels. Interestingly, data suggests that a greater percentage of students had intra-

linguistic types of approximations than approximations due to crosslinguistic relationships (i.e.,

bilingual strategies or linguistic hypothesis). This information is summarized in Table 4.3.

Table 4.3. *Frequencies for Grammatical Concordance and Other*
Grammatical Measures in Both English and Spanish

		Grade 1 (%)	Grade 2 (%)	Grade 3 (%)	Grade 4 (%)	Grade 5 (%)
Subject-verb agreement						
	English	0.0	3.3	16.7	20.0	30.0
	Spanish	20.0	20.0	20.0	33.3	26.7
Verb-agreement Present tense						
	English	13.3	20.0	13.3	6.7	10.0
Grammatical coherence						
	English	3.3	16.7	30.0	13.3	23.3
	Spanish	26.7	40.0	23.3	26.7	30.0
Extraneous words						
	English	0.0	10.0	20.0	16.7	33.3
	Spanish	6.7	23.3	20	16.7	3.3
Omitted words						
	English	20.0	33.3	46.7	63.3	73.3
	Spanish	13.3	53.3	46.7	33.3	36.6
Word order						
	English	3.3	10.0	16.7	6.7	3.3
	Spanish	0.0	13.3	3.3	6.7	0.0
Word choice						
	English	3.3	10.0	13.3	23.3	30.0
	Spanish	0.0	13.3	3.3	13.3	26.6

Omissions of grammatical categories. This second section includes grammatical

approximations due to omission of grammatical elements such as clauses, prepositions, verbs,

subjects, pronouns, articles (definite, indefinite), possessives, reflexive pronouns, conjunctions,

and modal verbs (i.e., would, could). As noted in Table 4.4, some of the grammatical omissions

were unique to a specific language, meaning that examples of the same omission were not found across languages.

Data showed that there was not a single type of grammatical omission present in both languages across all grade levels. In addition, none of the categories of grammatical omissions in either language continuously increased across grade levels. In English, across grade levels, there is a varied range of percentages of students presenting omissions in the use of prepositions, subject, pronouns, and conjunctions. Interestingly, the percentage of students with omissions in the use of prepositions and pronouns was higher in the fifth grade. In addition, data indicated a noticeable percentage of students with omissions in the use of modal verbs (i.e., would) for grade levels 1–4, perhaps suggesting that responding to a writing prompt that required expressing ideas while using conditional tense was a challenge. In Spanish, across grade levels, there is a varied range of percentages of students presenting omissions in the use of verbs and articles. This information is summarized in Table 4.4.

Table 4.4. *Percent of Students with Grammatical Omissions in Both English and Spanish*

Omissions	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Clauses					
English	3.3	0.0	0.0	0.0	0.0
Spanish	0.0	3.3	0.0	0.0	0.0
Prepositions					
English	3.3	10.0	26.7	10.0	30.0
Spanish	0.0	16.7	10.0	16.7	6.6
Verbs					
English	3.3	0.0	3.3	30.0	16.7
Spanish	10.0	3.3	3.3	13.3	6.7
Subject					
English	13.3	3.3	20.0	13.3	16.6
Spanish	0.0	0.0	3.3	0.0	3.3
Pronoun					
English	3.3	3.3	3.3	3.3	26.6
Spanish	0.0	6.7	3.3	0.0	0.0
Article					
English	0.0	3.3	10.0	3.3	13.3
Spanish	3.3	30.0	16.7	20.0	6.7
Possessives					
English	0.0	0.0	0.0	0.0	0.0 [a]
Spanish	0.0	3.3	0.0	0.0	0.0
Reflexive Pron.					
English	0.0	0.0	0.0	0.0	0.0 [a]
Spanish	6.7	3.3	6.7	3.3	3.3
Conjunction					
English	3.3	3.3	3.3	10.0	6.7
Spanish	0.0	10.0	3.3	6.7	0.0
Modal Verb					
English	6.67	6.67	33.3	16.7	0.0
Spanish	0.0	0.0	0.0	0.0	0.0 [a]

[a] No instances of misuse were found in this language.

Misuse/substitutions of grammatical elements. This third section includes grammatical

approximations due to the misuse of grammatical elements such as verbs, subjects, pronouns,

prepositions, possessives, modal verbs, and reflexive pronouns. In contrast to grammatical

omissions, a misuse indicates that the grammatical element was present within the modified c-

unit or utterance, however, such a grammatical element was not grammatically effective. As

noted in Table 4.4, some of the grammatical omissions were unique to a specific language, meaning that examples of the same omission were not found across languages.

Similar to findings for grammatical omissions, data showed none of the categories of grammatical misuse in either language continuously increased across grade levels. In both languages, data indicated that instances of preposition misuse were present in both languages across all grade levels while pronoun misuse was found in the data starting in the second grade. In English, modal verb misuse was present across all grade levels, and the higher percentage of students with this type of misuse was found in the third and fifth grade. In Spanish, misuse of reflexive pronouns was found in a low percentage of students across all grade levels. This data is displayed in Table 4.5

Table 4.5. *Percentage of Students with Grammatical Misuse in Both English and Spanish Grade Levels 1–5*

Misuse		Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Verb						
	English	6.7	10.0	13.3	3.3	0.0
	Spanish	0.0	0.0	10.0	3.3	16.7
Pronoun						
	English	0.0	3.3	16.7	3.3	6.7
	Spanish	0.0	3.3	3.3	26.6	3.3
Preposition						
	English	6.7	6.7	10.0	16.7	13.3
	Spanish	6.7	20.0	16.7	10.0	6.7
Possessive						
	English	0.0	0.0	3.3	0.0	3.3
	Spanish	0.0	0.0	0.0	0.0	0.0
Modal Verb						
	English	3.3	6.6	30.0	20.0	40.0
	Spanish	0.0	0.0	0.0	0.0	0.0
Reflexive Pron.						
	English	0.0	0.0	0.0	0.0	0.0
	Spanish	13.3	6.7	6.7	10.0	10.0
Conjunction						
	English	0.0	3.3	0.0	0.0	0.0
	Spanish	0.0	0.0	0.0	0.0	0.0

Approximations due to crosslinguistic relationships. This fourth section includes

instances of approximations due to crosslinguistic relationships observed in both languages that

are typical of EB students who are developing two languages simultaneously. In order to identify

the type of approximations due to crosslinguistic relationships, I used the analytical framework

proposed by Soltero-González et al. (2010). In their study, Soltero-González et al. (2010) define

approximations due to crosslinguistic relationships as bilingual strategies and categorize them as

bilingual strategies at the discourse (crosslinguistic transfer of punctuation), bidirectional syntax

transfer or application of syntactic rules from one language when writing in the other, and word

(word code switching) level. To reiterate, modified c-units with loan word code switching were

deemed as grammatically correct unless another type of approximation was observed (see Table

4.6).

Data showed that very few of the crosslinguistc approximations listed in the Literacy

Squared writing rubric were present in this study's writing samples in both languages. Further

data analysis indicated that in Spanish in grade levels 1-5, 25 percent of approximations were due

to cross-linguistic relationships whereas the other 75 percent were due to intra-linguistic

approximations. Interstingly, in English in grade levels 1-5, data showed that only 10 percent of

the approximations were due to cross-linguistic relationships.

Discourse level. Data indicated that use of crosslinguistic approximation in the use of

punctuation was only present in English in grade levels 1 and 2 and with a low percentage of

students using this type of approximation (i.e., ¡Hi!).

Sentence level. The use of literal translation—translation of text from one language to the

other word by word—was present in English for grade levels 1–3 and 5 while in Spanish it was

present in grade levels 2–5. The highest percentage of students with this type of approximation

was found in the second and third grades in the English narratives. Overall, the percentage of students with instances of word order transfer—syntactic structures unique to one language applied to writing in another language (Soltero- González et al., 2010)—was very low across grade levels and languages. Only one student in the fifth grade used inter-sentential code switching in the Spanish narrative.

Word level. Instances of code switching at the word level (i.e., switching from one language to the other) was mainly present in Spanish in grade levels 2–4, with a low percentage of students. Loan words (words of everyday use with language specific equivalents) were mainly used in Spanish in grade levels 2–4 by a high percentage of students. The most common loan words observed in students' writing were those words that described everyday objects that students used (e.g., videogames) and places in which students participate daily (e.g., gym, recess, mall). To conclude, the use of nativized words (words in one language that morphologically incorporate the structure of the other language) were only present in Spanish in grade levels 2–4 with a low percentage of students using this bilingual strategy. This data is summarized in Table 4.6.

Table 4.6. *Percentage of Students with Crosslinguistic Approximations*

Crosslinguistic relationships		Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Discourse level						
Punctuation						
	English	3.3	6.7	0.0	0.0	0.0
	Spanish[a]	0.0	0.0	0.0	0.0	0.0
Sentence level						
Literal translation						
	English	13.3	30.0	20.0	0.0	10.0
	Spanish	0.0	13.3	10.0	6.7	6.7
Word order						
	English	3.3	0.0	3.3	3.3	0.0
	Spanish	6.7	0.0	6.7	10.0	3.3
Inter-sentential						
	English[a]	0.0	0.0	0.0	0.0	0.0
	Spanish	0.0	0.0	0.0	0.0	3.3
Word level						
Code-switch						
	English	0.0	0.0	0.0	3.3	0.0
	Spanish	0.0	6.7	3.3	3.3	6.7
CS-loan word						
	English	0.0	6.7	0.0	0.0	3.3
	Spanish	10.0	23.3	36.7	36.7	23.3
CS-nativized word						
	English[a]	0.0	0.0	0.0	0.0	0.0
	Spanish	0.0	3.3	6.7	6.7	3.3

[a]No instances of crosslinguistic approximation found in the data for this language.
Note. CS = Instances of Code-Switching.

Conclusions for Biliterate Writing Development at the Word and Sentence Levels

Overall findings in the corpora suggest that students attending a paired literacy program in terms

of textual productivity, lexical diversity, and syntactical complexity seem to develop their

biliterate writing trajectory at the word and sentence levels in a coordinated manner (Escamilla et al., 2013).

In answering the question of how EB students develop as writers within and across languages, findings for textual productivity suggest that the number of words and modified c-units written overall increases across grade levels. In addition, in terms of writing development at the word level, data indicated that as the number of words increases in both languages so does the number of different words, a measure of lexical diversity. That is, as the number of written words increases so does children's productive vocabulary across languages. (This finding is supported by positive correlations across languages for NDW.) Consistent with findings from Rojas and Iglesias (2013), accelerated increases in the mean values for measures of total number of modified units, total number of words, and number of different words occurred in the early grades. It seems that for textual productivity and lexical diversity, similar writing development is observed across languages, and there is not a specific measure that indicates specific development within a specific language.

Biliterate writing development at the sentence level, the measure of mean length modified c-unit (MLMCu) suggested that lexical complexity was on average greater in the English samples than in the Spanish samples across all grade levels. In terms of SI— clause density measure— results did not show a clear pattern of students' increasing values of SI as it was expected across grade levels. Nonetheless, findings indicated that students across grade levels and across languages had on average mean values of 1.4 in both languages across grade levels, suggesting that a fair number of sentences in students' written narratives had complex sentences and sentences including a main clause and a dependent clause.

In this section, it is important to highlight that mean values of mean length modified c-units and SI are very close across languages and across grade levels, with no statistical significance across grade levels, suggesting a homologous syntactical complexity in both languages. For example, data suggest that mean values for MLMCu increased one word on average between first and fifth grade in both languages, suggesting that perhaps MLMCu mean value in the fifth grade was lower than expected in English while in Spanish it was even lower.

In terms of grammatical ability, findings suggest that the majority of students in the sample can differentiate the two grammatical systems (Meisel, 2001, p. 15), perhaps because of their simultaneous bilingualism and simultaneous instruction. This claim is supported by the fact that only 25 percent of the approximations in Spanish and only 10 percent of the approximations in English in grade levels 1-5 were due to crosslinguistc relationships. Findings also suggested that on average the number of grammatically correct modified c-units did not steadily increase as it was expected. Findings indicated that grammatical categories with a greater percentage of students, > 25%, were observed for intra-linguistic approximations: verb-agreement in both languages in the fifth grade, grammatical coherence in Spanish for grade levels 1–2, and 4–5, and for omitted words in both languages in grade levels 2–5.

Bilingual strategies or approximations due to crosslinguistic relationships at the discourse level (use of punctuation rule of one language when writing in the other) were only present in English in grade levels 1–2. At the sentence level, overall, there were few instances of approximations with the exception of the use of literal translation in the second grade in English (30 percent of students). At the word level, data indicated that most of the instances of code switching occurred in Spanish where students commonly used English words to name their personal belongings and places where children participate in their daily lives. In sum, contrary to

literature that suggests part of the failure in educating EB students is because of interference of Spanish, findings from this study suggests that grammatical approximation found in students' samples were mainly due to grammatical approximations unique to each language. To conclude, according to Tilstra and McMaster (2007), "developmentally, school-age children use longer c-units, more clauses per c-unit, and exhibit fewer grammatical errors as their language develops" (p. 47). However, longer modified c-units, more clauses per unit, and less grammatical errors were not the case for students in grade levels 1–5 participating in this study.

Chapter 5

Findings: Macrostructural Level

Biliterate Writing Development at the Discourse Level

Research questions 1 and 2 ask how emerging bilingual (EB) students' writing develops at the word, sentence, and discourse levels *within* and *across* languages. Whereas the previous chapter discussed the EB students' writing development at the word and sentence levels (microstructural analysis of texts), this chapter presents findings on writing development at the discourse level using macrostructural analysis of texts.

In simple terms, discourse in this study is defined as a piece of extended language, written or spoken, that has a meaning and purpose, "a unit higher than the sentence, for example the paragraph, of some larger entity such as episode or topic unit" (Halliday & Hassan, 1976, p. 19). However, the main questions to be answered in this chapter are how the concepts of cohesion and coherence help in the examination of the organization and construction of texts by EB students in both of their languages. According to Halliday and Hassan (1976), cohesion is the lexical and grammatical relationship between different elements of a text, which hold it together. For example, what are the lexical (i.e., use of same-word repetition, use of synonyms) and grammatical (i.e., connecting sentences by using personal references, verbal substitutions, ellipses) discourse features that EB students use across modified c-units to connect their texts in both of their languages. On the other hand, there is the way a text makes sense to the reader, the mental representation of the text, or the sense of connectedness (Sanders & Maat, 2006). That is, what are the logical relationships across modified c-units that students use to connect their texts, whether they use additive relationships to add information or they use resultative relationships to provide examples. Thus, in the words of Montaño-Harmon (1988), a text is both cohesive and

coherent. Thus, the questions I posed in this study are intended to understand the relations of meaning—cohesion and coherence—from which EB students attending grade levels 1–5 draw in order to link and create text in both of their languages.

The analytical framework I used for the examination of discourse level elements included the qualitative categories of lexical and syntactical cohesion and coherence proposed by Montaño-Harmon (1988), which are based on earlier seminal work by Halliday and Hassan (1976) and Jackson (1982). These categories are displayed in Table 5.1 and examples of each discourse feature are provided in Appendix L.

Table 5.1 *Cohesion and Coherence Discourse Features for Both English and Spanish for Grade Levels 1–5*

Macrostructure		
Lexical cohesion	1.	Reiteration: same word, synonyms superordinate, general class
	2.	Collocation
Syntactical cohesion	1.	Reference type: personal, demonstrative, comparative
	2.	Reference by position: anaphoric, cataphoric, exophoric
	3.	Substitutions: nominal, verbal, clausal
	4.	Ellipses: nominal, verbal
	5.	Conjunctions: additive, adversative, causal, temporal
Coherence	1.	Logical relationships: topic sentence; enumerative, additive, summative, resultative, explicative, illustrative, contrastive, conclusion sentence
	2.	Transition words
	3.	Textual deviations
	4.	Conversational marker

Statistical analysis included the examination of measures of central tendency and dispersion. Additionally, I examined correlations within groups—across languages within grade levels—and compared mean and median values across independent groups. Because data were not normally

distributed, I performed Spearman's bivariate correlations within subjects to identify relationships across languages for all written language measures. I also performed Mann-Whitney U tests to test the hypothesis that students in the upper grades had larger values of instances of lexical and syntactical cohesion and coherence; Mann-Whitney U tests were only performed to compare median values across grade levels and within languages (i.e., ENG-Reiteration Grade 2 compared to ENG-Reiteration Grade 1, and so forth). After visual inspection, the initial data analyses indicated that the distributions of the number of instances for measures of lexical and syntactical cohesion and coherence across grade levels and languages were similar.

Findings for EB students' writing development at the discourse level are presented in three different sections: (1) lexical cohesion, (2) syntactical cohesion, and (3) coherence. Each section presents findings for grade levels 1–5, including results from statistical analysis— measures of central tendency, dispersion, Spearman's correlations, and Mann-Whitney U tests. All the variables that correspond to these three measures at the written discourse level are summarized above in Table 5.1.

English and Spanish Lexical Cohesion, Grade Levels 1–5

According to Halliday and Hassan (1976), the "basic concept that is employed in analyzing the cohesion of a text is that of a TIE. [A] tie is a complex notion, because it includes not only the cohesive element itself but also which is presupposed by it" (p. 329). Jackson (1982) further states, "[l]exical cohesion refers to the use of the same, similar or related words in successive sentences, so that later occurrences of such words refer back to and link up with previous occurrences" (p.105). In sum, lexical cohesion is the "cohesive effect achieved by the selection of vocabulary" (Halliday & Hassan, 1976, p. 276). Halliday and Hassan (1976) suggest there are

two types of lexical cohesion: reiteration and collocation. Lexical reiteration includes the use of the same word, synonyms or near-synonyms, superordinate words, and general class words; collocation includes words that are semantically related. See Appendix L for definitions and examples.

Data collected in both English and Spanish presented interesting patterns in the use of vocabulary to achieve a cohesive effect. Overall findings indicated that discourse features for lexical cohesion were found in the corpora across languages and across grade levels with the exception of the use of synonyms in the first grade in the Spanish samples. This finding indicates that EB students' writing development within languages was only different in the first grade where synonyms were only observed in the corpora in English, but then synonyms were observed across languages and across grade levels 2–5. Overall findings suggested that students used reiteration (with same-word repetition) and collocation as the main lexical cohesive discourse feature to connect their texts in both English and Spanish. There were few instances of synonyms, superordinate words, or general class words in English and Spanish and across grade levels.

In English, the data indicated a linear and steady increase in mean percent values for lexical reiteration (i.e., compound value including all instances of same word, synonym, superordinate, and general class) and same-word repetition for grade levels 1–4 (while median percent values decreased in the fifth grade). In Spanish, there was a fluctuation in the mean percent values for lexical reiteration and same-word repetition; median percent values decreased in the fourth grade in Spanish while they increased again in the fifth grade. For collocations in English, mean percent values plateau in grade levels 2–3, then decreased in grade 5. In Spanish, collocations steadily increased in grade levels 1–3, and then steadily decreased in grade levels 4 and 5. Interestingly, for students in grades 1–5, using collocations of semantically related words

to unify text is similar across languages with positive correlations across languages in grade

levels 1 and 2. As shown in Figure 5.1, the mean percent values in the use of collocations are

slightly greater in Spanish for grade levels 1–4 whereas the use of collocations in English is

greater in grade level 5, on average. Similar mean percent values in the use of collocation across

grade levels and across languages may suggest that students use words that share the same lexical

environment to achieve a cohesive effect (Halliday & Hassan, 1976, p. 286). Examples for

instances of reiteration and collocation for each grade level in English and Spanish are illustrated

in Figure 9.

Lexical Cohesion Mean Percent Values Grade Levels 1-5
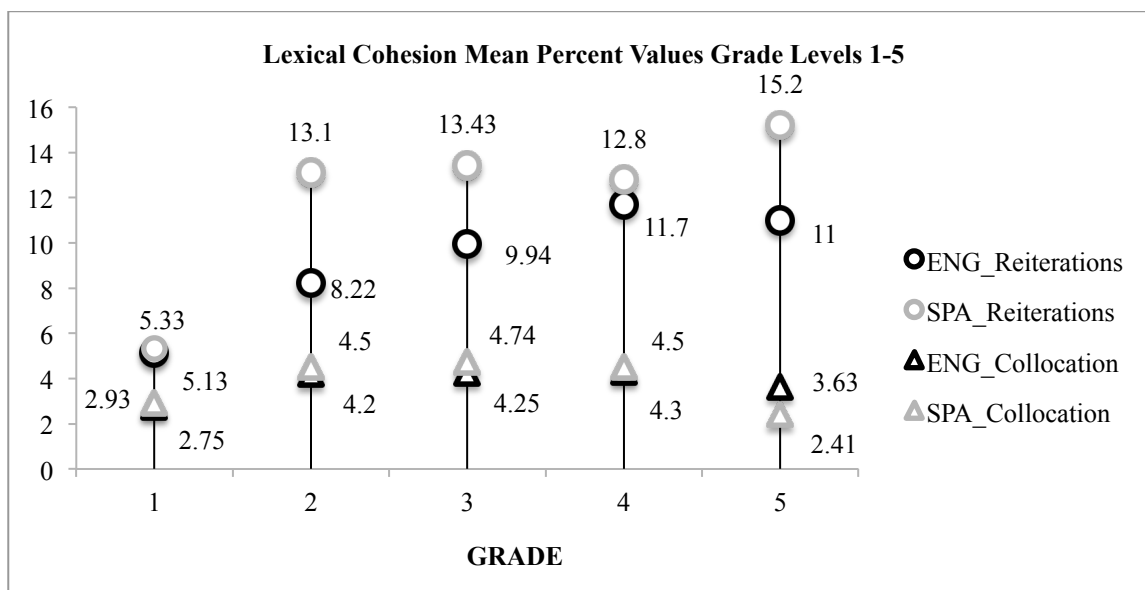
Figure 9. **Lexical Cohesion Mean Percen values Grade Levels 1-5**

Lexical cohesion, grade 1. In the first grade (n= 15), data suggests that students used

same-word repetition and semantically related words to unify their texts in English and Spanish.

Further data analysis showed that 33 percent of students used same-word repetition and

collocation in both of their languages (see Table 5.7). There were few instances of synonyms,

superordinate words, or general class words in English and Spanish. In the first grade, synonyms

were not present in Spanish compositions. In both English and Spanish, students in the first grade

presented similar mean values for lexical reiteration and lexical collocation, on average. There is a positive, significant correlation across languages for lexical collocation.

   Reiteration. Students in the first grade (n = 15) had similar numbers of instances of lexical reiteration, same-word repetition, synonyms, and superordinate and general class words in English (M = 5.13) and Spanish (M = 5.33). Additionally, there were few instances of synonyms, superordinate words, and general class words across languages. More specifically, students repeated the same word to unify their texts in both English and Spanish more than they used synonyms, superordinate words, or general class words. For instance, students in Spanish (M = 4.7) used repetition of the same word twice as often as they did in English (M = 2.5). The following pair samples from a first grader illustrate the use of same-word repetition in both languages: "I want to be a doctor for one day. I want to be a doctor because my father told me to be a doctor." In Spanish, this student wrote: "Mi mejor amiga es Sonya. Ella es una Buena amiga. Cuando estoy en problemas me ayuda. Por eso yo la ayudo." (My best friend is Sonya. She is a nice friend. When I have problems, she helps me. That´s why I help her.)

   In the examples above, the student used same-word repetition such as *doctor, amiga (*friend*), ayuda, and ayudo (*help*)* to connect the text across sentence boundaries.

   The data also indicate that the use of synonyms by first graders was only present in English (M = .58). In Spanish, students commonly used synonyms within a sentence and therefore were not considered a lexical tie. For example: "I would like to be my friend Melissa because she is nice, good, and polite". Here, the words *good* and *polite* are synonyms and near-synonyms of the word *nice*; however, only words that represented synonyms as a lexical tie were coded. That is, only words that represented synonyms across sentences and not within the sentence boundary were coded. In another example a student wrote: "I want to be Rosalinda

because she is <u>nice</u>. And she is very <u>polite</u>." Here, the student used a synonym to describe her friend's personal trait; she used the words *nice* and *polite* to describe Rosalinda (i.e., synonyms or near-synonyms) in two separate sentences.

As mentioned before, there were very few instances of lexical reiteration that included the use of superordinate and general class words across languages. A superordinate word is a word that represents a higher category within a system of classification (e.g., yellow → color). Data indicated that mean values for these two categories were greater in English. For example, students used superordinate words more often in English ($M = 1.4$) than they did in Spanish ($M = .20$), while the same was observed for general class words (English $M = .58$; Spanish $M = .41$). The example below represents superordinate words used in both English and Spanish:

I would like to be Xavier because he sits in the <u>yellow</u> table. And because that is my favorite <u>color</u>.

Mi major amiga es Stephani. Y también yo se que su favorito <u>color</u> es el <u>rosita</u>. Y el mio es <u>morado</u>. (My best friend is Stephani. And I know that her favorite <u>color</u> is <u>pink</u>. And mine is <u>purple</u>).

General class words, on the other hand, are words that describe general classes of objects, people or persons for humans, or things for nonhuman categories (Jackson, 1982). The following sentences illustrate examples of Spanish and English general class words: "I would be a <u>teacher</u>. I would like to be this <u>person</u> because it is good to be this <u>person</u>." "Mi major amigo es <u>Joel</u>. Él es un <u>niño</u> inteligente." As we see, the writer reiterates the word *teacher* for a general class word *person.* The same is observed in Spanish where the writer reiterates the word *Joel* for a general class word *niño* (boy).

Collocation. The use of collocation of semantically related words in students'

compositions across languages is similar in mean values but greater on average in Spanish ($M =$

2.93) than in English ($M = 2.75$). The following is an example of a student's use of collocation in

Spanish:

> Yo siempre he jugado con Misel porque yo siempre voy a la casa de Misel. Vamos al
>
> parque y jugamos a los jueguitos como los columpios a la resbaladilla y los monkey bars.
>
> Tambien jugamos a la maestra y al gato o al perro. (I have always played with Misel
>
> because I always go to his house. We go to the park and we play games such as the
>
> swings, slides, and monkey bars. We also play the teacher, and we play cat and dogs.)

The underlined words represent words that are semantically related (i.e., park, swings, slides,

monkey bars) or tend to appear frequently together (i.e., perros y gatos [cats and dogs]). The data

also shows a large positive and significant correlation in instances of collocation across languages

$r(15) = .629, p < .012$. These findings align with a similar study conducted by Montaño-Harmon

(1988), where the use of collocation suggests a well-developed vocabulary and, in this case, a

writing ability that is shared across languages. This information is summarized in Table 5.2.

Table 5.2. *Grade 1 Descriptive Statistics for Lexical Cohesion Measures*

Lexical cohesion	English (n = 15)	Spanish (n = 15)
Reiteration	5.13	5.33
Same word	2.5	4.7
Synonym	.58	0.0
Superordinate	1.4	.20
General class word	.58	.41
Collocation*	2.75	2.93

* Correlation is significant at the 0.05 level (2-tailed).

Lexical cohesion, grade 2. Overall findings in the corpora showed that all discourse

features for lexical cohesion were found across languages. Data findings suggest that students in

the second grade achieve cohesion in their compositions by using lexical reiteration; on average,

students use these cohesion devices more often in Spanish than they do in English. Students continued using same-word repetition to connect their texts, 90 percent used same-word repetitions in both of their languages, and there continued to be few instances of synonyms, superordinate words, or general class words in both languages. Interestingly, although there were few instances of superordinate words, 23 percent of students used this discourse feature across languages. For instances of collocation, data show that the use of collocation in both languages has very similar mean values (English $M = 4.2$; Spanish $M = 4.5$), and 50 percent of students used collocations in both of their languages. Data also indicate positive and significant correlations across languages for both lexical reiteration and lexical collocation. In addition, English compositions across grade levels 1 and 2 differed at statistical levels, ($p < .001$), for both measures of lexical reiteration and collocation. In Spanish, compositions across grade levels 1 and 2 differed at statistical levels for measures of lexical reiteration only.

Reiteration. Second grade EB students' compositions have on average more instances of lexical reiteration to unify their compositions in Spanish ($M = 13.1$) than in English ($M = 8.22$). The data also indicate a positive moderate correlation across languages in the use of lexical reiteration ($p < .035$). Similar to the first grade, students in the second grade used repetition of the same word to unify their texts in both English ($M = 8.22$) and Spanish ($M = 11.5$) more than other lexical reiterations such as synonyms, superordinate words, and general class words. As illustrated in Table 5.3, there are few instances of semantically superordinate words and general class words, and they continue to be slightly greater in English when compared to Spanish. The following is an example of the use of semantically superordinate words in the second grade: "I would be astronaut because I want to learn a lot of things like star/s, moon/s, and planets and the

space and the <u>sun</u>. And I would see the <u>solar system</u> and asteroids." In this example, the concept *solar system* is a superordinate term of *stars, moon, planets, sun,* and *space.*

In contrast to the first grade data, the use of synonyms is now observed in both English and Spanish, and the mean percent values are equal across languages, *M* = .42. The following is an example of the use of synonyms in the second grade in Spanish: "Mi mejor amigo es Miguel porque jugamos al soccer. Y algunas veces esta <u>enojado</u>. Y algunas veces se <u>enfurece</u>." (My best friend is Miguel because we play soccer. Sometimes he gets <u>mad</u>. And sometimes he gets <u>furious</u>.) In this example, the words *mad* and *furious* were coded as synonyms or near-synonyms, and the coding was conducted across sentence boundaries, as suggested by Halliday and Hassan (1976). There are not significant correlations between the use of repetitions, synonyms, superordinate words, or general class words across languages.

Collocation. Instances of lexical collocation have comparable mean values for both English (*M* = 4.2) and Spanish (*M* = 4.5), and there are positive moderate and significant correlations across languages (*p* < .008). Students in the second grade used semantically related words—collocations—to describe their family (i.e., mom, dad, brother), clothing (e.g., shoes, pants), every-day activities (e,g., write, read, sing), and use of technology (e.g., Xbox, Minecraft, PlayStation).

I performed Mann-Whitney U tests to determine if there were differences in the median percent scores of lexical reiteration and collocation. Results showed that students' compositions across grade levels differed statistically for the following measures: Spanish reiteration (*p* < .001), English reiteration (*p* < .001), and English collocation *p* < .048). This information is summarized in Table M3 in Appendix M.

Table 5.3. *Grade 2 Descriptive Statistics Lexical Cohesion Measures*

Lexical cohesion	English (n = 30)	Spanish (n = 30)
Reiteration*	8.22	13.1
Same word	6.2	11.5
Synonym	.42	.42
Superordinate	1.07	.83
General class word	.47	.43
Collocation**	4.2	4.5

*Correlation is significant at the 0.05 level (2-tailed).
**Correlation is significant at the 0.01 level (2-tailed).

Lexical cohesion, grade 3. The results obtained in the third grade were very similar to those found in the first and second grades in both English and Spanish for both measures of reiteration and collocation. Data continued to suggest that discourse features for lexical cohesion were found in the corpora across languages. Overall, third grade students continued to have a greater mean percent value for the use of lexical reiteration and collocation in Spanish when compared to the same measures in English. The mean percent values for lexical collocation continue to be very similar across languages and slightly higher in Spanish. Students continued to use same-word repetition more than synonyms, superordinate words, or general class words to unify their texts. Positive correlations across languages were only observed for the measures of reiteration and same-word repetition. In measuring both lexical reiteration and lexical cohesion, I only observed statistically significant differences in lexical reiteration median scores between second and third grades.

Reiteration. Data indicated that mean percent values for lexical reiteration continued to be higher in Spanish ($M = 13.43$) than in English ($M = 9.94$). Data also indicated a positive, large, and significant correlation for lexical reiteration across languages ($p < .001$). All students in the third grade used same-word repetition to unify their texts, 100 percent in both of their languages, more than they used semantic synonyms, superordinate words, and general class words. Unlike

the first and second grades, there was a positive, large, and significant correlation in semantically repetitive same-words across languages in the third grade ($p < .001$). For example:

> I was another person it would be my dad because he's a <u>mechanic</u>. I want to be a <u>mechanic</u> to fix car's engines and all that. It gets you <u>money</u>. It's great. But <u>money</u> is for emergencies. I just want <u>money</u>. When I get <u>money</u> it is just for me."

As the previous example shows, the student used the words *mechanic* and *money* repeatedly in his narrative to create a cohesive effect and to unify compositions in both English and Spanish.

As indicated in Table 5.4, there continued to be few instances of synonyms, superordinate words, and general class words in both languages. Although there were no significant correlations for the use of synonyms, superordinate words, and general class words across languages, 46 percent of students used general class words (i.e., person, thing) to unify their texts in both of their languages.

Collocation. The mean percent values for lexical collocation continue to show similarities across languages (Spanish $M = 4.25$, English $M = 4.74$). However, a large percentage (83 percent) of students used collocation in both of their languages. At the same time, there is not a significant increase in the mean values across grade levels (see Table 5.3 above). In addition, unlike grade levels 1 and 2, there is no significant correlation across languages for the use of lexical collocation in the third grade.

I performed Mann-Whitney U tests to determine if there were differences in the median percent scores of lexical reiteration and collocation. Results showed that students' compositions across grade levels differed statistically for the following measures: English reiteration, $p < .001$, and English collocation, $p < .003$, Spanish reiteration, $p < .003$, and Spanish collocation, $p < .019$. This information is summarized in Table M3 in Appendix M.

Table 5.4. *Grade 3 Descriptive Statistics Lexical Cohesion Measures*

Lexical cohesion	English (n = 30)	Spanish (n = 30)
Reiteration**	9.94	13.43
Same word**	8.11	12.1
Synonym	.40	.19
Superordinate	.48	.44
General class word	.94	.87
Collocation	4.25	4.74

**Correlation is significant at the 0.01 level (2-tailed).

Lexical cohesion, grade 4. In the fourth grade, all discourse features for lexical cohesion were observed in the English and Spanish samples, and students continued using lexical reiteration of the same word as lexical cohesion devices to unify their texts more than using collocations. The mean percent value for lexical reiteration continued to be greater in Spanish than in English and the same was true for same-word repetition and lexical collocation. However, when compared to mean percent values obtained in the third grade, there was a decrease in the mean percent value for lexical reiteration in Spanish while, in English, it continued to increase. A slight decrease in the mean values may be attributed to a decrease in the total number of words at the fourth grade level compared to the third grade; this suggests that less text may have decreased the use of semantically related words in students' compositions. At this grade level, data indicated significant correlations across languages for lexical reiteration and same-word measures. See table 5.5. The compositions in the fourth grade level did not differ at statistically significant levels when compared to compositions in the third grade.

Reiteration. As noted before, lexical reiteration mean percent values continued to be greater in Spanish compositions ($M = 12.8$) than in English ($M = 11.7$); however, Spanish mean percent values decreased when compared to third grade ($M = 13.43$). In addition, data show a positive strong and significant correlation for lexical reiteration across languages ($p < .001$).

As I mentioned earlier, students' continued to use same-word repetition to unify texts, and its usage continued to be greater in the Spanish compositions ($M = 11.3$) when compared to English compositions ($M = 9.06$). Data indicated that all students in the sample (100 percent) used same-word repetition in both of their languages, and a positive strong correlation across languages was found for the use of same-word repetition ($p < .001$). The previous sections have also shown that there are very few instances of the use of synonyms, superordinate words, and general class words, and the same continues to be true in the fourth grade.

Similar to previous grades, the mean values for superordinate and general class words continue to be greater in English compositions than in Spanish compositions. Here is an example to illustrate this finding: "I would be Lionel Messi because he is cool. He has nice skills. He can score from far." In this example, the word *score* was coded as a hyponym (i.e., a word with a more specific meaning than a superordinate word) of *skills*. More specifically, the student used the word *skill* as an umbrella term and then used the word *score* to provide a more explicit term related to the term *skill*. Superordinate words suggest a complex use of vocabulary to promote textual cohesion. On the other hand, the following is an example of a general class word from the data: "If I could be someone else I would like to be Beyonce because she is popular. She is proud of being a girl." In this example, the word *girl* is a general class word for *Beyonce.* Here the writer reiterated the noun *Beyonce* by using the word *girl.*

Collocation. For lexical collocation, mean values for both English ($M = 4.3$) and Spanish ($M = 4.5$) are similar in second and third grade levels, and 86 percent of students used this discourse feature in both of their languages. In fact, data indicated a mean value of $M = 4.4$ on average for all three grade levels in both languages. Interestingly, the mean values for lexical collocation do not steadily increase across grade levels as might be expected. As noted in the

findings for second and third grade, there is not a significant correlation in the use of lexical

collocation across languages and across grade levels.

To determine if students' compositions showed a statistically significant difference, I

compared median values for lexical reiteration and collocation across the third and fourth grades

by performing Mann-Whitney U tests, which revealed nonstatistically significant results. This

information is summarized in Table M3 in Appendix M.

Table 5.5. *Grade 4 Descriptive Statistics Lexical Cohesion Measures*

Lexical cohesion	English (n = 30)	Spanish (n = 30)
Reiteration (overall)**	11.7	12.8
Same word**	9.34	11.3
Synonym	.27	.34
Superordinate	1.17	.65
General class word	.92	.52
Collocation	4.3	4.5

**Correlation is significant at the 0.01 level (2-tailed).

Lexical cohesion, grade 5. Fifth grade data continued to show that all discourse features

for lexical cohesion were found in the corpora in English and Spanish. In English, mean percent

values for lexical reiteration overall, same-word repetition, and collocation decreased when

compared to fourth grade. In Spanish, mean percent values for reiteration overall and same-word

repetition increases while collocations continued to decrease. Interestingly, mean percent value

for collocation in English and Spanish moderately decreased. Positive correlations across

languages were only observed for the measured same-word repetition. See Table 5.6. Statistically

significant differences in median scores between grade levels 4 and 5 were only observed in

Spanish for measures of lexical reiteration and lexical collocation. See Table M3 in Appendix M.

Reiteration. In Spanish, the mean value for lexical reiteration increased on average 2.4

points ($M = 15.2$), while in English ($M = 11$) the mean value decreased .7 points on average when

compared to the same measures in the fourth grade. Similar to previous grade levels, Spanish lexical reiteration continued to present greater mean values when compared to English (see Figure 5.1). Similar to grade level 1, there was no statistical correlation across languages for this linguistic measure.

As I indicated before, data suggest that EB students in fifth grade continued to use same-word repetition as the lexical cohesive feature to unify texts, and 100 percent of students used this discourse feature in both of their languages. Mean values for same-word repetition continue to be greater in Spanish ($M = 12.9$) when compared to English compositions ($M = 8.70$), and data indicates a positive, moderate, statistically significant correlation ($p < .038$). The following is an example of a student in the fifth grade that uses same-word repetition:

> I can help people. And be a <u>lawyer</u> with my best <u>friend</u>. One day I can work together and never stop being a <u>lawyer</u>. When I go to college I can go with my <u>friend</u> to learn how to be a <u>lawyer</u>.

As we see in this example, the student unified her text by utilizing the words *lawyer* three times in three consecutive sentences and using the word *friend* twice. The writer achieved textual cohesion by using same-word repetition to secure emphasis and clarity in her writing.

There continue to be few instances of students connecting their text through the use of synonyms, superordinate words, and general class words; however, 53 percent of students used general class words across languages. The use of synonyms is slightly higher in Spanish while the use of superordinate and general class words continues to be higher in English; the same pattern is observed in the fourth grade. As noted for grade levels 1–4, there were no significant

correlations across languages for synonyms, superordinate words, and general class words. These data are summarized in Table 5.6.

Collocation. For lexical collocation, data show a decrease in mean values for English and Spanish. The decrease in the mean value for lexical collocation in both languages might be attributed to students relying more on using the same word to unify texts (English $M = 8.70$, Spanish $M = 12.9$) than on using semantically related word collocation. Similar to grades 3 and 4, there is not a statistically significant correlation for lexical collocation across languages in the fifth grade, and 73 percent of the students in the sample used semantically related words in both of their languages.

I performed Mann-Whitney U tests to determine if there were differences in the median percent scores of lexical reiteration and collocation. Results showed that students' compositions across grade levels differed statistically for the following measures: Spanish reiteration ($p < .044$) and Spanish collocation ($p < .013$).

Table 5.6. *Grade 5 Descriptive Statistics Lexical Cohesion Measures*

Lexical cohesion	English (n = 30)	Spanish (n = 30)
Reiteration (overall)	11.0	15.2
Same word*	8.70	12.9
Synonym	.56	.72
Superordinate	.85	.54
General class word	.94	.90
Collocation	3.63	2.41

*Correlation is significant at the 0.05 level (2-tailed).

Conclusions for Spanish Lexical Cohesion, Grade Levels 1–5

Findings in the data indicated that students' use of lexical cohesion in both English and Spanish in grades 1–5 did not follow a predictable development; mean percent values fluctuated across grade levels, particularly in grade levels 4 and 5. However, same-word repetition and collocation

were the most commonly used and shared discourse features across languages in all grade levels by students in the sample starting in the first grade. This finding in the corpora seems to suggest that the discourse features of same-word repetition and collocation partially inform the biliterate writing trajectory for EB students participating in this study.

In answering to the research question of how EB students develop as writers within and across languages, findings suggest that all discourse features for lexical cohesion, with the exception of synonyms in Spanish in the first grade, were found in the English and Spanish written samples across grade levels. Data indicated that the discourse features more commonly used by students across languages in all grade levels were reiteration same-word repetition and semantically related words, or collocation. Interestingly, a greater percentage of students used same-word repetition and collocations in both languages in all grade levels than synonyms, superordinate words, and general class words (see Table 5.7). Another interesting finding of discourse features used across languages was the use of reiteration general class words. Although there were few instances in the data, the percentage of students using this linguistic device was noteworthy starting in the third grade. In terms of discourse features observed only within each language, data indicated that the use of synonyms was initially observed in English in the first grade but then in both languages starting in the second grade.

Data also indicated that compositions in Spanish included on average a greater number of lexical reiteration cohesive devices when compared to English compositions. As noted before, a greater percentage of students attending grade levels 1–5 relied mostly on the use of same-word repetition to unify their texts in English and Spanish. This finding is problematic because the use of same-word repetition as a cohesive device to unify text suggests students' use of limited vocabulary (Crowhurst, 1987) (see Table 5.7).

Across all grade levels, there were few instances of the use of semantically related words such as synonyms and superordinate words, and small percentages of students across grade levels 1–5 presented synonyms and superordinate words in both of their languages (see Table 5.7). This finding is also troublesome because the use of synonyms and superordinate words suggests the ability to use a diverse vocabulary (Crowhurst, 1987). Students who do not possess an extensive vocabulary tend to increase redundancy by using lexical repetition, resulting in a more repetitive writing style (Guthrie, 2008), which is the case for this sample of students. The data also indicated that the use of superordinate words was greater in English, perhaps suggesting students had a more varied vocabulary in English than in Spanish. For synonyms and superordinate words, the data do not show a clear pattern of use across languages or across grade levels; no significant correlations for these lexical measures were found in the data.

Similar to synonyms and superordinate words, the use of collocation indicates the ability to use diverse vocabulary (Crowhurst, 1987). Interestingly, the use of semantically related words—collocations— remained the same in grade levels 3 and 4, and then decreased in grade 5. However, despite the inconsistent use of collocation in the upper grades, the percentage of students using collocations in both of their languages increased (see Table 5.7). Semantically related words or collocations appear more frequently in Spanish compositions in grade levels 1–4, but they were more frequent in the fifth grade in English. It seems that as the number of deviations increased in both languages across grade levels (see Tables 5.14 and 5.15 on page 184 and 185), the number of collocations decreased. That is, as students digressed in their writing by including different situational events, the number of their semantically related words decreased.

The data do not show a clear pattern in terms of correlations across languages or statistical significance across grade levels. For example, positive correlations across languages were only

observed for the following: lexical reiteration in grade levels 2, 3, and 4; collocations in grade

levels 1 and 2; and same-word repetitions, which were only observed in grade levels 3, 4, and 5.

Additionally, statistically significant differences were found in grade levels 2 and 3 for both

lexical reiteration and collocation measures in English. In Spanish, statistically significant

differences were found in grade levels 2, 3, and 5 for the lexical reiteration measure; meanwhile,

a statistically significant difference was found in grade levels 3 and 5 for the collocation measure.

A pattern in the data suggests that it is in the third grade where students' compositions became

more complex when compared to the previous grade, and their use of discourse features

significantly increased.

In sum, EB students in this sample seem to unify their texts in both languages by using

same-word repetition, semantically related words, or collocations. Although the use of synonyms

and collocations are expected to grow with age (Crowhurst, 1987), it seems that for students

attending grade levels 1–5, either the use of synonyms and superordinate words were not yet

within their linguistic repertoire in English and Spanish, or they have not been explicitly taught

how to expand their lexical repertoire.

Table 5.7. *Percent of Students Who Used the Same Discourse Feature across Languages*

Discourse feature	Grade 1 (%)	Grade 2 (%)	Grade 3 (%)	Grade 4 (%)	Grade 5 (%)
Reiteration					
Same word	33	90	100	100	100
Synonyms	0	6.7	10	13.3	26.7
Superordinate	0	23.3	23.3	23.3	30
General class	6.7	6.7	46.6	36.6	53.3
Collocation	33	50	83.3	86.6	73.3

English and Spanish Syntactical Cohesion, Grade Levels 1–5

According to Halliday and Hassan (1976), syntactical cohesion is the linkage of sentences together using grammatical features of languages such as reference, substitution, ellipsis, and conjunction. In short, besides being about the way sentences are organized in a text, syntactical cohesion is also about the ways in which sentences are linked together to form a cohesive whole (Jackson, 1982). I measured syntactical cohesion in EB students' written texts by counting instances of reference type (personal, demonstrative, comparative), reference by position (anaphoric, cataphoric, and exophoric), substitutions (nominal, verbal, and clausal), ellipses (nominal and verbal), and use of conjunctions (additive, adversative, causal, and temporal).

Syntactical cohesion, grade 1. EB writing in the first grade (n = 15) presents some similarities and differences across languages in the use of syntactical or grammatical features to connect text. Overall findings suggest that students' use of syntactical cohesive devices languages varies across languages. In addition, neither positive nor significant correlations were found in the use of syntactical cohesive ties across languages in the first grade.

Reference by type. In the first grade, students mostly used anaphoric personal reference in both of their languages to connect their text; that is, students' used personal pronouns to refer back to a noun that was previously mentioned in the text. Twenty-six percent of students used personal reference whereas 33.3 percent used anaphoric reference to connect their texts. The following examples from the data illustrate the use of anaphoric personal reference in both languages: a student writes in English, "I want to be *Rosalinda* because she is nice. And because *she* is thankful to other people," whereas she writes in Spanish, "Mi mejor amiga es *Sonia* porque nunca se enoja conmigo. Y cuando yo estoy en problemas *ella* siempre esta allí para ayudar." As we can see in both examples, the student used the personal pronouns *she* and *ella* (she) to refer

back to the nouns *Rosalinda* and *Sonia* that were previously mentioned in the narrative. There were very few instances of demonstrative and comparative references present in both languages.

   Reference by position. Another interesting finding is that exophoric references were more frequent in Spanish (*M* = 1.55) than in English (*M* = .14). The exophoric reference points outside of the text for meaning for the speaker/writer assumes that the listener/reader has the background knowledge to get meaning from the reference. For example, in Spanish, "Mi mejor amiga es Evelen Chavez porque ella juega todos los dias conmigo en el recreo en todo. Nada mas no tanto nos gusta *lo* mismo." (My best friend is Evelen Chavez because she plays every day with me. However, we don't always like to do *the same*.) In the sentence above, the direct pronoun *lo* points to a referent outside of the text—different things that both girls like that are not mentioned in the text—and the writer expects the reader to have the background knowledge to get meaning from the reference. In English, there was only one example of *comparative* exophoric reference: "I would like to be just one day me. And *other* times I like to be other persons." Here, the comparative *other* refers to another time that has no reference within the text but is outside the text. In addition, cataphoric reference—a reference that points forward to something that will be stated next in the text—was only present in Spanish: "Mi mejor amiga es Stephanie. Ella es mi mejor amiga porque siempre juega conmigo. Y también sé *que* es su color favorito, es *rosita."* (My best friend is Stephanie. She is my best friend because she always plays with me. I also know what is her favorite color is, it is pink.) In the previous example, the student uses the relative pronoun *que* as a reference for the word *rosita* (pink). The presence of more instances of exophoric reference in Spanish suggest that students bring situational and contextual situations into their writing, whereas in English it seems that students construct their texts by building references already mentioned in the text.

Substitutions. The use of substitution—a grammatical relation defined as a replacement of one linguistic item by another (Halliday & Hassan, 1976, p. 88) so that the substitute item is interpretable only by reference to the original longer item—was only observed once in Spanish, and it was used to substitute a clause ($M = .18$). A first grader wrote:

> Mi mejor amiga es Sonya porque nunca se enoja conmigo. Y cuando *yo estoy en problemas ella esta allí para ayudarme*. Por *eso* yo siempre la ayudo también. (My best friend is Sonya because she never gets upset with me. And when I have problems she is there to help. For *that* reason, she is my best friend.)

In this example, the student used the pronoun *eso* as a substitution for the previous clause that says, "when I have problems she is there to help."

Ellipses. Instances of ellipses—nominal and verbal—were both present in English and Spanish. According to Halliday and Hassan (1976), substitutions and ellipses are very similar to each other, "and ellipsis is simply a 'substitution by zero'" (p. 143). The data shows that nominal ellipses were only present in Spanish ($M = 3.6$). The following are examples of nominal ellipses (Ø) from the data:

> Mis mejores amigas son Arianna y Stephanie porque las conocí en salón ocho. También Ø fueron amables conmigo. También Ø jugaron conmigo. (My best friends are Arianna and Stephanie because I met them in room eight. Also, *they* were kind to me. Also, *they* played with me.)

In the example before, the symbol Ø could be replaced by the pronoun *ellos* (they). Because Spanish is a pronoun-drop language, meaning that the null subject information is encoded in the verb (Bedore, 1999), nominal ellipses occurred more frequently in Spanish than in English.

In contrast, English verbal ellipses (*M* = .63) occurred more frequently than in Spanish (*M* = .22). The next example illustrates the use of verbal ellipses in English: "I would be a teacher. I would be a teacher because I can show students how *to be responsible* at school. And so they can show Ø their mom." In this example, the student uses a verbal ellipsis after the verb *show* to substitute the verbal clause *to be responsible.* The only way we understand what the students will show to their moms, *to be responsible,* is by referring back in the text. According to Vujević (2012), substitutions, as well as ellipses, are cohesive devices common to all languages and have the purpose "to avoid the burdening repetitions within the text, and to make the whole text cohere" (p. 407). Findings suggest that in the first grade, students have not yet developed the use of ellipses and substitutions to avoid repetitions within the text.

Conjunctions. Finally, students in the first grade used more additive and causal conjunctions in both languages than they used adversative and temporal conjunctions. Notably, 66.7 percent of students used additive conjunctions across languages, and only 20 percent used causal conjunctions across languages. Briefly, conjunctions are "specific devices (conjunctions) for linking one sentence to another" (Jackson, 1982, p. 104). According to Halliday and Hassan (1976), there are four types of conjunctions expressed in their simplest forms: additive (and), adversative (but), causal (so), and temporal (then). Data findings show that the use of additive conjunctions to connect their texts occurred more frequently in Spanish than in English, *M* = 7.4 and 4.57 respectively. In Spanish, students mainly used the connectors *y* (and) and *también* (also) to connect their texts whereas in English students used only the connector *and*. In English, causal conjunctions occurred more frequently than in Spanish to connect texts, *M* = 2.15 and *M*=1.3 respectively. In English, students mainly used the causal connector *because* and very few instances of the connector *so.* In Spanish, students mainly used the causal connector *porque*

(because). The data show few instances of adversative and temporal conjunctions in Spanish

whereas there were no examples of these types of conjunctions in English. Table 5.11[6] shows

examples for each type of conjunction that students used across grade levels.

At this grade level, there were no significant correlations for measures of syntactical

cohesion across languages. This information is summarized in Table 5.8.

Table 5.8. *Grade 1 Descriptive Statistics for Syntactical Cohesions Measures*

Discourse feature	English (n = 15)	Spanish (n = 15)
Reference by type		
Personal	4.36	2.34
Demonstrative	.72	.25
Comparative	.53	1.11
Reference by position		
Anaphoric	5.5	2.25
Cataphoric	0.00	.20
Exophoric	.14	1.55
Substitution		
Nominal	0.0	0.0
Verbal	0.0	0.0
Clausal	0.0	.18
Ellipsis		
Nominal	0.0	3.6
Verbal	.63	.22
Conjunction		
Additive	4.57	7.49
Adversative	0.00	.27
Causal	2.15	1.3
Temporal	0.0	.98

Syntactical cohesion, grade 2. Similar to the first-grade, findings suggest that EB writing

in the second grade (n = 30) presents similarities and differences in the use of syntactical or

grammatical features to connect text. Additionally, similar to first grade level, the use of

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[6] See Table 5.11 on page 160.

syntactical devices across grade levels and across languages varies across the different types of cohesive ties to connect text. At the same time, patterns in students' use of syntactical cohesive ties to connect texts were found in the use of Spanish and English anaphoric personal references, Spanish nominal ellipses, and the use of additive and causal conjunctions in both English and Spanish. The following are the differences and similarities in the use of syntactical features to connect texts between the first and second grades. The data is summarized in Tables 5.9 and 5.10[7].

Reference by type. Overall, data show that students continued to rely on the use of personal reference to connect text, and 80 percent of students used personal reference across languages. There continued to be few instances of demonstrative and comparative references.

- The use of personal references increased from grade 1 to grade 2 and continued to occur more frequently in the English writing samples, $M = 6.90$ and $M = 4.86$, respectively.

- Compared to the first grade, demonstrative references in the second grade had a greater increase in Spanish than in English, $M = .91$ and $M = .48$, respectively.

- Comparative references increased across grade levels and continued to be more frequently used in Spanish, $M = 1.11$ and $M = .53$, respectively.

Reference by position. Students in the second grade continued to connect their texts using anaphoric references—references that refer back to some item already stated in the text, and 90 percent used anaphoric references in both of their languages. Instances of exophoric references (references that point out the text) continued to be greater in Spanish.

- The use of anaphoric references increased across grade levels and continued to be more frequently used in English than in Spanish, $M = 5.5$ and $M = 2.25$, respectively.

[7] See Table 5.9 on page 158 and Table 5.10 on page 159.

- Similar to the first grade, cataphoric references were only observed in Spanish, *M*= .20.

- Exophoric reference mean values decreased in the second grade but continued to be greater in Spanish, *M* = .43 and *M* = .27, respectively.

Substitutions. English nominal and verbal substitution as well as Spanish nominal substitution emerged in the data. Similar to first grade, neither instances of English clausal substitutions nor instances of Spanish verbal substitutions were found in the data.

- Nominal substitutions in both languages emerged in the second grade, and there was only one example of nominal substitutions in each language,

  M = .27 and *M* = .04 respectively.

  > For example, in English, a student wrote: "If I was someone else I would be Brandon. He also has friends that I really like to play with. One of them really likes to play with me and his name is Carlos. And another *one* is called Carlos." In this example, the student used the item *one* to substitute for Carlos, one of Brandon's friends. In Spanish, there is a similar example where the student wrote:

  > > Mi mejor amiga es Alejandra porque cuando vino a esta escuela eramos amigas. Leslie es mi mejor amiga. Tambien es buena. Las *dos* son mejores amigas y chistosas. (My best friend is Alejandra because when she came to this school we were friends. Leslie is my best friend. She is good too. *Both* are my best friends and they are funny.)

  > In this example, the student used the item *dos* (both) as a substitute for both of her friends, Alejandra and Leslie.

- English verbal substitutions emerged in English only, and there was only one example in the data, *M* = .27.

In verbal substitutions, the verb *do* replaces the lexical verb across sentence boundaries (Halliday & Hassan, 1976). The following is an example from the second grade data: "My best friend is Carlos. Carlos has a ramp for his bike and one day he called us all to watch him jump the ramp. And he *did* it." In this example, *did* substitutes for the lexical verb *jump*.

- Similar to first grade, only one instance of clausal substitution was found in the Spanish samples, $M = .06$.

Ellipses. Compared to the first grade data, overall mean values for English and Spanish ellipses decreased in the second grade, and Spanish nominal ellipses continue to be more frequent in the data.

- Nominal ellipses in both English and Spanish decreased when compared to the first grade mean values, $M = .27$ and $M = 2.8$, respectively.

- The mean values for English verbal ellipses decreased in the second grade, $M = .15$.

- The mean values for Spanish clausal ellipses increased in the second grade, $M = .53$.

Conjunctions. The use of additive and causal conjunctions continued to be greater in the second grade in both languages when compared to the use of adversative and temporal types of conjunctions. Data indicated that 73.3 percent of students used additive conjunctions in both languages whereas 40 percent used causal conjunctions across languages. English adversative and temporary types of conjunctions emerged in the second grade data. A positive and moderate correlation was found in the use of additive conjunctions across grade levels, $r(30) = .431, p < .017$. See Table 5.11 for examples of the types of conjunctions students used at this grade level.

- Different from the first grade, the mean value for Spanish additive conjunctions decreased in the second grade and is less than the mean value of English additive conjunctions, $M = 4.62$ and $M = 4.33$.

- Overall, second-grade mean values for causal conjunctions decreased when compared to first-grade data, and the mean value in English was slightly higher than the Spanish mean value, $M = 1.3$ and $M = 1.26$ respectively.

- English adversative types of conjunctions emerged in the second grade and the mean value continued to be greater in Spanish, $M = .37$ and $M = .15$, respectively.

- English temporal types of conjunctions emerged in the second grade and mean value continued to be greater in Spanish, $M = .64$ and $M = .09$, respectively.

Finally, Mann-Whitney U tests were performed to determine if there were differences in the median scores of syntactical cohesive ties in students' compositions across grade levels. Results showed that students' compositions across grade levels differed statistically for the following measures: English personal reference ($p < .001$), English anaphoric reference ($p < .003$), Spanish personal reference ($p < .001$), Spanish demonstrative reference ($p < .040$), and Spanish anaphoric reference ($p < .001$). Table M4 in Appendix M summarizes the syntactical cohesive devices that show a statistical significance in the comparison of texts across grade levels and within languages.

Syntactical cohesion, grade 3. In the third-grade data (n = 30), there continued to be some similar patterns to those found in the second grade as to the types of syntactical cohesive ties that students use to connect their texts in both of their languages. For example, students continue to rely on the use of personal anaphoric references to connect their texts, instances of nominal ellipses continued to be greater in Spanish, and the use of additive and causal

conjunctions in both English and Spanish continued to be greater than the use of adversative and temporal types of conjunctions. In addition, results suggest students' compositions across grade levels 2 and 3 differed statistically for a great number of measures in both languages. The following are the differences and similarities in the use of syntactical features to connect texts between the second and third grade and across languages. The data is summarized in Tables 5.9 and 5.10 on pages 167 and 168.

Reference by type. Similar to the first and second grade, overall findings suggest that students continued to rely on the use of anaphoric personal reference to connect their texts in both languages. In addition, 93.3 percent of students used personal reference whereas 100 percent of students used anaphoric in both languages to connect their texts. There continued to be few instances of demonstrative and comparative reference when compared to the use of personal reference across languages. However, although there were few instances of demonstrative reference, 53.3 percent of students used demonstrative reference in both languages.

- The use of personal reference increased from grade 2 to grade 3 and continued to occur more frequently in English, $M = 7.04$ and $M = 5.27$, respectively.
- The use of demonstrative reference increased in the third grade, and mean value was greater in English, $M = 1.52$ and $M = 1.08$.
- Mean values for comparative reference slightly increased in the third grade, and mean value continued to be greater in Spanish, $M = .74$ and $M = .30$.

Reference by position. Similar to previous grades, students in the third grade continued to connect their texts using anaphoric reference—reference that refers back to some item already stated in the text. Instances of exophoric reference—reference that points out the text—continues

to be slightly greater in Spanish. A positive and strong correlation was found in the use of cataphoric reference across languages, $r(30) = .567$, $p < .001$.

- The use of anaphoric reference increased in the third grade and continued to be more frequently used in English than in Spanish, $M = 8.47$ and $M = 6.5$, respectively.

- English cataphoric reference emerged in the third grade, and mean values were greater in Spanish, $M = .22$ and $M = .07$.

As an illustration of cataphoric reference in English, we have the following example: "Well, I think I have mentioned all *these* things, *she is amazing, she can do everything.*" In this example, the writer uses the demonstrative pronoun *these* to point forward to something, which will be stated in the text: *she is amazing* and *she can do everything.*

- There are few instances of exophoric reference, and mean values continued to be slightly greater in Spanish, $M = .38$ and $M = .32$.

Substitutions. Spanish verbal substitutions emerged in the data. Additionally, overall, the use of substitutions is low when compared to other syntactical cohesive ties. Similar to previous grade levels, there are no examples of English clausal substitutions.

- There are few instances of nominal substitutions in English and Spanish, $M = .05$ and $M = 14$, respectively.

- Spanish verbal substitutions emerge in the data, and mean value is greater in English, $M = .08$ and $M = .02$.

The following is an example in the use of Spanish verbal substitution from the data: " A veces la maestra nos deja *trabajar* juntas. Y lo *hacemos* muy bien." (Sometimes the teacher lets us *work together*. And we *do* it right.) In this example, the student used the item *hacemos* (we do it) as a verbal substitute for the lexical verb *trabajar* (work).

- Similar to first and second grade, only instances of clausal substitution was found in the Spanish samples, $M = .60$.

Ellipses. Compared to the second grade data, overall mean values for English and Spanish ellipses increased in the third grade, and Spanish nominal ellipses continue to be more frequent in the data.

- English nominal ellipses increased in the third grade, and Spanish nominal decreased .02 point on average, $M = .32$ and $M = 2.6$, respectively.

- The mean values for both English and Spanish verbal ellipses slightly increased in the third grade, $M = .43$ and $M = .66$, respectively.

Conjunctions. In the third grade, the use of additive and causal conjunctions continued to be greater in both languages when compared to the use of adversative and temporal types of conjunctions. Overall, the use of adversative and temporal conjunctions increased in the third grade, and 93.3 percent of students used additive conjunctions and 46.7 used causal conjunctions across languages to connect their texts. A positive and moderate correlation was found in the use of causal conjunctions across languages, $r(30) = .385$, $p < .036$. See Table 5.11 for examples of the types of conjunction students used at this grade level.

- Compared to second grade, the mean value for Spanish and English additive conjunctions decreased in the third grade. In addition, the mean value for additive conjunction is now slightly greater in Spanish, $M = 4.0$ and $M = 3.48$.

- Instances of English causal conjunctions slightly increased in the third grade, and mean value for English causal conjunction continues to be greater than Spanish, $M = 1.59$ and $M = .94$.

- Overall, instances of adversative and temporal conjunctions in both languages slightly increased in the third grade. Again, the data is summarized in Tables 5.9 and 5.10.

To conclude, Mann-Whitney U tests were performed to determine if there were differences in the median scores of syntactical cohesive ties in students' compositions across grade levels. Results showed that students' compositions across grade levels differed statistically for the following measures in English: personal reference ($p < .001$), anaphoric reference ($p < .001$), demonstrative reference ($p < .003$), additive conjunctions ($p < .025$), adversative conjunction ($p < .014$), causal conjunction ($p < .007$), temporal conjunction ($p < .002$). Similarly, results showed that students' compositions across grade levels differed statistically for the following measures in Spanish: personal reference ($p < .009$), demonstrative reference ($p < .018$), anaphoric reference ($p < .003$), additive conjunction ($p < .026$), verbal substitution ($p < .046$), clausal substitution ($p < .001$), and nominal ellipses ($p < .034$). This information is summarized in Table M4 in Appendix M.

Syntactical cohesion, grade 4. Data in the fourth grade (n = 30) showed that there were no significant changes in students' use of syntactical cohesive ties to connect their texts in both of their languages when compared to third grade data. For instance, students continued to rely on the use of personal anaphoric reference to connect their texts, and there are few examples of substitutions in both languages. Instances of nominal ellipses continue to be greater in Spanish, and the use of additive and causal conjunctions in both English and Spanish continue to be greater than the use of adversative and temporal types of conjunctions. Positive correlations across languages were found for measures of reference by type and position, for additive and clausal types of conjunctions, and for nominal ellipses. This information is summarized in Tables 5.9 and 5.10 on pages 167 and 168. Finally, results suggest that student compositions across grade levels

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3 and 4 did not differ statistically in any of the measures of syntactical ties in either language. See Table M4 in Appendix M for a summary of results.

   Reference by type. Similar to previous grade levels, overall findings suggest that students continued to rely on the use of anaphoric personal reference to connect their texts in both languages. For example, 90 percent of students used personal reference, and 93 percent used anaphoric reference to connect their texts in both languages. There continued to be few instances of demonstrative and comparative reference when compared to the use of personal reference across languages. A positive and strong correlation was found in the use of personal reference across languages, $r(30) = .615, p < .001$.

- Mean values for personal reference in the fourth grade stayed relatively the same when compared to third-grade data and continued to occur more frequently in English, $M = 7.03$ and $M = 5.36$, respectively.

- Overall, the mean values for demonstrative reference slightly decreased in English and Spanish, and continued to occur more frequently in English, $M = 1.18$ and $M = .92$, respectively.

- Similar to previous grades, there are few occurrences of comparative reference, English $M = .37$, and Spanish $M = .55$.

   Reference by position. Similar to previous grades, students in the fourth grade continued to connect their texts using anaphoric reference (reference that refers back to some item already stated in the text). Instances of exophoric reference (reference that points out the text) were slightly greater in English. A positive and strong correlation was found in the use of anaphoric reference across languages, $r(30) = .657, p < .001$.

- The use of anaphoric reference in the fourth grade stayed relatively the same when compared to third-grade data, and continued to be more frequently used in English than in Spanish, $M = 8.04$ and $M = 6.21$, respectively.

- Cataphoric reference was found in both languages, and mean values continue to be greater in Spanish, $M = .42$ and $M = .15$.

- There were few instances of exophoric reference, and mean values at this grade level were slightly greater in English, $M = .37$ and $M = .19$.

Substitutions. Similar to lower grade levels, the use of substitutions is low when compared to other syntactical cohesive ties. Similarly to previous grade levels, there are no examples of English clausal substitutions.

- There are few instances of nominal substitutions in English or Spanish, $M = .05$ and $M = .51$, respectively.

- There are few instances of verbal substitutions in either language, and mean value is greater in English, $M = .20$ and $M = .01$,.

- Similar to lower grade levels, the only instances of clausal substitution are found in the Spanish samples, $M = .23$.

Ellipses. Compared to the third-grade data, overall mean values for English and Spanish ellipses slightly decreased in the third grade, and Spanish nominal ellipses continue to be more frequent in the data. A positive and strong correlation was found in the use of nominal ellipses across languages, $r(30) = .570, p < .001$.

- Nominal ellipses in both languages slightly decreased in the third grade, and mean value for nominal ellipses is greater in Spanish than in English, $M = 1.9$ and $M = .28$.

- Verbal substitutions in both languages slightly decreased, English $M = .35$ and Spanish $M = .41$.

Conjunctions. Similar to previous grade levels, the use of additive and causal conjunctions continued to be greater in both languages when compared to the use of adversative and temporal types of conjunctions. English causal conjunctions continued to be slightly higher in English. For instance, 83.3 percent used additive conjunctions and 50 percent of students used causal conjunctions to connect their text in both languages. A positive and moderate correlation was found in the use of additive conjunctions across languages, $r(30) = .413$, $p < .023$. In addition, a positive and strong correlation was found in the use of causal conjunctions across languages, $r(30) = .544$, $p < .002$. See Table 5.11 for examples of the types of conjunction students used at this grade level.

- Similar to third-grade levels, the mean value for Spanish and English additive conjunctions slightly decreased in the fourth grade, and the mean value for additive conjunctions continued to be slightly greater in Spanish, $M = 3.32$ and $M = 2.59$.

- Instances of English causal conjunctions continued to be greater in English than in Spanish, $M = 1.52$ and $M = 1.47$, respectively.

- Similar to previous grades, there are few instances of adversative and temporal types of conjunctions. This data is summarized in Tables 5.9 and 5.10.

To conclude, Mann-Whitney U tests were performed to determine if there were differences in the median scores of syntactical cohesive ties in students' compositions across grade levels. Results showed that students' compositions in both of their languages did not differ statistically across grade levels 3 and 4.

Syntactical cohesion, grade 5. In the fifth grade, data showed similar trends to previous grade levels in students' use of syntactical cohesive devices to connect text in both of their languages. At this grade level, instances of anaphoric personal reference continued to frequently occur in the data, and there were few instances of substitutions in both languages. Instances of nominal ellipses continued to be greater in Spanish, and the use of additive and causal conjunctions in both English and Spanish continued to be greater than the use of adversative and temporal types of conjunctions. In contrast to previous grade levels, English clausal substitutions emerged in the data. A positive correlation across languages was found for the measure of temporal conjunctions. See Tables 5.9 and 5.10 on pages 158 and 159. In addition, results suggest students' compositions across grade levels 4 and 5 differed statistically in the use of English additive and Spanish temporal types of conjunctions. The following are the differences and similarities in the use of syntactical features to connect texts between the fourth and fifth grade levels and across languages.

Reference by type. Similar to previous grade levels, findings suggest that students continued to rely on the use of anaphoric personal reference to connect their texts in both languages. The data indicated that 93.3 percent of students used personal reference, and 100 percent used anaphoric references in both languages to unify their texts. Similarly to previous grades, there were few instances of demonstrative and comparative reference across languages, and 53.3 percent of students used demonstrative reference across languages.

- Mean value for English personal reference decreased while personal references increased in Spanish, $M = 7.05$ and $M = 5.3$, respectively.
- Overall, the mean values for demonstrative reference slightly increased in English and Spanish, $M = 1.22$ and $M = 1.25$, respectively.

- There are few occurrences of comparative reference, English $M = .39$ and Spanish $M = .73$.

Reference by position. Students in the fifth grade relied on using anaphoric reference to connect their texts in both English and Spanish (reference that refers back to some item already stated in the text). Instances of exophoric reference (reference that points out the text) were slightly greater in Spanish at this grade level.

- The use of English anaphoric reference decreased while the mean value for Spanish anaphoric reference increased, $M = 6.49$ and $M = 8.25$, respectively.

- Cataphoric reference was found in both languages, and mean values continued to be greater in Spanish, $M = .53$ and $M = .25$.

- There continued to be few instances of exophoric reference, and mean values at this grade level were slightly greater in Spanish, $M = .32$ and $M = .28$.

Substitutions. The use of substitutions continued to be lower when compared to other types of syntactical cohesive ties. Different from previous grade levels, English clausal substitutions emerged in the data.

- There are few instances of nominal substitutions in English or Spanish, $M = .14$ and $M = .18$, respectively.

- There are few instances of verbal substitutions in either language, and the mean percent value is greater in Spanish, $M = .08$ and $M = .20$.

- English clausal substitutions emerged in the data, and mean value is greater in Spanish, $M = .51$ and $M = .02$.

The next example is from the fifth-grade data and illustrates the use of clausal substitutions in English: "Messi is also in the national soccer team Argentina. Argentina is a very good team, and

so is Barcelona." In this example, the item *so* substitutes the clause *a very good team*. There was only one instance of English clausal substitution at this grade level.

Ellipses. Different from the fourth-grade data, overall mean values for English and Spanish ellipses slightly increased in the fifth grade, and Spanish nominal ellipses continue to be more frequent in the data.

- Nominal ellipses in both languages slightly increased, and the mean value for nominal ellipses continued to be greater in Spanish, $M = 2.4$ and $M = .42$.

- Verbal substitutions in both languages slightly increased, English $M = .60$ and Spanish $M = .72$.

Conjunctions. Similar to previous grade levels, the use of additive and causal conjunctions continued to be greater in both languages when compared to the use of adversative and temporal types of conjunctions. At this grade level, 80 percent of students used additive conjunctions, and 66.7 percent if students used causal conjunctions in both languages to unify their texts. A positive and strong correlation was found in the use of temporal conjunctions across languages, $r(30) = .526, p < .003$. Examples of the type of conjunctions that students used to connect their texts are displayed in Table 5.11 on page 160.

- In contrast to fourth-grade level, the mean value for Spanish and English additive conjunctions slightly increased in the fifth grade, and the mean value was slightly greater in English, $M = 3.46$ and $M = 3.42$.

- Instances of English causal conjunctions continued to be greater in English, $M = 1.52$ and $M = 1.47$.

- Overall, the use of adversative and temporal types of conjunctions increased in the fifth grade.

Finally, Mann-Whitney *U* tests were performed to determine if there were differences in the median scores of syntactical cohesive ties in students' compositions across grade levels. Results showed that students' compositions across grade levels differed statistically for the following measures in English and Spanish: English additive conjunction, $p <. 043$, and Spanish temporal conjunction, $p <. 025$. This information is summarized in Table M4 in Appendix M.

Conclusions for Syntactical Cohesion in Grades 1–5

Similar to findings for lexical cohesion, findings for syntactical cohesion indicated that students' use of syntactical cohesion discourse features did not follow a predictable development. For example, mean percent values fluctuated across languages and grade levels, some discourse features started in one language first and then in the other at a subsequent grade level, or they were concurrently observed in the same language but started in the second grade or above. However, data also indicated that there were few discourse features that were more commonly observed in the data across languages and across all grade levels than others. Examples include personal and anaphoric reference and additive and causal conjunctions. The data seemed to suggest that the use of personal and anaphoric reference and additive and causal conjunctions seems to inform the biliterate writing trajectory for students participating in this study.

In answering the question of how EB students develop as writers at the discourse level across languages in all grade levels, findings for syntactical cohesion suggest that students mainly used personal and anaphoric reference, including additive and causal conjunctions to connect their texts. This finding is supported by the great percentage of students that used personal anaphoric reference, additive and causal conjunctions across languages in all grade levels (see Table 5.12 on page 161). In terms of writing development within languages, data seems to indicate that the use of Spanish clausal substitution can be considered within a language discourse

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feature since it was observed in Spanish in grade levels 1–5. English clausal substitutions were only observed in the fifth grade (see Table 5.9 on page 158). Overall, data suggests that students in the sample presented a more varied used of syntactical devices to connect their texts than in the English sample. To sum up, the discourse features of personal and anaphoric reference, including the use of additive and causal conjunctions, seem to inform EB students' biliterate writing development at the discourse level for syntactical cohesion in all grade levels.

The data indicated few instances of demonstrative and comparative reference (e.g., reference by type), cataphoric and exophoric reference (e.g. reference by position), substitutions (e.g., nominal, verbal, and clausal), ellipses (e.g., nominal and verbal), and adversative and temporal types of conjunctions across grade levels and in both languages. Data suggested that students used nominal ellipses and clausal substitutions in Spanish more frequently across all grade levels.

Another pattern in the data suggests that students in the sample relied more on the use of additive and causal conjunctions to connect their texts in both languages than the use of adversative and temporal types of conjunctions. In addition, the use of English causal conjunctions was greater on average than the use of Spanish causal conjunctions.

There is not a clear pattern in the data in terms of positive correlations across languages in the use of syntactic cohesive ties. Positive correlations across languages were found in the second grade for the measures of additive conjunctions; then in the third grade for cataphoric reference and causal conjunctions; also in the fourth grade for the measures of personal reference, anaphoric reference, nominal substitutions, and additive and causal conjunctions; and finally in the fifth grade for the measure of temporal conjunction (see Table 5.9 and Table 5.10).

To conclude, the data do not show a clear pattern that could suggest that the written compositions of EB students become more complex across grade levels in the use of syntactical cohesions features. Statistical differences in EB students' written responses across grade levels were only found for a few measures of syntactical cohesion in the second, third, and fifth grade levels in both languages. Similar to other measures, data seems to indicate that it is in the third grade where students' texts became more complex in terms of increasing textual productivity, or increasing the use of discourse features.

Table 5.9. *Grade Levels 1–5 English Syntactical*
Cohesive Ties

Discourse feature	Grade 1 (n = 15)	Grade 2 (n = 30)	Grade 3 (n = 30)	Grade 4 (n = 30)	Grade 5 (n = 30)
Reference by type					
Personal	4.36^+	6.90^+	7.04^+	$**7.03^+$	5.3
Demonstrative	$.72^+$	.48	1.52^+	1.18^+	1.22
Comparative	.53	.25	.30	.37	.39
Reference by position					
Anaphoric	5.5^+	7.37^+	8.47^+	$**8.04^+$	6.49
Cataphoric	0.00	0.00	$**.07$	.15	.25
Exophoric	.14	.27	.32	$.37^+$	.28
Substitution					
Nominal	0.00	$.27^+$	.05	$**.05$	.14
Verbal	0.00	.27	$.08^+$	$.20^+$	.08
Clausal	0.00	0.00	0.00	0.0	.02
Ellipsis					
Nominal	.44	.27	.32	.28	.42
Verbal	$.63^+$	.15	.43	.35	.60
Conjunction					
Additive	4.57	$*4.62^+$	3.48	$*2.59$	3.46^+
Adversative	0.00	.15	$.59^+$	.26	.39
Causal	2.15^+	1.3^+	$*1.59^+$	$**1.52^+$	1.78^+
Temporal	0.00	.09	.54	.37	$**.62$

*Correlation across languages is significant at the 0.05 level (2-tailed).
**Correlation across languages is significant at the 0.01 level (2-tailed).
+ value greater in this language.

Table 5.10. *Grade Levels 1–5 Spanish Syntactical Cohesive Ties*

Discourse feature	Grade 1 (n = 15)	Grade 2 (n = 30)	Grade 3 (n = 30)	Grade 4 (n = 30)	Grade 5 (n = 30)
Reference by type					
Personal	2.34	4.86	5.27	**5.36	7.05$^+$
Demonstrative	.25	.91$^+$	1.08	.92	1.25$^+$
Comparative	1.11$^+$	.65$^+$	.74$^+$	.55$^+$	.73$^+$
Reference by position					
Anaphoric	2.25	5.8	6.5	**6.21	8.25$^+$
Cataphoric	.20$^+$	.19$^+$	**.22$^+$	.42$^+$	.53$^+$
Exophoric	1.55$^+$	.43$^+$	.38$^+$	.19	.32$^+$
Substitution					
Nominal	0.0	.04	.14$^+$	**.51$^+$	.18$^+$
Verbal	0.0	0.0	.02	.01	.20$^+$
Clausal	.18$^+$	.06$^+$	.60$^+$	.23$^+$	.51$^+$
Ellipsis					
Nominal	3.6$^+$	2.8$^+$	2.6$^+$	*1.9$^+$	2.4$^+$
Verbal	.22	.53$^+$	.66$^+$	.41$^+$	.72$^+$
Conjunction					
Additive	7.49$^+$	*4.33	4.0$^+$	3.32$^+$	3.42
Adversative	.27$^+$	.37$^+$	.43	.35$^+$	.76$^+$
Causal	1.3	1.26	*.94	**1.47	1.55
Temporal	.98$^+$	.64$^+$	.67$^+$	.44$^+$	**1.11$^+$

*Correlation across languages is significant at the 0.05 level (2-tailed).
**Correlation across languages is significant at the 0.01 level (2-tailed).
+ value greater in this language.

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Table 5.11. *The Use of Coordinating Conjunctions for Grade Levels 1–5 in English and Spanish*

Conjunction types	Language	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Additive	English	And	And Also	And Also Or	And Or Also Plus	And Also Or Else
	Spanish	Y También	Y También O Además	Y O También	Y O También Además Todavía	Y También O Todavía Además Más
Adversative	English		But	But	But	But
	Spanish	Pero Aunque	Pero Aunque	Pero	Pero	Pero Aunque
Causal	English	Because So	Because	Because So	Because So Then	Because So
	Spanish	Porque	Porque	Porque	Porque	Porque
Temporal	English		When, then	When Then Now	Then When Now Last After	Next When Since
	Spanish	Cuando Mientras	Cuando, ahora	Cuando Después Ahora	Luego Cuando	Cuando Luego ahora

Table 5.12. *Percent of Students with Same Linguistic Features for Syntactical Cohesion across Languages*

Discourse feature	Grade 1 (n= 15) (%)	Grade 1 (n= 30) (%)	Grade 1 (n= 30) (%)	Grade 1 (n= 30) (%)	Grade 1 (n= 30) (%)
Reference by type					
Personal	26.7	80	93.3	90	93.3
Demonstrative	0	13.3	53.3	40	53.3
Comparative	0	6.7	20	16.7	23.3
Reference by position					
Anaphoric	33.3	90	100	93.3	100
Cataphoric	0	0	6.7	6.7	13.3
Exophoric	0	0	10	13.3	6.7
Substitution					
Nominal	0	0	0	3.3	6.7
Verbal	0	0	0	0	0
Clausal	0	0	0	0	0
Ellipsis					
Nominal	0	3.3	30	30	36.7
Verbal	0	3.3	10	16.7	30
Conjunction					
Additive	66.7	73.3	93.3	83.3	80
Adversative	0	3.3	16.7	13.3	26.7
Causal	20	40	46.7	50	66.7
Temporal	0	3.3	16.7	3.3	23.3

English and Spanish Coherence: Logical Relationships, Grade Levels 1–5

Research questions 1 and 2 ask how emerging bilingual (EB) students develop as writers at the word, sentence, and discourse levels *within* and *across* languages. This findings section discusses the last level of analysis in students' written samples at the discourse level: instances of coherence, which is the logical relationships across modified c-units. To reiterate, cohesion is the lexical and grammatical relationship between different elements of a text that holds it together (Halliday & Hassan, 1976), while coherence is the way a text makes sense to the reader, the mental representation of the text, or the sense of connectedness (Sanders & Maat, 2006). In order to make sense of how students develop as writers, I measured instances of coherence by analyzing and quantifying the type of logical relationships across sentence boundaries, or modified c-units including, topic sentence, additive sentences, resultative sentences, illustrative sentences, and so on. See Table 5.13 for mean percentage values for all categories of coherence for grade level 1.

Similar to previous measures of lexical and syntactical cohesion, I performed statistical analysis for measures of coherence that included examining central tendency and dispersion. In some measures of coherence, I calculated the percentage of students who used the same discourse feature across grade level, and only those values that I found to be meaningful were reported. Additionally, I performed Spearman's correlations within groups—across languages—and performed Mann-Whitney U tests to compare mean and median values across grade levels—independent groups. Table M5 in Appendix M displays a summary of measures with statistical significance.

Overall results for instances of coherence suggest that mean percentages for most of the measures in both languages tend to fluctuate across grade levels 1–5. A steady growth in

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the mean percentage of measures of coherence was observed across grade levels in both languages only in the use of transitional words. In Spanish, the use of summative logical relationships steadily increased across grade levels. Another common trend across grade levels in the data is that all writing samples in the corpus had on average one topic sentence that introduced students' texts in both languages. In this section, findings are reported by grade level in four different sections: (1) topic sentence, (2) logical relationships, (3) transitional words, (4) conversational markers, (5) deviations, and (6) statistical results.

Coherence: Logical relationships, grade 1. In the first grade (n = 15), most students start their texts with a topic sentence, and there is a high frequency of additive and explicative logical relationships when compared to other types of logical relationships to connect their texts. There were few instances of resultative and illustrative instances in both languages. Meanwhile, summative and contrastive logical relationships and conversational markers were only present in Spanish. At this grade level, there were no examples of enumerative and conclusive sentences in either language. A stark difference in the mean averages across languages is observed in the use of deviations in Spanish. A positive and strong correlation across languages was found for the illustrative logical relation measure. This information is summarized in Table 5.13.

Topic sentence. Data findings suggest that all students in the sample (N= 15) used a topic sentence to introduce the topic in their narratives in both languages, *M* = 1.0. Students responded to the English prompt, "If you could be someone else for a day, who would you be? Why would you want to be that person?" and usually started their texts with the following topic sentences: "I want to be …" or "I would like to be … ." Similarly, in Spanish, students responded to the writing prompt, "¿Quién es tu mejor amigo en todo el

mundo? Escríbenos por qué esa persona es tu mejor amigo." (Who is your best friend in the entire world? Explain why that person is your best friend.) All students in the first grade started their sentences with the phrases: "Mi mejor amigo es… ." At this grade level, data suggests that students' use of topic sentences to introduce the topic in their narratives is a writing skill that is shared across languages.

Logical relationships. Very similar to the use of additive and causal conjunctions described in the previous sections, students in the first grade commonly linked their sentences using additive terms that introduced a statement of similarity with what has preceded it or reinforces what has been stated by confirming it. The following is an example of an additive logical relationship in English from the data: "I want to be Xavier because he is a nice person, *and* he is very funny." Data indicated that 66.7 percent of the sample (n= 15) used additive logical relationships across languages.

Because the prompt asked students to give reasons why they would like to be another person and why a person is their best friend, students commonly connected text using explicative logical relationships, which introduce an explanation or reformulation of what preceded. Students in English usually connected their sentences using the connector *because*, whereas in Spanish students used the connector *porque* (because). The following is an example of an explicative logical relationship in English: "I want to be a teacher. I would be a teacher *because* I can show students how to be responsible." In the second sentence, the student is explaining why she/he would like to be a teacher (an explicative relationship). Further analyses showed that only 26.7 percent of the sample used resultative logical relationships across languages.

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In the data, there were few instances of resultative and illustrative sentences in either language. Further, summative and contrastive sentences were only present in Spanish. Examples of enumerative and conclusive sentences were not observed in the first grade in either language. To conclude, there was a positive and strong correlation in the use of illustrative logical relations across languages, $r(30) = .619$, $p < .014$.

Transition words. There were few instances of transition words or phrases in either language. Overall data suggests that the mean percent for the use of transition was slightly greater in English, at 4.3, while in Spanish it was 3.0. Transition words or phrases are linking words that note the logical relationships of one sentence to another and are considered different to coordinating conjunctions (Halliday & Hassan, 1976). The following is an example of a resultative transition word a student used in Spanish:

Mi mejor amiga es Sonya, y cuando yo estoy en problemas ella está alli para

ayudarme. *Por eso* yo siempre la ayudo. (My best friend is Sonya, and when I am in

trouble she is always there to help me. *For those reasons,* I always help her too.)

In this example, the student uses the transition phrase *por eso* to denote a resultative transition phrase. In English, we have the following example: "I would like to be just me one day. And sometimes I like to be my sister. *Other times* I like to be just me." In this example the transitional phrase *other times* denotes an additive transition phrase very different from only using the coordinating conjunction *and* or *also*.

Conversational markers. Similar to the use of transition words, there were few instances of conversation markers in the data. Conversational markers are words or expressions that writers use for clarification, as pauses during oral conversations, as markers that reveal the writer's intentions or attitudes, or to indicate whom the audience is (Montaño-

Harmon, 1988). The use of conversational markers (*marcadores de función pragmática,* as they are called in the literature in Spanish) were present only in the writing samples in Spanish, M = 2.61.

Deviations. The mean percent of textual deviations (breaks in the development of text or "instances when the relationship of one sentence to the preceding is not clear that the second sentence breaks the logical sequence and the readers' expectations as to what logically should follow are not met" (Montaño-Harmon, 1988, p. 262) was more frequent in Spanish than in English, 12.4 and 1.3, respectively. The next example illustrates a deviation in Spanish:

> Mi mejor amiga es Jazmine porque me divierte, me hace reir. *Jugamos a las hermanas, a las mamás, o a las maestras.* (My best friend is Jazmine because she entertains me, she makes me laugh. We play at being sisters, being moms, or being teachers.)

In the previous example, the sentence "Jugamos a las hermanas, a las mamas, o a las maestras" does not follow a logical relationship to the previous sentence, "Mi mejor amiga es Jazmine porque me divierte, me hace reir." The use of a transition word or coordinating conjunctions would have helped the reader to see the logical connection between the first and second sentences. In English, there was only one example of textual deviation in the data. This information is summarized in Table 5.13.

Statistical results across grade levels. Mann-Whitney *U* tests were performed starting in the second grade to determine if there were differences in the median scores of syntactical cohesive ties in students' compositions across grade levels.

Table 5.13. *Grade 1 Measures of Coherence*

Discourse feature	English (μ)	Spanish (μ)
Topic sentence	1.0	1.0
Enumerative	0.0	0.0
Additive	37.6	37.9
Summative	0.0	.47
Resultative	1.6	2.07
Explicative	20.2	14.2
Illustrative*	2.22	4.6
Contrastive	0.0	3.4
Conclusive sentence	0.0	0.0
Transitional words and phrases	4.3	3.0
Conversation markers	.00	2.61
Deviations	1.3	12.4

*Correlation is significant at the 0.05 level (2-tailed).

Coherence: Logical relationships, grade 2. There continued to be similarities and differences in the use of logical relationships to connect texts in both languages. Students in the second grade (n= 30) continued to begin their texts with a topic sentence in both languages, and examples of additive and explicative relationships continued to be greater when compared to other types of logical relationships. Some differences when compared to the first grade included: enumerative relationships and conclusive sentences emerging in the data in both languages; summative and contrastive relationships and conversational markers emerging in English; and the mean percent of transition words increasing in both languages. An interesting finding in the data indicated that the use of textual deviations sharply increased in English, and the mean percent was now closely similar in both languages.

Strong and positive correlations across languages were found for enumerative, additive, and conversational markers. See Tables 5.14 and 5.15 on pages 184 and 185.

Compositions across grade levels 1 and 2 differed statistically for English and Spanish additive relationships, and English textual deviations. This information is summarized in Table M5 in Appendix M.

      Topic sentence. With the exception of one student in Spanish, most students at this grade level continued to start their texts with a topic sentence in both languages. In English, some students started their texts by stating the person they would be, for example: "I would be my dad…" while others paraphrased the prompt: "If I could be someone else I would be… ." In Spanish, students often started their texts with phrases such as: "Mi mejor amigos es… ."(My best friend is… .) while others were more sophisticated and interacted with the audience: "Te voy a contar quien es mi mejor amigo… ."(I will tell you who is my best friend… .) Data continued to suggest that students' use of topic sentences is a writing skill that is shared across languages.

      Logical relationships. Similar to the first grade, the use of additive and explicative logical relationships in both languages continued to be greater when compared to the other types of logical relationships. Data indicated that 86.7 percent of the students used additive logical relationships across languages whereas only 30 percent used resultative logical relationships across languages. There continued to be few instances of summative, resultative, illustrative, or contrastive logical relationships. However, the categories of summative and contrastive logical relationships were now observed in both languages. In English, there was only one example of summative logical relationships, which introduces a summary of what preceded: "My best friend is Leo … I want to be him for all those reasons." In this sentence, the students summarizes that Leo is his best friend because all the reasons stated before. A similar example was found in Spanish: "Mis mejores amigas son Angelina y

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Andrea. En mi opinion son las mejores amigas." (My best friends are Angelina and Andrea. *In my opinion*, they are the best friends.) In the second sentence, the student concludes that in her opinion, and because all of the examples she had listed below, Angelina and Andrea are her best friends. As mentioned before, there were few instances of summative logical relationships in English and Spanish, mean percent = .37 and .5, respectively.

Similar to summative logical relationships, contrastive logical relationships, which introduce information in opposition to what preceded or offers an alternative to what preceded, were now present in both English and Spanish, mean percent = 2.68 and 1.71, respectively. For example, in English a student wrote: "I would be my mom because I would clean everything and I love to clean a lot. *But* I have school." A similar example was observed in Spanish:

> Mi mejor amigo es Ivan porque juega conmigo. También el me llama para que juegue conmigo. *Pero* tambien jugamos con otros amigos. (My best friend is Ivan because he plays with me. He also calls me to play with him. But we also play with other friends.)

Most of the sentences that were categorized as contrastive included the contrastive connector *but* in English and *pero* (but) in Spanish.

Across grade levels 1 and 2, there was a noticeable increase in the mean percent of enumerative logical relationships (these introduce the order in which points are to be made or the time sequence in which actions or processes take place) in both languages. The following is an example of an enumerative relationship in English: "The person that I would like to be is Jade. My first reason is because she had lots of friends. My second reason is because I like her style of boots… ." An example in Spanish:

Mi mejor amigo es Salvador. *Primero* es muy chistoso, agradable, chido. *Segundo,* no

me dice cosas malas como –estas feo. (My best friend is Salvador. *First*, he is funny,

pleasant, and cool. *Second*, he doesn't call me mean things such as—you are ugly).

In both of the previous examples, the students used enumerative connectors such as first and

second to connect their texts across sentence boundaries.

Equally to previous measures, the use of conclusive sentences was also now present

in both English and Spanish, but there were only a few instances, *M*=.07 and *M*= .10,

respectively. In English, a student used a conversational marker or a tag question to conclude

her/his writing: "The person I would like to be is Jade. Now you understand why I would like

to be Jade and why?" As we can see in this example, the student concludes the text by asking

a rhetorical question to the reader in the attempt to corroborate whether the reader now

understands the reasons she wants to be Jade. In Spanish, we have the following example of a

conclusive sentence:

Mi mejor amigo es Alan porque juega futbol conmigo. El es honesto. No pelea con

otros niños. En mi opinion mi mejor amigo es muy amable. (My best friend is Alan

because he play soccer with me. He is honest. He doen't fight with other kids. In my

opinion my best friend is very kind.)

In this example, and similar to the example I provided for the summative logical relationship

above, the student concludes his text by summarizing that his best friend is Alan, and in

summary, his best friend is very kind.

Another emerging interesting finding in the second grade is the use of tag questions

or rhetorical questions, especially in Spanish, *M*= 3.17 and *M*=. 78. According to Hinkel

(2002), in general, rhetorical questions are not considered to be appropriate to use in written

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academic texts in English because rhetorical questions are considered personal and subjective (p. 153). Therefore, if EB students are being instructed to write for academic purposes, perhaps teaching how to include rhetorical questions in academic writing should be applied for other types of writing genres. In conclusion, results showed positive and strong correlations across languages in the use of enumerative logical relationships, *r*(30) = .518, *p* < .003, and additive logical relationships, *r*(30) = .576, *p*< .001.

     Transition words. The use of transitional words increased in both languages and were greater in Spanish, *M*= 4.87 and *M*= 6.0. There was not a significant correlation in the use of transitions across language in the second grade.

     Conversational markers. Compared to the first grade, the inclusion of conversational markers or *marcadores de función pragmática* sharply increased in the second grade and were present in both languages, English mean percent = 6.79 and Spanish mean percent = 6.44. For example, in Spanish a student used the following conversation marker: "*Hi*, I will tell you about if I could be another person for a day." Interestingly, most of the instances of conversational markers in the second grade started with the conversation marker "hi", or addressing the audience "I am going to tell you about if I were … ." In Spanish, we have the following example:

     Él es mi mejor amigo porque nos gusta jugar origami. *Ojo*- Al final nos enseñamos de

     todo en origami. (He is my best friend because we like to do origami. Look- At the

     end we taught to each other everything about origami.)

In this example, the student used the conversational marker *ojo* (look) to call the readers' attention. The types of conversational markers were more varied in terms of structure in Spanish than they were in English: some students used rhetorical questions, others used the

expression *Hola* (Hi), and others addressed the audience (i.e., I will tell you who is my friend, Now you know who is my friend). Similar to enumerative and additive logical relationships, there was a strong and positive correlation across languages in the use of conversational markers, $r(30) = .714, p < .001$.

  Deviations. Deviations sharply increased in the second grade in English, and the inclusion of textual deviations was similar in English and Spanish, mean percent = 14.8 and mean percent = 14.95, respectively. Findings revealed that as students wrote more in the second grade when compared to the first grade, the number of textual deviations increased. Interestingly, 11 students in the sample of 30, or 36 percent, had instances of deviations in both languages.

  Statistical results across grade levels. Finally, I performed Mann-Whitney U tests to determine if there were differences in the median scores of coherence in students' compositions across grade levels. Results showed that students' compositions across grade levels differed statistically for the following measures: English additive logical relationship ($p < .001$), Spanish additive logical relationship ($p < .012$), and English Deviations, ($p < .001$). This information is summarized in Table M5 in Appendix M.

  Coherence: Logical relationships, grade 3. In the third grade (n= 30), students continued to include, on average, one topic sentence to start their texts in both languages. Data suggests that in addition to additive and explicative relationships, at this grade level students increased their usage of resultative and illustrative logical relations to connect their texts in both languages. There were few instances of enumerative, summative, contrastive, and conclusive sentences. Interestingly, the number of enumerative logical relationships noticeably decreased in both languages when compared to the previous grade levels. In

addition, the usage of transitional words continued to increase in both languages, whereas the usage of conversational markers and deviations decreased. Similar to measures of lexical and syntactical cohesion described in previous sections, the third-grade level showed a greater number of measures that positively correlated, and student compositions were more statistically complex in more measures than in any other grade level. This information is summarized in Tables 5.14 and 5.15 in pages 194 and 195.

Topic sentence. As previously mentioned for both languages, all students that participated in the study started their narratives with a topic sentence. In English, the majority of students started their texts by restating the writing prompt: "If I could be another person … ." Re-stating the writing prompt seemed a more complex topic sentence than only stating, "I would be my dad." In Spanish, the majority of students continued to start their narratives with the statement, "Mi mejor amigo/a es … ." (My best friend is...) Similar to previous grade levels, data suggests that students' use of topic sentences is a writing skill that is shared across languages.

Logical relationships. Data suggests that third grade students' use of logical relationships was more varied than in the second grade sample. Although students in the third grade continued to mostly rely on the use of additive and explicative logical relationships in English and Spanish to connect their texts, the data indicated a noticeable increase in illustrative and resultative logical relationships in both languages. Further analyses indicated that 100 percent of students in the sample (n= 30) used additive logical relationships, 60 percent of the sample included explicative, 36.7 percent of students used resultative logical relationships, and 46.7 percent of students used illustrative relationships across languages.

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As noted before, the data showed a significant increase in the number of resultative and illustrative logical relationships in this grade level in both languages. The following is an example collected from my research of an illustrative logical relationship that introduced an illustration or example of what preceded: "If I could be someone else, I would be my cousin Karina. She has pretty clothes and she has a big house. *The house has three bathrooms. The house has two floors.*" In this example, the last two sentences functioned as illustrations for the statement *she has a big house.* In Spanish, the example of illustration is easier to recognize:

> Mi mejor amiga es Noelie. Es mi mejor amiga porque ella me apoya en lo que yo necesito. *Por ejemplo,* cuando estamos en los columpios… . (My best friend is Noelie. She is my best friend because she helps me when I need it. *For example* when we are in the playing in the swings… .")

In this example, the students used the phrase *for example* to illustrate why Noelie is a good friend and helps her when she needs it. Additionally, a positive and moderate correlation was found for illustrative logical relationships across languages, $r(30) = .486$, $p < .006$.

The next example illustrates an instance of resultative logical relationships (introduces the result or consequence of what preceded) in English:

> I would like to be my friend Alexia because she is a very nice person, and I would like to see where she lives and if she lives in an apartment or a house. And *that way* I know the stuff that she likes.

In this last example, the student uses the expression *that way* to indicate that, as a result of knowing where her friend lives, she can know about the stuff she likes.

Similar to previous grade levels, there continued to be few instances of enumerative, summative, contrastive, and conclusive sentences. Nonetheless, a positive and moderate correlation was found for summative logical relationships across languages, $r(30) = .415$, $p < .023$, and for conclusive sentences, $r(30) = .499$, $p < .005$.

Interestingly, the usage of tag questions to engage the reader continued in the third grade; however, the mean percent decreased in both English and Spanish, mean percent = .61 and .40, respectively. However, two out of three total students used tag questions in both of their languages suggesting that the use of tag questions was a discourse feature shared across languages for few students.

Transitional words. Transitional words continued to increase in both English and Spanish when compared to the second grade level, median percent 7.5 and 8.44, respectively. Some examples of transitions in English included: *another example, in conclusion, finally, that is why, that is how*. In Spanish, the following examples occurred: *por eso* (because of that*), otras veces* (some other times), *finalmente* (finally), *además* (moreover), *igualmente* (similarly), *otra razón* (another reason), etc. Further data analyses indicated that 13 students in the sample (n= 30), or 43 percent, used transitions in both of their languages.

Conversational markers. The usage of conversational markers slightly decreased in the third grade in English and Spanish, median percent = 6.4 and 5.7, respectively. A positive correlation was found in the use of conversational markers across languages, $r(30) = .543$, $p < .002$.

Deviations. In the third grade, the median percent of deviations slightly decreased in English and Spanish in the third grade, 10.9 and 12.17, respectively. Further analyses

indicated that 14 students in the sample (n = 30), or 46 percent, presented textual deviation in both of their languages.

Statistical results across grade levels. As noted before, third grade student compositions were more statistically complex in a larger number of measures than in any other grade level. Mann-Whitney *U* test results indicated that students' compositions across grade levels differed statistically for the following measures: In English, additive logical relationship, ($p < .016$), resultative logical relationship, ($p < .005$), explicative logical relationship, ($p < .001$), illustrative logical relationship, ($p < .005$), contrastive logical relationship, ($p < .029$), and transitional words, ($p < .016$); in Spanish, additive logical relationship, ($p < .002$), resultative logical relationship, ($p < .001$), illustrative logical relationship, ($p < .001$), contrastive logical relationship, ($p < .008$), and transitional words, ($p < .002$). These data are summarized in Tables M5 in Appendix M.

Coherence: Logical relationships, grade 4. In the fourth grade (n= 30), students continued to include on average one topic sentence to start their narratives in both languages. Compared to the use of logical relationships in the third grade, data suggests that in both languages, students continued to rely on additive, explicative, and illustrative logical relationships. However, in Spanish students relied on contrastive relationships instead of resultative relationships, whereas in English students continued to rely on resultative relationships. Compared to additive and explicative logical relationships, there continued to be few instances of enumerative, summative, and contrastive logical relationships, overall. The mean percent for conclusive sentences fluctuated across grade levels and remained low in the fourth grade. Transitional words continued to increase in both languages; meanwhile, the usage of conversational markers stayed relatively the same. Textual deviations sharply

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increased in Spanish but decreased in English. Positive correlations across languages were found for enumerative, contrastive logical relationships, and for transitional words and deviations. See Tables 5.14 and 5.15 on pages 184 and 185. Compositions across grade levels 1 and 2 differed statistically for measures of English deviations and Spanish illustrative relationships. This information is summarized in Table M5 in Appendix M.

Topic sentence. With the exception of one student in Spanish, most of the students in the sample had on average one topic sentence in both languages (96.7 percent), English mean percent = 1.0 and Spanish mean percent = .96. At this grade level, most students started their English narratives with expressions in conditional tense, such as "If I could be…" or "I would be… ." However, there were a couple of examples where students utilized the adversative transition *although* to start their narratives, for example: "Although I know a lot of people the person I would like to be for just one day is my mom." Consistent with previous grade levels, the use of topic sentence continues to be a writing skill that is shared across languages.

Logical relationships. As noted before, in English students used more additive, explicative, resultative, and illustrative logical relationships when compared to other kinds of relationships. In Spanish, students mostly relied on additive, explicative, contrastive, and illustrative when compared to other kinds of relationships. An interesting finding here is that at this grade level, students used five different logical relationships across languages: additive, explicative, contrastive, illustrative, and resultative. Further analyses showed that 94 percent of students used additive logical relationships, 60 percent used explicative logical relationships, 30 percent of students used both explicative and resultative across languages, and 23 percent used contrastive in both languages.

Similar to previous grade levels, there were few instances of enumerative, summative, and contrastive logical relationships in both languages as well as for the usage of conclusive sentences. However, although there was a small mean percentage of enumerative and contrastive logical relationships, positive and strong correlations were found for both measures: enumerative, $r(30) = .556, p < .001$, and contrastive, $r(30) = .523, p < .003$.

To conclude, the usage of tag questions continued to be present in students' writing and slightly increased in both languages, and the mean percent was greater in English, mean percent = 1.3 and .63. At this grade level, only one student included tag questions in both languages.

Transitional words. Transitional words continued to increase in English and Spanish, median percent = 11.2 and 9.37, respectively. The following are some examples of transitional words/phrases from the English narratives: *best of all, one other thing, the last reason is, the last example*, *so that is the way, finally, lastly.* Likewise, we have the following examples in Spanish: *luego* (then)*, después* (after)*, al final* (at the end)*, por supuesto que también* (in the same way)*, y eso es porque* (that is why)*, la ultima razón* (the last reason is)*, por último* (to conclude)*, en conclusión* (in conclusion). Further analysis indicated that 33 percent of the students in the sample (n = 30) used transitions words/phrases in both of their languages. In addition, a positive and moderate correlation was found in the use of transition words across languages, $r(30) = .387, p < .035$.

Conversational markers. The use of conversational markers slightly increased in Spanish while it decreased in English, median percent = 5.93 and 6.32, respectively.

Deviations. The use of textual deviations sharply increased in students' Spanish narratives while they decreased in English, median percent = 19.4 and 9.8, respectively.

Interestingly, 50 percent of students had deviations in their writing samples in both languages. Similar to findings in the third grade, a positive correlation across languages was found in the use of textual deviations, $r(30) = .462, p < .010$.

Statistical results across grade levels. Mann-Whitney U test results showed that students' compositions across grade levels differed statistically for the following measures in Spanish: illustrative logical relationship, ($p < .045$), and deviations, ($p < .045$). This data is summarized in Table M5 in Appendix M.

Coherence: Logical relationships, grade 5. In the fifth grade (n= 30), students had on average one topic sentence to start their written narratives in both languages. Data findings indicated that, similar to the third-grade level, students relied more on the usage of additive, explicative, illustrative, and contrastive in both of their languages to connect their texts. There continued to be few instances of enumerative, summative, or resultative logical relationships. Overall, conclusive sentences increased but continued to be low. Transitional words continued to increase in both languages, and a noticeable change in the mean percent was noticeable in Spanish. Similarly, the usage of conversational markers increased in both languages. The mean percent of deviations fluctuated and continued to be greater in Spanish. For instance, Spanish deviations slightly increased whereas deviations in English slightly decreased. There were no significant correlations across languages in any of the measures of coherence. See Tables 5.14 and 5.15 on pages 184 and 185. Compositions across grade levels 4 and 5 differed statistically for measures of English explicative logical relationships and Spanish illustrative relationships. This information is summarized in Table M5 in Appendix M.

Topic sentence. Similar to earlier grade levels, all students in the sample had one topic sentence to start their narratives in both of their languages, a writing skill that continued to be shared across languages. In this grade level, most of the narratives started with the sentence: " If I could be…" "If I were… ." In Spanish, most of the students in the sample started their sentences similarly to previous grades: "Mi mejor amigo es… ."

Logical relationships. As noted before, data indicated that students in the fifth-grade level relied more on additive, explicative, illustrative, and contrastive logical relationships to connect their texts in both languages. Further analysis indicated that 96 percent of students used additive, logical relationships, 86.7 percent of students used explicative, 20 percent used illustrative, and 40 percent used contrastive logical relationships in both languages. These findings might suggest that additive, explicative, illustrative, and contrastive are types of relationships more accessible in the linguistic repertoire than the other types of logical relationships previously described. Similar to earlier grade levels, the usage of enumerative, summative, and resultative logical relationships remained low. The usage of conclusive sentences increased in the fifth grade however the mean percent was less than 1.0, mean percent Spanish = .40 and mean percent English = .30. There were few instances of tag questions in English and Spanish, mean percent = .92 and 1.6, respectively. Similar to the third grade, two out of three students used tag questions across languages.

Transitional words. Transitional words continued to increase in the fifth grade in English and Spanish, median percent = 13.9 and 15.8, respectively. In terms of examples in the use of transitional words/phrases, data indicated that transitional words/phrases were similar to those found in the fourth grade. However, an interesting finding is that 17 students in the sample (56.7 percent), used transitional words/phrases in both of their languages.

Conversational markers. The use of conversational markers increased in both

English and Spanish and continued to be greater in the English writing samples, median

percent = 9.7 and 9.1. Further analysis revealed that 23.3 percent of the sample presented

conversational markers in both of their writing samples.

Deviations. The use of deviation slightly decreased in English and slightly increased

in Spanish, and continued to be noticeably greater in Spanish, mean percent = 20.7 and 9.2.

Interestingly, although there was not a significant correlation across languages, further

analysis indicated that 50 percent of the students presented deviations in both of their

languages, which suggests that topic digressions is a discourse feature shared across

languages for students attending the fifth grade.

Statistical results across grade levels. Mann-Whitney U test results showed that

students' compositions across grade levels differed statistically for the following measures in

English: explicative logical relationship, ($p < .001$), and Spanish illustrative logical

relationship, ($p < .045$). This data is summarized in Table M5 in Appendix M.

Conclusions for Coherence in Grades 1–5: Logical Relationships

Overall results for instances of coherence—logical relationships—suggest that mean

percentages for most of the measures in both languages tend to fluctuate across grade levels

1–5. Yet, there were interesting patterns in the data that revealed how EB students in this

sample developed as writers at the discourse level. These patterns were found for grade

levels 1–5, 2–5, and 3–5. For grade levels 1–5, a clear pattern in the data indicated that

students in the sample commonly used a topic sentence and additive and explicative

relationships to connect their texts across languages. For grade levels 2–5, data indicated that

in addition to topic sentences, additive and explicative relationships (36 percent) included deviations (i.e., digressions) in their written texts. For grade levels 3–5, students in the sample added resultative and illustrative logical relationships, the use of transitional words, and conversational markers to the discourse features aforementioned. These findings in the corpora seem to suggest that the use of a topic sentence and additive and explicative relationships in grade levels 1–5, the addition of deviations in grade levels 2–5, and the addition of resultative and illustrative relationships, including the use of transitional words/phrases seem to partially inform students' biliterate writing trajectory. This information is summarized in Table 5.16 and Figure 10 below.

In answering to the research question of how EB students develop as writers within and across languages at the discourse level, for coherence, data indicated there were a few discourse features that were not observed in both languages starting in the first grade: enumerative, summative, contrastive, conclusive sentence, and conversational markers. After the second grade, all discourse features included in the category of coherence were observed in the corpora in both languages. Therefore, there was no indication in the data that students in the corpora across grade levels and across languages developed a discrete discourse feature in a single language and not in the other. On the other hand, the discourse features already mentioned that seem to partially inform students' biliterate writing trajectory seem to answer to the research question related to students' writing development across languages.

Data also indicated that students in grade levels 1–5 in English and Spanish had on average less than one conclusive sentence in their written texts. This finding suggests, contrary to the use of topic sentences, that the use of conclusive sentences is not a writing skill shared across languages and across grade levels.

Interestingly, as the number of conjunctions linearly decreased across grade levels in both languages, the number of transition words across grade levels in both languages linearly increased. This finding suggests that students' use of linking words/phrases became more complex throughout the grade levels in both languages.

The data indicated fluctuations in the use of conversational markers in both English and Spanish writing samples, however with similar mean percentage values across languages. To conclude, the median percent of deviations are greater in Spanish in grade levels 1–5, while in English deviations were also present in all grade levels but with lower median percent values.

Similar to other findings for lexical and syntactical cohesion and for measures of textual productivity, lexical diversity, and syntactical complexity, it was in the third grade where the usage of discourse features of coherence significantly increased. Interestingly, in the fifth grade, a large percentage of students (40 percent) used contrastive logical relationships in both languages in addition to additive, explicative, illustrative, and resultative.

Table 5.14. *Grades 1–5 Measures of Coherence Spanish*

Discourse feature	Grade 1 Mean percent	Grade 2 Mean percent	Grade 3 Mean percent	Grade 4 Mean percent	Grade 5 Mean percent
Topic sentence	1.0	.93	1.0	.96	1.1
Enumerative	0.0	**7.14^+	2.4^+	**3.84	3.33
Additive	37.9^+	**42.8^+	47.4^+	38.5^+	42^+
Summative	$.47^+$	$.5^+$	*0.33	.28	.97
Resultative	2.07^+	1.6	6.3	4.7	6.7^+
Explicative	14.2	9.8	9.03	10.3	11.7
Illustrative	*4.6^+	3.8	**10.0^+	4.9	11.6^+
Contrastive	3.4^+	1.71	4.0	**5.47^+	11.8^+
Conclusive sentence	0.0	$.10^+$	**0.30^+	$.23^+$	$.40^+$
Transitional words and phrases	3.0	6.0^+	8.44^+	*9.37	15.8^+
Conversation markers	2.61^+	**6.44	**5.7	5.93	9.1
Deviations	12.4^+	14.95^+	10.9	*19.4^+	20.7^+

*.Correlation is significant at the 0.05 level (2-tailed).
**.Correlation is significant at the 0.01 level (2-tailed).
+ greater value in this language.

Table 5.15. *Grades 1–5 Measures of Coherence English*

Discourse feature	Grade 1 Mean percent	Grade 2 Mean percent	Grade 3 Mean percent	Grade 4 Mean percent	Grade 5 Mean percent
Topic sentence	1.0	1.0^+	1.00	1.00^+	1.0
Enumerative	0.0	**3.92	2.19	$**5.4^+$	5.03^+
Additive	37.6	**40.1	35.72	31.2	29.7
Summative	0.0	.37	$*1.25^+$	1.5^+	2.59^+
Resultative	1.6	3.07^+	6.6^+	7.14^+	5.17
Explicative	20.2^+	10.8^+	19.0^+	19.3^+	25.0^+
Illustrative	*2.22	4.4^+	**8.36	8.9^+	6.17
Contrastive	0.0	2.68^+	6.24^+	**4.16	8.0
Conclusive sentence	0.0	.07	**0.23	.10	.30
Transitional words/ phrases	4.3^+	4.87	7.5	$*11.2^+$	13.9
Conversational markers	.00	$**6.79^+$	$**6.4^+$	6.32^+	9.7^+
Deviations	1.3	14.8	12.17^+	9.8	9.2

*.Correlation is significant at the 0.05 level (2-tailed).
**.Correlation is significant at the 0.01 level (2-tailed).
+ greater value in this language.

Table 5.16. *Grades 1–5 Percent of Students with Same Linguistic Features for Coherence across Languages*

| Discourse feature	Grade 1 (%)	Grade 2 (%)	Grade 3 (%)	Grade 4 (%)	Grade 5 (%)
Topic sentence	100	93	100	96.7	100
Enumerative	0.0	10.0	0.0	16.7	13.3
Additive	66.7	86.7	100	90	96.7
Summative	0.0	0.0	3.3	0.0	3.3
Resultative	0.0	6.7	36.7	30	30
Explicative	26.7	30	60	60	86.7
Illustrative	6.7	3.3	46.7	30	20
Contrastive	0.0	0.0	26.7	23.3	40
Conclusive sentence	0.0	0.0	16.7	3.3	13.3
Transitional Words/phrases	0.0	6.7	43.3	33.3	56.7
Conversational Markers	0.0	20	23.3	16.7	23.3
Deviations	0.0	36.7	46.7	50	53.3
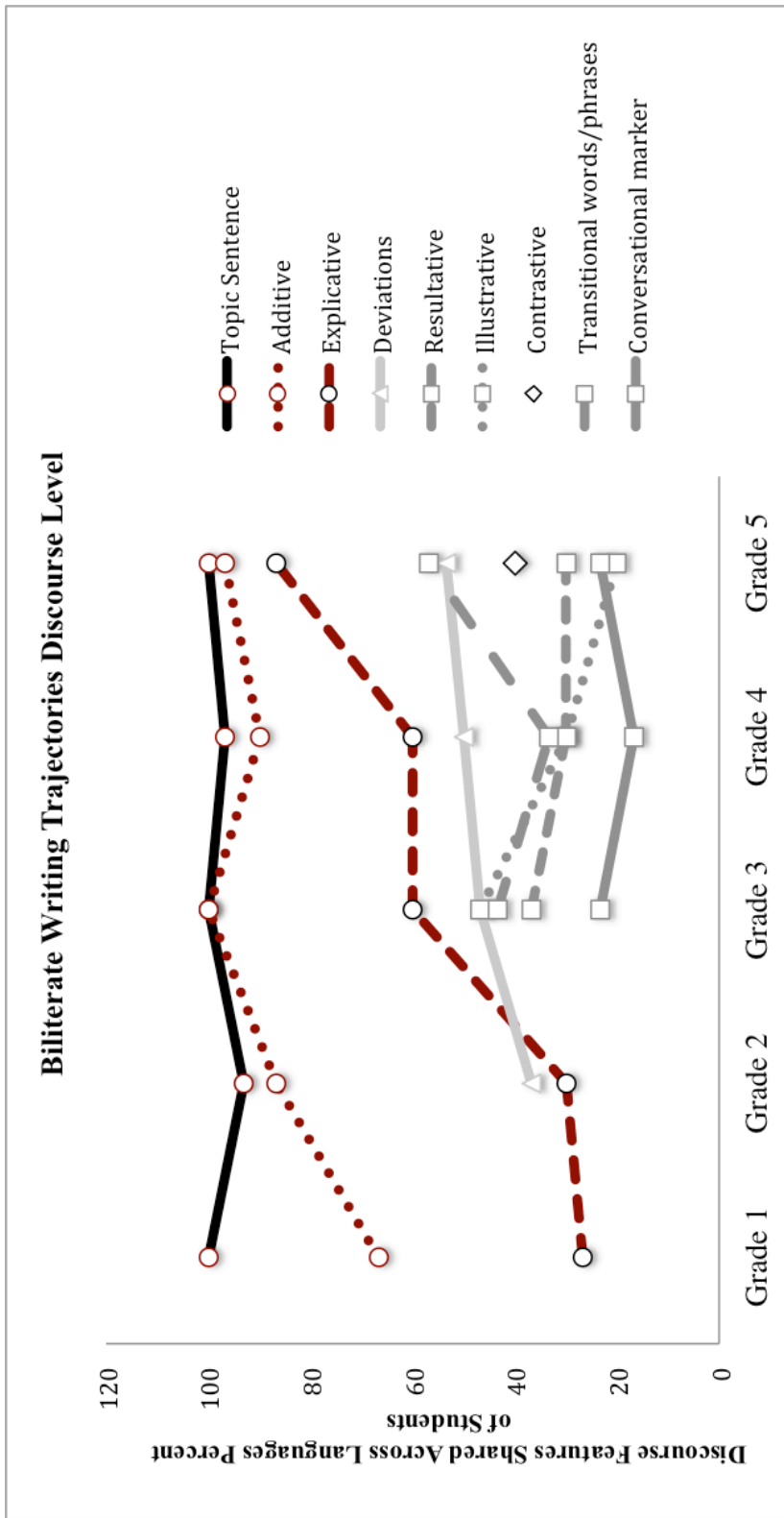
Figure 10. **Biliterate Writing Trajectory Writing Grade Levels 1-5**

Chapter 6

Findings: Distribution of Scores Across Data Sets

Research question three examined whether students' outcomes in content more evenly distributed when responding to a single writing prompt across grade levels rather than responding to different writing prompts at each grade level. The 2010–2011 data show that students' scores in content in both languages clustered at level 5 (see Appendix E). Research question 3 asks: "How does the rating in content compare for students who responded to the *same* writing prompt to students who responded to *different* writing prompts in grades 1–5?

After I scored all pairs of writing samples collected in the 2013–2014 school year for students attending grade levels 1–5 (n= 355), I entered all scores into a Statistical Package for Social Science (SPSS) for statistical analyses. From this data I excluded students who were labeled as SpEd (Special Education) students or who have an Individual Educational Plan (IEP) in literacy. A similar procedure was performed for the 2010–2011 data set. In addition, I also excluded those students who only responded to one prompt because they were absent when the writing sample was taken, and those students who responded in the same language to both prompts (i.e., newcomers who were not able to write in English, yet) (n= 2). Similarly, for the data set 2010–2011, I included in the analyses only those students attending grade levels 1–5 who had two measures for writing content in both languages (n= 1,485); I also excluded students who scored zero in content in either language (Spanish n= 3; English n= 5). At the end, I obtained two datasets that included two groups of students with two measures (i.e., four variables) for scores in content on English and Spanish for their respective years (2010–2011 and 2013–2014). The number of cases included for analyses according to state, schools, and grade levels are depicted in Table 6.1.

Table 6.1. *Frequency Comparison for 2010–2011 and 2013–2014 by State, School, and Grade Level*

State	Schools (n)		Grade level	Frequency (%)		Total (frequency)	
	2010–2011	2013–2014		2010–2011	2013–2014	2010–2011	2013–2014
Colorado	2	1	1	95 (21.2)	24 (22.9)	448	105
			2	90 (20.1)	19 (18.1)		
			3	77 (17.2)	17 (16.2)		
			4	82 (18.3)	25 (23.8)		
			5	104 (23.2)	20 (19.0)		
Oregon	13	2	1	334 (32.2)	46 (18.4)	1037	250
			2	387 (37.3)	47 (18.8)		
			3	309 (29.8)	39 (15.6)		
			4	7 (.7)	66 (26.4)		
			5	0	52 (20.8)		
Total	15	3				1,485	355

Descriptive Statistics for 2010–2011 and 2013–2014 Datasets

Measures of central tendency were computed to summarize the data for the 2010–2011 and

2013–2014 data sets. Measures of dispersion were computed to understand the variability of

scores on a scale of 1–10 for all four variables: Spanish and English content scores for both data

sets. The following are the results of this analysis. For 2010–2011, Spanish content scores were

N=1,485, M= 5.12, SD=1.3; English content scores were N=1,485, M=4.69, SD=1.4. Data

indicated higher mean values in Spanish than in English. Based on the small standard deviation,

it appears that scores within this data set did not vary that much. The following are the results of the analysis for the 2013–2014 Spanish and English content scores. Spanish content scores were N=355, M=5.54, SD=1.2; English content scores were N=355, M=5.55, SD=1.5. Data indicated similar mean values for content scores for both languages. A small standard deviation suggests low variability of scores as well. When comparing both data sets, it seems that students responding to a single prompt in grade levels 1–5 had a better and similar performance in both languages, whereas students who responded to different prompts had a higher mean value in Spanish. In addition, both data sets present very similar standard deviations for all four variables (SD=1.2, 1.5,1.3, 1.4). Measures of central tendency and dispersion suggest that having students respond to different or the same prompt in grade levels 1–5 does not provide a great difference in the variability of scores. This information is summarized in Table 6.2.

Table 6.2. *Measures of Central Tendency and Dispersion for 2010–2011 and 2013–2014*

Language	2010–2011			2013–2014		
	(N)	Mean	SD	(N)	Mean	SD
Spanish	1,485	5.12	1.3	355	5.54	1.2
English	1,485	4.69	1.4	355	5.55	1.5

Frequency of Distribution of Scores

In order to compare how scores were distributed across data sets, I computed the frequency of scores by grade levels 1–5 by languages using the crosstabs command in SPSS. I conducted the comparison across data sets by comparing data sets across languages and across grade levels. I examined if the issue of students clustering at score 5 was still occurring in the new 2013–2014 data set.

In the first grade, the 2010–2011 Spanish content scores showed a greater variation of scores on a scale of 1–10 points. The minimum score was 1 and the maximum score was 8, and 43.8 percent of the students received a score of 5. In the 2013–2014 data set there was less variation in scores; the minimum score was 1 and the maximum score was 6, where 60 percent of the students received a score 5. At this grade level, in Spanish, both data sets present the same issue of students clustering at score 5 in the rubric. Similarly, in English, the 2010–2011 scores were more varied than the 2013–2014 data set. The 2010–2011 data set shows a minimum score of 1 and a maximum score of 7, where 31.7 percent of students received a score of 4 in the rubric, only 25.6 percent of students scored a 5. The 2013–2014 data set shows a lesser variation of scores with a minimum score of 1 and a maximum score of 6, where 60 percent of the students received a score of a 5. Although the issue of students clustering at score 5 was not present in English in the 2010–2011data set, it was present in the new 2013–2014 data set.

In the second grade, the 2010–2011 Spanish content scores also show a greater variation of scores than the 2013–2014 data set. In the 2010–2011 data set, the minimum score was a 1 and the maximum score was a 9, where 58.9 percent of students received a score 5 in content. In the 2013–2014 data set, students received a minimum score of a 5 and a maximum score of a 7, and 81 percent of the students received a score 5. In English, the 2010–2011 data shows a minimum score of 1 and a maximum score of 8, where 56.4 percent of students scored a 5. Students in the 2013–2014 data set received a minimum score of 3 and a maximum score of 7, and 68.2 percent of students received a score of 5. The issue of students clustering at score 5 continues to be present in the second grade in both languages in the new 2013–2014 data set.

In the third grade, the same trend was present in the 2010–2011 data set. There was a greater variation of scores in Spanish and English than there was for scores in both languages in

the 2013–2014 data set. In the 2010–2011 data, we observed a minimum score of 1 and a maximum score of 9, and 57.5 percent of students scored a 5. The data from 2013–2014 presents a minimum score of 5 and a maximum score of 7, and 69.6 percent of students scored a 5. In English, the 2010–2011 data set shows a minimum score of 1 and a maximum score of 9, and 51.3 percent of students received a score 5. The 2013–2014 data show a minimum score of 4 and a maximum score of 7, where 53.6 percent of students also received a score of 5. Similar to the previous grade levels, students continue clustering at the score 5 in the Literacy Squared writing rubric.

In the fourth grade, the clustering at level 5 was not observed in the 2013–2014 English content scores. At this grade level, the variability of scores decreased and the minimum and maximum scores were very similar across data sets and across languages. The 2010–2011 data set presented a minimum score of 4 and a maximum score of 9 in Spanish, and 34.8 percent of students scored a 5. In the 2013–2014 data set we observed a minimum score of 4 and a maximum score of 8, where 42.9 percent of students scored a 5. In English, in the 2010–2011 data set we observed a minimum score 4 and a maximum score of 9, and 50.6 percent of students scored a 5. In English, the 2013–2014 data set presents a minimum score of 5 and a maximum score of 7, and the greatest percent of students, 56.3, received a score of 6; only 29.7 percent of students received a score of 5.

In the fifth grade, the clustering at score content 5 was not present in the 2013–2014 data set in both languages. The 2010–2011 data set present a minimum score of 4 and a maximum score of 9 in Spanish, and 33.7 percent of students scored a 5. In the 2013–2014 data set we observe a minimum score of 5 and a maximum score of 10, where 37.5 percent of students scored a 7 and only 29.2 percent of students scored a 5. In English, in the 2010–2011 data set we

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observe a minimum score 4 and a maximum score of 10, and 46.2 percent of students scored a 5. In English, the 2013–2014 data set presents a minimum score of 5 and a maximum score of 10, and the greatest percent of students, 43.1, received a score of 7; only 12.5 percent of students received a score of 5.

In sum, the issue of students clustering at score 5 in the Literacy Squared writing rubric was not present in the 2013–2014 data set for the English language in the fourth grade or in both languages in the fifth grade. The distribution of scores by year, language, and grade levels are displayed in Figures 11-14.
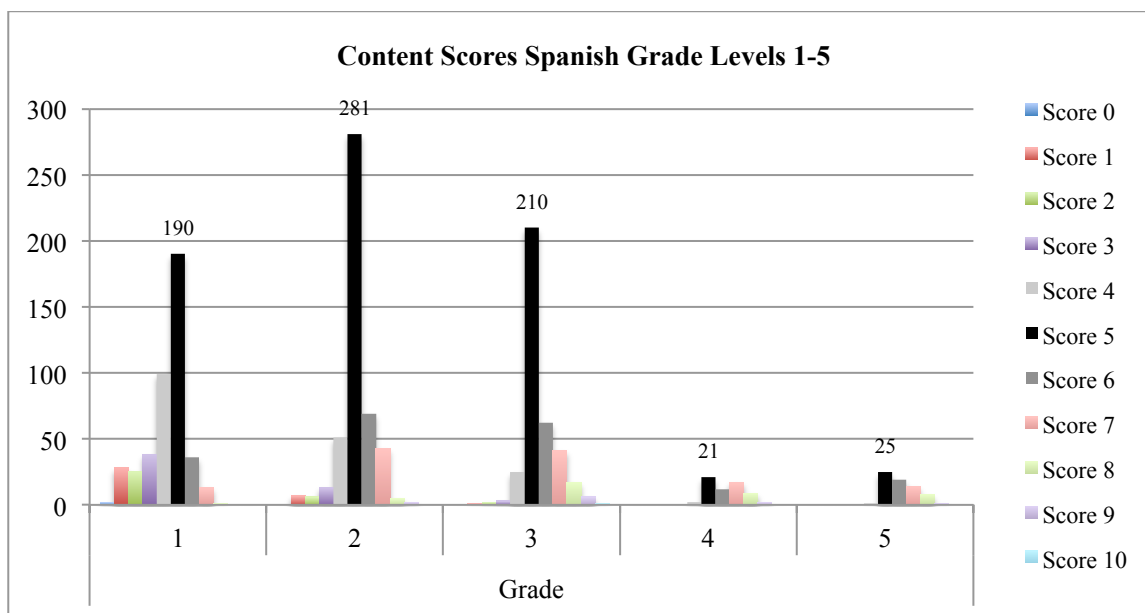
Figure 11. **2010-2011 Spanish Content Scores Grade Levels 1-5**
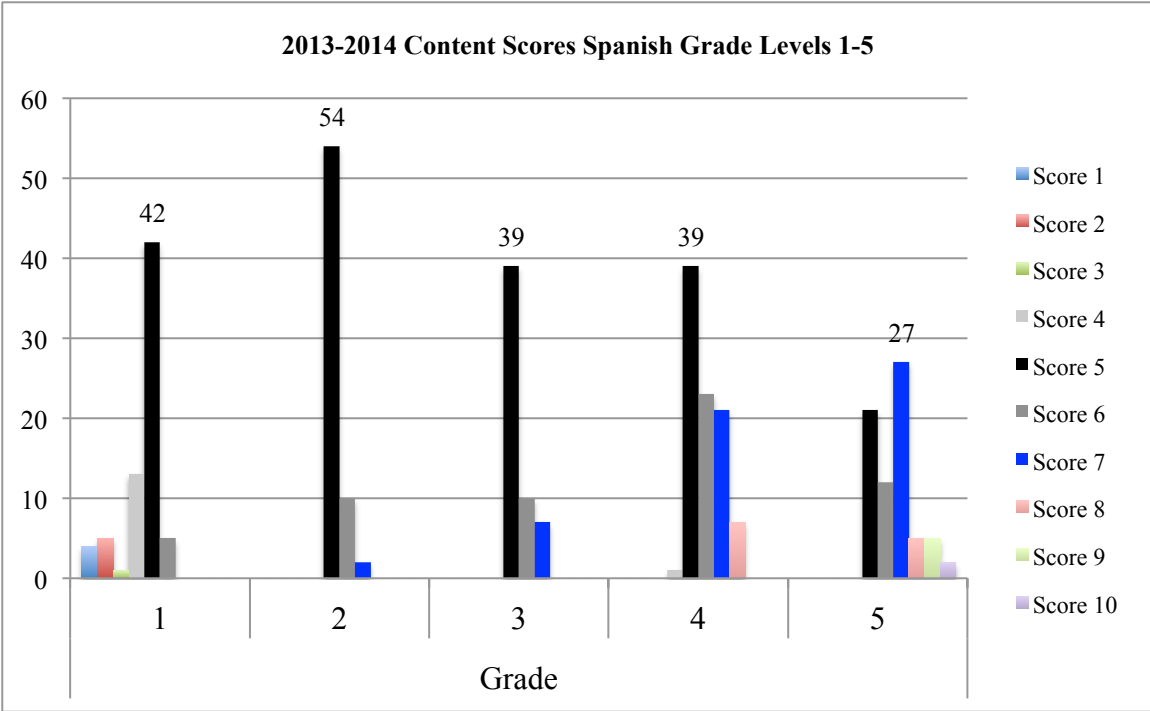
Figure 12. 2013–2014 Spanish Content Scores Grade Levels 1–5
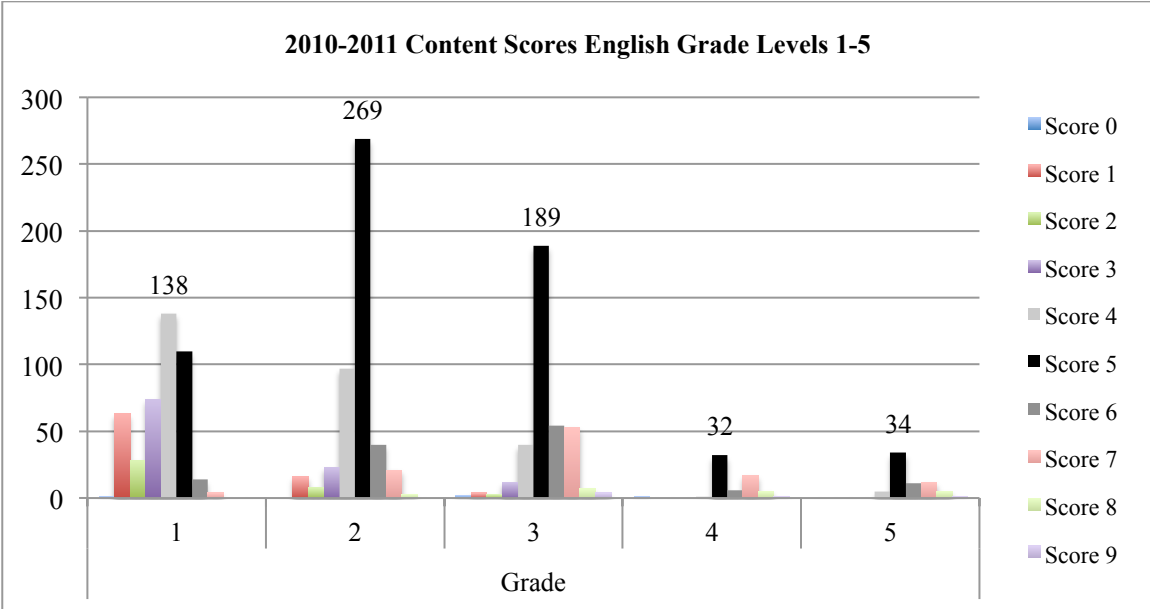
Figure 13. 2010–2011 English Content Scores Grade Levels 1–5

2013-2014 Content Scores English Grade Levels 1-5
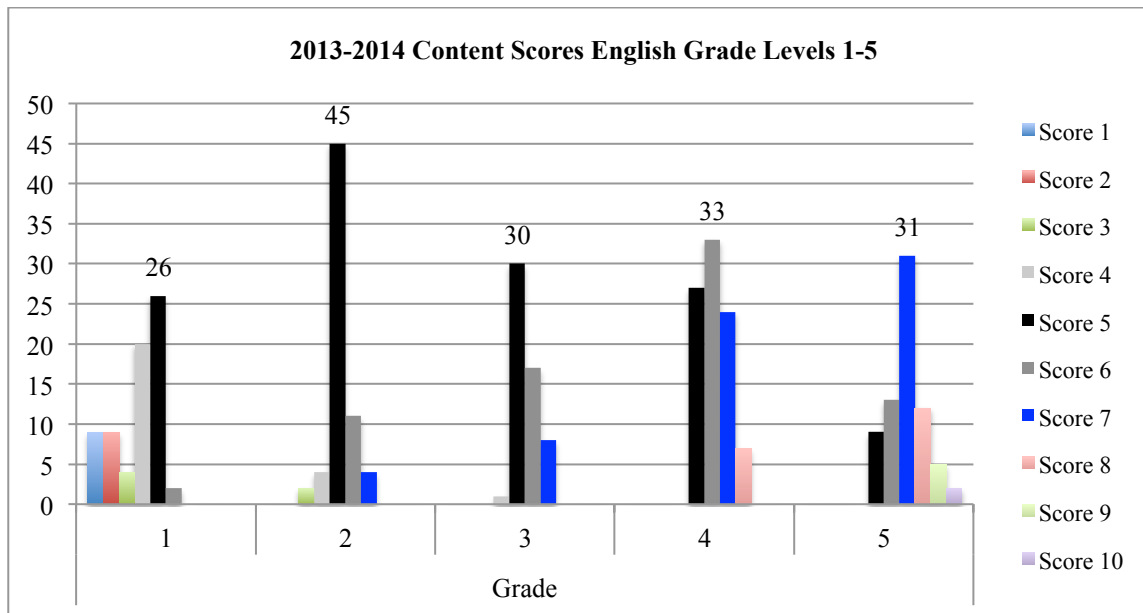
Figure 14. 2013–2014 English Content Scores Grade Levels 1–5

Changes in Mean Scores Over Time for Both 2010–2011 and 2013–2014 Data Sets

In terms of students' performance in writing over time in both languages, or changes in the mean

scores by grade level, both data sets showed that students' performance in writing slowly

increased over five years, except for the fifth grade in the 2010–2011 data set. The mean scores

for the fifth grade in the 2010–2011 data set show a very small decrease when compared to the

fourth grade mean scores for both languages (see Figure 15). In addition, both data sets present

different patterns of growth for both languages for students in grade levels 1–5. For example, the

2010–2011 data set shows that students' mean scores by grade level were higher in Spanish

throughout all five grade levels. The 2013–2014 data set shows a different pattern. Mean scores

for Spanish content were greater than English content scores for grade levels 1 and 2; however,

mean scores for English content scores become slightly higher than Spanish in grade level 3

(Spanish M=5.43, English M=5.57), and this pattern continues through fifth grade (See Figure

16). Perhaps this change in performance in English in the year 2013–2014 when compared to the

year 2010–2011 may be due to the topic of the prompt. In the 2010–2011, the students responded to the prompt "write about the best thing that has ever happened to you. Why was it the best thing?" whereas in the 2013–2014 year, students responded to the prompt, "if you could be someone else for a day, who would you be? Why would you want to be that person?" It seems that the context for the latter prompt was more open and induces students to write more complex narratives. These patterns are depicted in Figures 15 and 16.

2010-2011 Mean Content Scores English and Spanish Grades 1-5
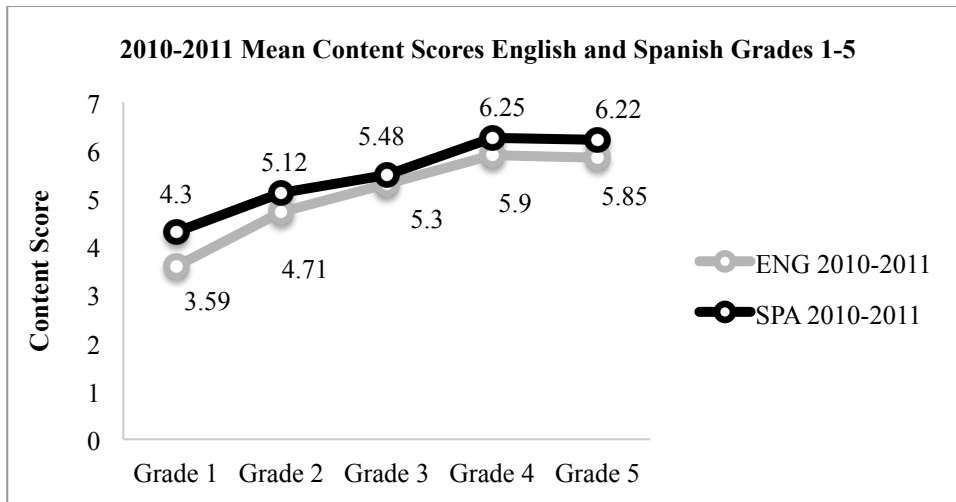
Figure 15. **2010-2011 Mean Content Scores English and Spanish Grade Levels 1-5**

2013-2014 Mean Content Scores English and Spanish Grades 1-5
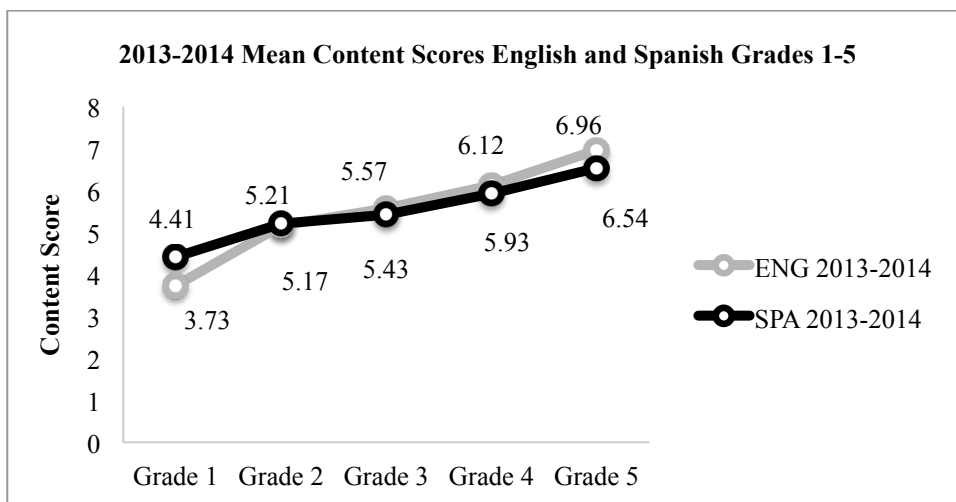
*Figure 16.* **2013-2014 Mean Content Scores English and Spanish Grades 1-5**

Mean Differences between First and Fifth Grades for Both Data Sets

A difference in the mean scores between fifth grade and first grade students for all four variables also presents some differences. A difference in mean scores between fifth grade students (M=6.96) and first grade students (M= 3.73) for the 2013–2014 English content score variable shows a difference of 3.23 points on the Literacy Squared writing rubric scale. The other three variables show an increase on average of 2 points on the scale for grade levels 1–5. The difference in mean scores between the fifth and first grade suggests that students in the 2013–2014 data set had a faster increase in English content scores than they did for Spanish content scores in grade levels 1–5, and a faster increase in English mean scores than those students included in the 2010–2011 data set. This information can be observed in Figure 16.

Percentage of Students Receiving the Same Score in Grades 1–5

In order to determine how students in both data sets were achieving levels of biliteracy, meaning that students achieved the same content scores in both languages, I computed the percentage of students for both data sets who had the same scores in both languages. The following are the results for the 2010–2011 data set: N=744, percentage= 50. For the 2013–2014 data set: N=198, percentage=56. Overall, data showed that in the 2013–2014 data set a greater percent of students in grade levels 1–5 achieved the same scores in both languages. When we examine the percentage of students by grade levels who received the same scores in content, the data presents interesting patterns. Overall, the percentage of students who received the same score in the first grade level was very similar for both data sets (2010 percent=41; 2014 percent=44). From the first to the second grade for the 2010–2011 data we see a sharp increase in the percentage of students who received the same score (55 percent); however, from grade levels 3–5 we noticed a slow decrease in the percentage of students receiving the same score (53, 51, 49, respectively).

For the 2013–2014 data set, we saw a sharp increase for students attending the second grade (68 percent) and the third grade (71 percent); however, the percent of students receiving the same score gradually decreased in grade levels 4 and 5. Overall, both data sets present a gradual decrease in the percentage of students receiving the same score, and both data sets have the same percentage of students receiving the same score in the fifth grade—49 percent. Data suggested that in the 2010–2011 data set, students had greater scores in Spanish whereas in the 2013–2014 data set, students had greater scores in English, which resulted in the decrease of percentage of students with same content scores. This information is displayed in Figure 17.
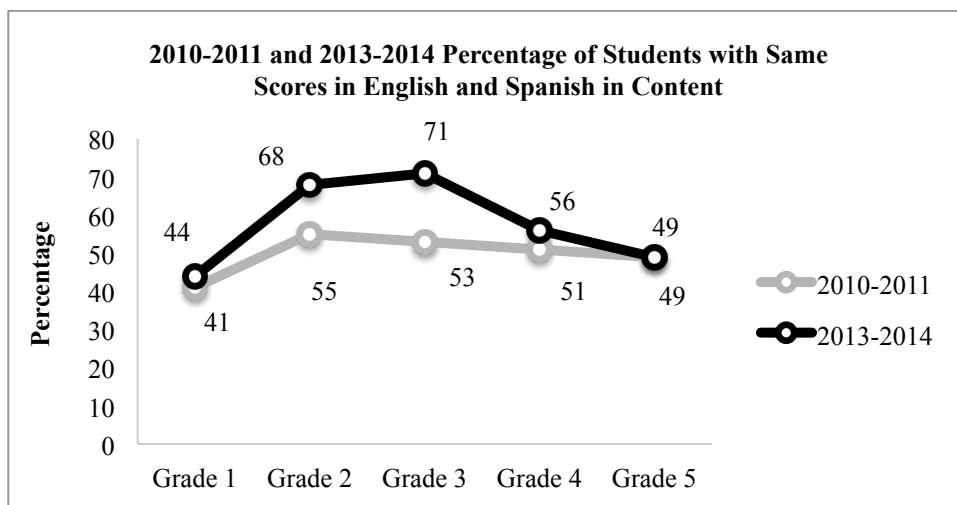
Figure 17. **Percentage of Students with Same Scores in English and Spanish in Content**

Descriptive Statistics for 2010–2011 and 2013–2014 Datasets by Grade Level

With the intention to examine in more detail the differences in students' performance in writing content in both languages across data sets, I computed measures of central tendency and dispersion at each grade level.

  First grade. The following are the results of this analysis for the 2010–2011 data set: Spanish content scores were N= 429, M=4.30, SD=1.4, Median=5, Mode=5; English content

scores were N=429, M=3.59, SD=1.4, Median=4, Mode=4. For the 2013–2014 data set: Spanish

content scores were N= 70, M= 4.41, SD=1.2, Median=5, Mode=5; English content scores were

N=70, M=3.73, SD=1.5, Median=4, Mode=5. Data showed that measures of central tendency

and dispersion were very similar for both data sets for both languages in the first grade: Spanish

mean scores were greater than English for both groups on both data sets, standard deviation was

very similar for all four variables, and median scores and the mode were very similar across data

sets and languages (±1). This also confirms or suggests that students responding to the same

prompt in the first grade level did not provide more varied scores than when students responded

to different prompts across grade levels 1–5.

Second grade. The following are the results of this analysis for the 2010–2011 data set:

Spanish content scores were N=477, M=5.12, SD=1.1, Median=5, Mode=5; English content

scores were N=477, M=4.71, SD=1.1, Median=5, Mode=5. For the 2013–2014 data set: Spanish

content scores were N=66, M=5.21, SD=0.48, Median=5, Mode=5; English content scores were

N=66, M=5.17, SD=0.75, Median=5, Mode=5. At this grade level we observed the same pattern

observed in the first grade level, whereby Spanish content mean scores were greater than English

mean scores, and the median and mode was 5 for all four variables. In the 2013–2014 data set we

saw a very small standard deviation (Spanish SD=0.48, English SD=0.75) suggesting that the

variability of scores was even smaller than the 2010–2011 data set. The previous was due to the

fact that in the 2010–2011 data set we had a range of scores of 8 points in Spanish (min. score=1;

max. score=9) and a range of 7 points in English (min. score= 1; max. score= 8). On the other

hand, in the 2013–2014 data set the range in Spanish content scores was 2 (min. score=5; max.

score=7) and a range of 4 points in the scale for English content scores (min. score=3; max.

score=7). In the 2013–2014 data there were no cases in which students scored a 1 in content. In

the 2010–2011 that could have been possible if in the second grade a student responded in a language other than the prompt. Overall, the data showed that the 2013–2014 data set presented a smaller variability of scores when compared to the 2010–2011 data set.

Third Grade. The following are the results of this analysis for the 2010–2011 data set: Spanish content scores were N=386, M=5.48, SD=1.1, Median=5, Mode=5; English content scores were N=386, M=5.30, SD=1.2, Median=5, Mode=5. For the 2013–2014 data set: Spanish content scores were N=56, M=5.43, SD=0.7, Median=5, Mode=5; English content scores were N=66, M=5.57, SD=0.8, Median=5, Mode=5. Overall, all mean scores for all four variables were within the score of 5 on the scale, the only difference was that in the 2013–2014 data set, the mean for English content scores was greater than the Spanish content scores. Similarly to the second grade data, the range of scores for the 2010–2011 data (Spanish scores range= 9 points, English scores range= 8 points) were greater than the range of scores for the 2013–2014 data set (Spanish scores range= 2 points, English scores range= 3 points). Therefore, the standard deviation measures for the 2013–2014 data set were very small suggesting a smaller variability of scores.

Fourth Grade. The following are the results of this analysis for the 2010–2011 data set: Spanish content scores were N=89, M=6.25, SD=1.2, Median=6, Mode=5; English content scores were N=89, M=5.91, SD=1.2, Median=5, Mode=5. For the 2013–2014 data set: Spanish content scores were N=91, M=5.93, SD=1.0, Median=6, Mode=5; English content scores were N=91, M=6.12, SD=0.9, Median=6, Mode=6. Overall, content mean scores were very similar across languages and across data sets (mean scores range=5.91 to 6.25). Compared to the 2010–2011 Spanish and content scores where the Spanish mean score was greater than English, the English mean score was greater in the 2013–2014 data set. In the fourth grade, the lowest

standard deviation measure was observed in the 2013–2014 English content score (SD=0.9); it was in this grade where the lowest range of scores were also observed (range=3; min. score=5; max. score=8). At this grade level, data continued suggesting that in terms of score variability, there was not that much difference across data sets.

Fifth Grade. The following are the results of this analysis for the 2010–2011 data set: Spanish content scores were N=104, M=6.21, SD=1.2, Median=6, Mode=5; English content scores were N=104, M=5.85, SD=1.2, Median=5, Mode=5. As mentioned before, the mean scores in the fifth grade for both languages decreased when compared to the fourth grade mean scores, -.4 points in Spanish and -.6 in English, on average. For the 2013–2014 data set: Spanish content scores were N=72, M=6.54, SD=1.3, Median=7, Mode=7; English content scores were N=72, M=6.96, SD=1.2, Median=7, Mode=7. Overall, the 2013–2014 had greater mean scores in both Spanish (M=6.54) and English (M=6.96) when compared to the 2010–2011 data set, including greater median scores (Spanish median score= 7; English median score=7), and mode scores (mode= score 7 in both languages). In addition, the 2013–2014 English content mean score was the greatest (M=6.96) when compared to the other groups or variables. In terms of variability of scores, all four variables present similar standard deviation measures (SD= 1.2, 1.2, 1.3, 1.2) suggesting that the variability of scores across data sets was very similar. This information is summarized in Table 6.3.

Table 6.3. *Central Tendency Comparison Measured for Content Scores for Data Set 2010–2011 and 2013–2014*

| | | 2010–2011 | | | | | | | 2013–2014 | | | | | |
| | | Spanish | | | English | | | | Spanish | | | English | | |
Grade	(n)	μ (SD)	˜x	Mo	μ	˜x	Mo	(n)	μ (SD)	˜x	Mo	μ	˜x	Mo
1	429	4.30 (1.4)	5	5	3.59 (1.4)	4	4	70	4.41 (1.2)	5	5	3.73 (1.5)	4	5
2	477	5.12 (1.1)	5	5	4.71 (1.1)	5	5	66	5.21 (.48)	5	5	5.17 (.75)	5	5
3	386	5.48 (1.1)	5	5	5.30 (1.2)	5	5	56	5.43 (0.7)	5	5	5.57 (0.8)	5	5
4	89	6.25 (1.2)	6	5	5.91 (1.2)	5	5	91	5.93 (1.0)	6	5	6.12 (0.9)	6	6
5	104	6.21 (1.2)	6	5	5.85 (1.2)	5	5	72	6.54 (1.3)	7	7	6.96 (1.2)	7	7
	1,485							355						

Notes: μ=mean, ˜x= median, Mo=mode.

Changes in Mean Scores by Language Across Data Sets

As part of my data analysis, I also compared how the mean scores by language and across grade level compared across data sets. As I mentioned before, mean scores in both languages for both data sets showed a slight increase in the mean scores across grade levels 1–4, except in the fifth grade for the 2010–2011 data set. When comparing mean scores across the same language (i.e., Spanish 2010–2011 to Spanish 2013–2014) and across data sets, the data showed different trends between English and Spanish. In English, data showed that overall the 2013–2014 data set presented higher mean scores than the 2010–2011 across grade levels. In addition, difference in mean scores across grade levels were very similar in grades 1–4, less than a point on average, but greater than a point in grade 5 (e.g., difference in mean scores=1.11 points in the scale). In Spanish, the data showed a different trend. In the first, second, and fifth grade the data for 2013–2014 showed greater mean scores than the 2010–2011 data set; however, this changed in grade

levels 3 and 4 where the 2010–2011 data set showed greater mean scores. These trends are displayed in Figures 18 and 19.

English Content Mean Scores Comparison Years 2011 and 2014
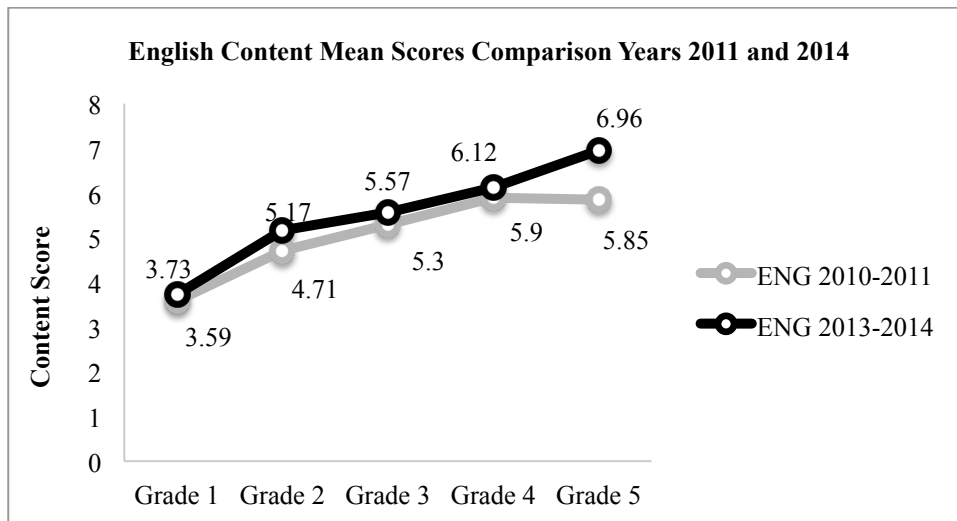
Figure 18. **English Content Scores Comparison Years 2011 and 2014**

Spanish Content Mean Scores Comparison Years 2011 and 2014
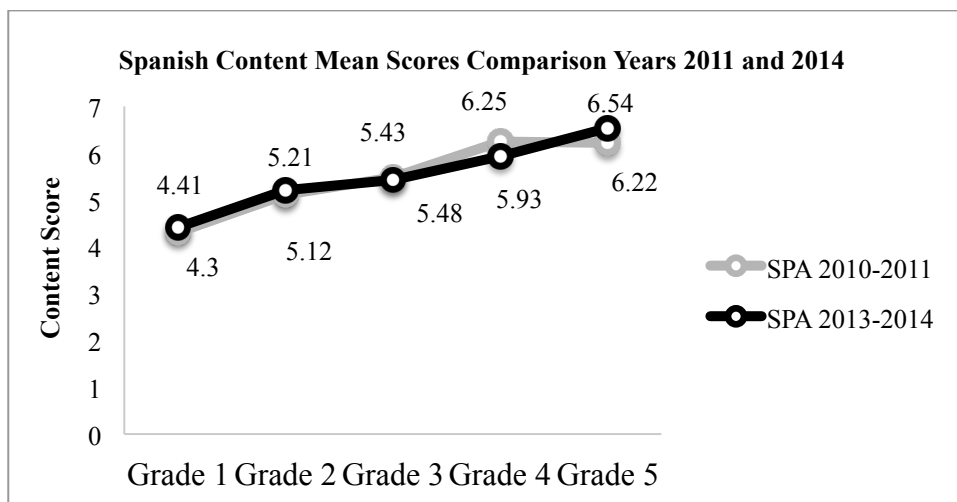
Figure 19. **Spanish Content Mean Scores Comparison Years 2011 and 2014**

Inferential Statistics: Independent *T* Tests

Independent *t*-tests across data sets, within grade levels, and within languages were performed to test the hypothesis that the group in the 2013–2014 and the group in the 2010–2011 data set were associated with statistically different mean scores. As described in Table 6.4, the normal

distribution for both data sets was also tested, and the 2010–2011 and 2013–2014 data sets were sufficiently normal for the purpose of conducting a *t*-test (i.e., skew +/- 2; and kurtosis +/- 2). Additionally, the assumption of homogeneity of variances was also tested and satisfied via Levene's *F* test, with exception for a *t*-test performed for second-grade English.

      English content scores grade levels 1–5 independent *t*-test results. The group in the 2013–2014 data set *(N= 355)* who responded to the same prompt in grade levels 1–5 received a greater mean score in English (*M=5.55, SD=* 1.5) than the group included the 2010–2011 data set (*N=* 1,408, M=4.61, *SD*=1.48) who responded to different prompts across grade levels 1–5. The independent *t*-tests were associated with a statistically significant effect, $t(1761)= -10.62$, *p* = <.001. Additionally, the assumption of homogeneity of variances was also tested and satisfied via Levene's, $F(1, 1761)= .805$, $p < .370$. Thus, the group for the 2013–2014 data set was associated with statistically significantly higher mean scores in English than the 2010–2011 group. After both *t*-tests were performed, we can conclude that the difference in mean scores across the group who responded to the same prompt in grade levels 1–5 was statistically different from the group who responded to different prompts across grade levels 1–5. This information is summarized in Table 6.4.

      Spanish content scores grade levels 1–5 independent *t*-test results. The group in the 2013–2014 data set (*N=* 355) who responded to the same writing prompt in grade levels 1–5 received a greater mean score in Spanish (*M=5.54, SD=* 1.24) than the group included in the 2010–2011 data set (N= 1,408, M=5.06, *SD*=1.35) who responded to different prompt at each grade level. The independent *t*-test was associated with a statistically significant effect, $t(1761)= -6.11$, $p = <.001$. Additionally, the assumption of homogeneity of variances was also tested and satisfied via Levene's test, $F(1761)= 1. 89$, $p = .168$. Thus, the group for the 2013–2014 data set

was associated with statistically significantly higher mean scores in Spanish than the 2010–2011 group.

English content scores within grade levels 1–5 independent *t*-test results. Only independent *t*-tests scores performed in the second grade and fifth grade across data sets 2010–2011 and 2013–2014 resulted in statistically significant differences. The group in the second grade in the 2013–2014 data set (N= 66) who responded to the same prompt in grade levels 1–5 received a greater mean score in English (M=5.17, SD= .75) than the group included the 2010–2011 data set (N= 477, M=4.71, SD=1.14) who responded to different prompts across grade levels 1–5. The independent *t*-test was associated with a statistically significant effect, $t(111)$= -3.16, p = <.002. Levene's tests indicated unequal variance (F= 7.63, p<. 006) so degrees of freedom were adjusted from 541 to 111.

In the fifth grade, students in the 2013–2014 data set (N= 72) had a greater mean score (M= 6.96, SD= 1.18) whereas students in the 2010–2011 had a smaller mean score (M= 5.72, SD= 1.15). The independent *t*-test was associated with a statistically significant effect, $t(138)$= -6.26, p = <.001. Additionally, the assumption of homogeneity of variances was also tested and satisfied via Levene's test, $F(138)$= 1.24, p = .267. Results indicated that students in the fifth grade for 2013–2014 were associated with a higher mean than students included in 2010–2011; this finding supports students in 2013–2014 not clustering at score content 5 as it was observed in the data set 2010–2011.

Spanish content scores within grade levels 1–5 independent *t*-test results. Only *t*-tests performed in the fifth grade resulted in significant differences in mean scores across data sets. Students attending the fifth grade in 2013–2014 had a greater mean score (M= 6.54, SD= 1.32) than students included in the 2010–2011 data set (M= 6.09, SD= 1.11). The independent *t*-test

was associated with a statistically significant effect, $t(138)= -2.18$, $p= <.030$. Additionally, the assumption of homogeneity of variances was also tested and satisfied via Levene's test, $F(138)= 2.05$, $p = .154$. This finding supports the 2013–2014 data set where students were not clustering at content score 5 as was the case for students included in the 2010–2011 data set.

Conclusions

Data indicated that there was not a great variability of scores when measures of dispersion were compared across data sets: 2010–2011 ($N= 1,485$) and 2013–2014 ($N= 355$). However, when comparing variability of score by grade level by language, the smallest score variability, or small standard deviation value, was found in grade levels 2 and 3 for data set 2013–2014 (see Table 6.3). When looking at frequency of scores by grade level and by language, the findings indicated three differences across data sets: (1) in grade 1 English, data set 2010–2011 showed students clustering at content score 4, whereas for 2013–2014 data set students clustered at content score 5, (2) in grade 4 English, students in the 2013–2014 data set clustered at content score 6, whereas students in the 2010–2011 clustered at content score 5, and (3) in the fifth grade in English and Spanish, students in the 2013–2014 data set clustered at content score 7, whereas students in the 2010–2011 data set continued to cluster at content score 5. Independent t-test results suggested that the data set for year 2013–2014 ($N= 355$) had statistically significant greater mean values than the 2010–2011 ($N= 1,485$) data set in English and Spanish. Independent t- tests performed within grade levels in English indicated that mean values for grade levels 2 and 5 for data set 2013–2014 were significantly higher than mean values for grade levels 2 and 5 for the 2010–2011 data set. Independent t- tests performed within grade levels in Spanish indicated that the mean value for grade level 5 for data set 2013–2014 was significantly higher than the mean value for grade level 5 for the 2010–2012 data set.

Table 6.4. *Normal Distribution Values for Data Sets 2010–2011 and 2013–2014*

Content Scores	N	M	SD	Skew	Kurtosis
Spanish 2010–2011	1,408	5.06	1.35	-.397	1.9
Spanish 2013–2014	355	5.54	1.24	.068	2.7[a]
English 2010–2011	1,408	4.61	1.48	-.522	.979
English 2013–2014	355	5.55	1.5	-.497	1.47

[a] .7 above the Values for acceptability for psychometric purposes (+/-1 to +/-2).
Note: M=Mean. SD=Standard Deviation. Content Scores ranges from 0 (Lowest Score) to 10 (Highest Score).

Chapter 7

Discussion, Implications, and Recommendations

Overview

An enormous amount of research has already been conducted on the literacy development of monolingual English and Spanish speakers. However, it is difficult to find quality research studies that specifically focus on biliteracy development among emerging bilingual (EB) children. These are young students who are exposed to and are learning two different languages at home and in the classroom. Of particular interest in this topic is the need for empirical knowledge that provides information about how young EB students develop writing skills in both of their languages, or biliterate writing. By increasing our understanding of how biliterate students develop their writing skills, it will allow our educational system to make much-needed changes in the way we teach and assess EB children growing up with two languages. Through the design of more structured learning environments and rigorous assessments, we can improve the education of Spanish-English EB students.

The primary purpose of this research was specifically focused on biliterate writing development. This study examined how EB students attending a paired literacy program in grade levels 1–5 progressed as writers at the word, sentence, and discourse levels within and across languages when writing an explanatory text. The secondary purpose was to examine how the rating in the analytical trait of content using the Literacy Squared® writing rubric differed between students who responded to the same prompt in grade levels 1–5 as compared to those who responded to different prompts in the same grade levels in English and Spanish. In the context of writing assessment, the writing task (or writing prompt) plays an important role in the successful collection of students' representative sample of their truthful writing skills (i.e.,

reliability). For example, one of the main requirements of the task is to require students to write a composition that elicits their knowledge about a subject, and the language they use has to be presented in a piece of connected discourse (Jacobs et al., 1981). Research indicates that characteristics and the nature of the task influence the writing quality of students' compositions. The task characteristics that influence writing quality include: the audience, the mode (i.e., description, narration, exposition), aims or functions (i.e., expressive, persuasive), and familiarity of the topic. For example, when using a writing prompt, the examiner needs to be cognoscente of whether or not students' abilities are aligned with the characteristics of the task. That is, asking students to respond to expository text when they have not been exposed to this type of writing mode means that students may not be able to show their best writing performance. Research has supported the idea that writing abilities do not transfer across genres (Arena, 1975). Or, if the topic is too familiar to students, students' may not put their best effort into completing the task (Hinkel, 2002). To illustrate this last point, research in English-as-a-Second-Language writing has found that when topics are very familiar to students (i.e., My Best Friend, My First Day at School, A Hero), the writing samples are problematic because the vocabulary and mode of expressions are permeated with students' mother tongue and culture (Paulston & Bruder, 1976; as cited in Jacobs et al., 1981, p. 14). In addition, Swineford (1964) suggested that readers are more consistent when scoring writing samples with the same topic. Therefore, examining the influence of writing prompts in bilingual children was a warranted purpose for this study. This study also adds to the current knowledge about how EB students develop their writing skills in two languages: These students attend classes that provide supportive learning environments, which are provided by Literacy Squared schools.

The rapid increase of EB children in U.S. classrooms has made it increasingly difficult to ignore their linguistic and instructional needs. There is an urgent need to improve literacy instruction and the way educators assess EB students' literacy skills. The education of Spanish-English speaking EB students continues to be a challenge for educators, administrators, and policymakers in the pre-K–12 educational system. A worrisome statistic for this population is the fact that EB students at different grade levels are not meeting academic expectations. EB students are underperforming at the college level despite the fact that the majority of these students were born in the United States and have received years of schooling in the American educational system. In terms of assessment, EB students continue to be evaluated through monolingual approaches that only provide limited information about their true levels of literacy competencies. The rise of globalization and the explosion of Internet use have given people the ability to communicate instantaneously from practically anywhere on the planet, and the global economy has led to a huge demand for individuals who are fluent in more than one language. Bilingualism is a huge asset for any individual to include in their set of skills in today's global economy, and it is imperative that the U.S. educational system recognizes these undeniable trends and creates a curriculum that encourages students to learn and communicate in two languages throughout their scholastic years.

Discussion and Implications

When I first began teaching elementary-level students in the United States, my experience working directly with Spanish-English EB students sparked my interest in wanting to learn more about how writing skills develop for these students across both of their languages, English and Spanish. During my initial experiences with these students, my colleagues and I did not have clear expectations about the writing performance of EB students in both of their languages at the

elementary level, nor did we have explicit directives on how to support their biliterate writing. The major objective of this project, then, was to develop a solid research methodology that would generate data and conclusions that would serve to inform and enhance our current educational theories, policies, and instruction regarding biliterate students, which would bolster the big picture objective of strengthening the overall education of EB students. This study adds to existing theory by providing empirical evidence about how EB students use cognitive and literacy skills in the construction of texts at the word, sentence, and discourse levels in two languages. Particularly, this study adds empirical knowledge to the concept of *biliterate writing trajectory*, which hypothesizes that EB students' attending a school that uses paired literacy instruction positively develop English and Spanish writing skills in a coordinated manner (Escamilla, Hopewell, Butvilofsky, Sparrow, Soltero-González, Ruiz-Figueroa, & Escamilla, 201). Findings from this study could also contribute to the national dialogue that supports bringing bilingualism into the standards-based reform (Flores & Schissel, 2014). With the intention to inform biliteracy instruction, this study recognizes specific discourse features that EB students use to construct texts in their academic writing while at the same time makes recommendations to the Literacy Squared assessment system.

The implications and discussion section is furthered divided into three sections. The first section discusses findings for textual productivity and biliterate writing at the word and sentence level. The second section discusses findings for biliterate writing development at the discourse level. Finally, the last section discusses the implications of how students' writing performance, as related to content, differed when responding to the same or different prompts across grade levels.

Biliterate Writing Development at the Word and Sentence Levels

In this study, the Semantic Structure of Texts (Kintsch & van Dijk, 1978) was useful to help understand the psycholinguistic processes in text production. The analysis of written texts at the microstructural level provided insights about textual information. This analytical framework included a set of lexical measures that allowed a uniform examination of students' textual productivity, lexical diversity, and syntactical complexity. In addition, the concepts of holistic bilingualism, biliterate writing trajectory, and sociolinguistics provided the framework for interpreting EB students' biliterate writing development at the word and sentence levels.

Findings showing comparable textual productivity, lexical diversity, and syntactical complexity measures suggest that students attending a paired literacy instruction positively develop writing skills in English and Spanish in a coordinated manner. According to the theory of holistic bilingualism, students use their knowledge of one or both of their languages as a resource to construct their texts (Grosjean, 1989). However, unlike some studies that suggest that L1 dominant bilingual students produce longer texts in their L1 while producing shorter texts in their L2 (Manchon, 2012), the students who participated in this research study wrote with similar levels of text, lexical diversity, and syntactical complexity in both languages. There are a few key reasons why it is important for us to recognize that the children in this study were creating similar written passages in both English and Spanish. First, textual productivity ability, lexical diversity, and syntactical complexity are aspects of language skills that are more likely to transfer across languages (Cummins, 1981). Second, these results provide additional evidence that EB children use both of their languages as linguistic resources in the construction of texts (Grosjean, 1989; Gort, 2006; Escamilla et al., 2013). Next, these results provide empirical evidence that when EB students are participating in paired literacy instruction, they can

positively develop their biliterate writing trajectory in a coordinated manner. The final and most important finding from these results is that traditional standards-based monolingual approaches are not an accurate representation of the knowledge and linguistic ability of these students.

One positive finding in the data is that students in the sample presented coordinated syntactical complexity in both languages. However, the data also indicate a discontinuous and homologous syntactical growth across grade levels, which may suggest the need to examine biliteracy instruction and the assessment system within the Literacy Squared framework. The research showed a discontinuous trend for the subordination index (SI). SI mean values did not steadily increase across all grade levels in both languages as the students advanced in their education and continued to mature as writers. Furthermore, findings indicated a homologous growth in English and Spanish for mean length modified c-units (MLMCu), and a sharp decrease in Spanish in the fifth grade. One interesting finding revealed that the difference in words between first graders and fifth graders in the sample was one word on average. There are a number of external and unmeasured variables that might be contributing to the homologous and discontinuous growth in the lexical complexity of EB students that we measured in this particular study. For instance, it appears that EB students' sociolinguistic contexts, particularly their limited participation in biliterate contexts in the upper grades and the prestige that our society places on speaking English, seem to influence the opportunities for students to develop similar syntactical complexity in Spanish. In other words, reducing the exposure of EB students to Spanish-speaking academic environments may have the negative consequence of limiting the ability of these students to further develop syntactical complexity. Acknowledging that the sociolinguistic context may be limiting students' opportunities to advance in the development of syntactical writing skills may have implications for strengthening biliteracy instruction across all

grade levels. A recommendation for practitioners would be to increase awareness about students' syntactical development in the construction of texts in both English and Spanish throughout all grade levels. Learning proficient syntactical skills in the construction of texts is essential for their academic success.

Secondly, the thematic and contextual content of the prompt may also influence the quality of the text in terms of syntactical constructions (Hinkel, 2002). According to Hinkel (2002), "the greater writer's familiarity and experience with a topic is and the easier it is to write about, the simpler the text can be" (p. 241). Since students may be quite familiar with the topic of the prompt (i.e., best friend and being someone else for a day), it is possible that students may not invest the necessary effort to use more advanced syntax. Certainly, this is an area that should be explored further through additional research. This finding could act as a catalyst that jumpstarts the long overdue conversation regarding whether the writing prompts in the Literacy Squared systems could potentially be improved. A recommendation, based on the literature consulted, would be to provide the students with less familiar topics that would require them to invest more thought, consideration, and effort in their texts (Hinkel, 2002).

A positive finding from this study suggests that the majority of students in the sample can differentiate between the two grammatical systems when producing written texts. This claim is supported by the high incidence of intra-linguistic approximations across grade levels (i.e., grammatical concordance, misuse, and omissions) (Grosjean, 2012) and comparatively few instances of crosslinguistic approximations (i.e., linguistic hypothesis) (Soltero-González, Escamilla, & Hopewell, 2010). According to Mesiel (2011), it has already been established that simultaneous bilingual children can differentiate grammatical systems from early ages, as soon as language-specific word order and inflectional morphology appear in children's speech. This

study shows that they can differentiate in written language as well. Drawing from this well-established research, we can gain a few insights about EB grammatical ability in the construction of texts. First, students presenting more intra-linguistic approximations continue to challenge the notion that students are confused by linguistic interference between their two languages. Secondly, the low incidence of crosslinguistic approximations combined with the demonstration of greater syntactical complexity in English than Spanish across all grade levels by these EB students would appear to sustain the recent research findings that challenge the notion that learning Spanish hinders English acquisition (Reyes, 2001; Gort, 2006). These findings continue to implicate the potential effectiveness of paired literacy programs to concurrently develop EB writing skills in two languages.

Moreover, the minimal usage of crosslinguistic approximations in the student writing samples seems to support the idea that because students' languages are in contact, children presented linguistic variation in their writing as they incorporated both languages in their approach to academic learning. That is, students used bilingual strategies at the word, sentence, and discourse levels as strategic linguistic resources to achieve written communication in both languages (Gort, 2006; Soltero-González et al., 2010). Students' use of Spanish- and English-influenced utterances in the other language may have allowed them to perform at a more complex level in English or Spanish (Fiestas & Peña, 2004; Bedore & Peña, 2008).

This study also found that EB students frequently utilized code switching during these writing exercises, which is "the use of one language while engaged in the other" (Gort, 2006, p. 342). The active use of code switching seems to confirm the notion that this is a strategic academic resource that is unique to EB students. That is, code switching did not interfere with the clarity of the story. In this study, code switching was rule governed, provided additional

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communicative means, and was influenced by sociolinguistic factors (e.g., family, education) and by the content of discourse (i.e., students participating in bilingual settings) (Meisel, 2001; Grosjean, 2012; Genesee and Nicoladis, 2006). Students in the sample mainly code switched in Spanish by using English words to represent their immediate sociolinguistic contexts, such as school, playground, community, and technological devices. A key insight in this finding may suggest the need for redefining the concept of code switching for methodological approaches for future research. The definition that I used for the purpose of this study—"the use of one language while engaged in the other" (Gort, 2066, p. 342)—was limited in identifying the nature of the code switching. For instance, students used words in their writing that did not have an equivalent definition in the other language, particularly for lexicon related to technology (e.g., iPad, Playstation). For the purpose of this study, I coded all technology and brand-related words as *loan words*, even though these brand and product names are spelled identically in both English and Spanish-speaking countries and are firmly part of the lexicon. However, students may have used loan words that do have an equivalent label in the other language. This suggests that perhaps students were using idiosyncratic loans, or words that students used to fill a vocabulary gap (e.g., using store instead of "tienda"). An interesting endeavor for future researchers to explore would be to carefully analyze the specific word choices that students made when code switching in order to more closely examine whether specific loan words had an equivalent definition or not. If future research reveals that students are overly reliant on loan words that have an equivalent definition in the other language (for instance, words semantically related to school and home), it may indicate the need to continue urging EB students to utilize a more precise vocabulary.

The increase of grammatical approximation in both languages across grade levels may further suggest that students in this sample are not improving their grammatical ability as they advance through elementary school, which leads us to suggest some potential improvements to biliteracy instruction. One possible explanation for the steady increase in grammatical approximation among EB students across grade levels might be the fact that these students had just 30 minutes to compose their written texts without the opportunity for drafting, revising, and editing. Nonetheless, it has been documented that there is a significant reduction in the use of grammatical approximations in their writing as writers mature and become more proficient in the language (Tilstra & MacMaster, 2007). Therefore, the prevalence of grammatical approximations in these students' writing samples may suggest implications for biliteracy instruction in two important ways. First, there is the need to encourage the development of biliterate writing skills by supporting students in the learning of both standard English conventions, or Common Core State Standards (Council of Chief State School Officers, 2015), and standard Spanish conventions so that they can communicate more effectively when writing in either or both languages. According to already-established literature, the types of grammatical approximations that appear in EB student writing samples should drive further and more advanced grammar instruction (Hinkel, 2002). It is recommended that grammar instruction be contextualized to communicative purposes and be delivered through explicit and direct instruction and interactive approaches (Genesee & Riches, 2006).

Biliterate Writing Development at the Discourse Level

Because the mental operations that underlie the processes in language production include the linguistic resources (microstructure) as well as the conceptual resources (Levelt, 1983), written texts were also examined at the global level or macrolevel (Kintsch & van Dijk, 1978). As noted

before, the theoretical and linguistic reason for this description derives from the fact that a text base (microlevel) must be connected to what is intuitively called a *topic of discourse* (macrolevel). Therefore, the use of macrostructural analysis of text included the discourse features of cohesion and coherence (Montaño-Harmon, 1988) and provided a framework for the uniform analysis of discourse features found in the student writing samples. The examination of written text at the micro- and macrostructural levels provided a robust examination of the synergistic relationship among the different linguistic levels of textual productivity, lexical diversity, and syntactical complexity in students' text composition (Danzak, 2011). In addition, the concepts of holistic bilingualism (Grosjean, 1986) and bidirectional transfer (Dworin, 2003; Reyes, 2006) provided a solid framework for identifying the specific discourse features present across languages. These concepts also provided guidance in the examination of discrete discourse features that EB students used to organize and unify text in both languages in all grade levels.

In order to contextualize the biliterate writing development of EB students at the discourse level, I used the fifth grade CCSS English Language Arts (ELA) standards, writing, text types and purposes, and explanatory texts. According to the CCSS ELA standards, while composing explanatory texts, students are expected to: (1) introduce a topic clearly and provide related information logically, (2) develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic, (3) link ideas using words, phrases, and clauses, (4) use precise language and domain-specific vocabulary to explain the topic, and (5) provide a concluding statement or section related to the information presented. In addition, students are expected to produce clear and coherent writing compositions in which development and organization are appropriate to task, purpose, and audience. The following

sections discuss EB biliterate writing skills at the discourse level: cohesion, coherence, and implications in relation to the fifth-grade CCSS ELA writing standards.

Cohesion. Students relying on particular discourse features to unify texts across languages and across grade levels appear to challenge the prevailing school of thought that biliterate writing is considered to be idiosyncratic. Although the data from this study revealed inconsistent trends in the use of discourse features, I found that students in the sample used similar discourse features across grade levels and across languages to unify texts. This analysis appears to suggest a coordinated and positive biliterate writing trajectory. When EB students responded to an explanatory text, they used several discourse features to unify text in both languages and across grade levels 1–5: same word repetition (i.e., lexical reiteration) and collocation (i.e., words semantically related). In terms of syntactical relationships to unify texts, students in the sample mostly relied on the use of personal anaphoric reference, additive conjunctions, and causal conjunctions. The use of macrostructural analysis of texts and a hallidarian approach (Halliday & Hassan, 1976) to examining cohesion contributed to the identification of particular discourse features that children in this sample used to unify their writing across languages and across grade levels. Knowing the kind of lexical and syntactical cohesive devices that students use (or don't use) when constructing texts could assist in developing more efficient writing instruction.

Interestingly, the word "cohesion" is not mentioned in grade levels 1–5 in the CCSS; it only starts to be explicitly mentioned in the eighth grade. If texts are both cohesive and coherent (Kintsch & van Dijk, 1978; Montaño-Harmon, 1988), it would be worth investigating why the CCSS ELA expects students to demonstrate cohesion and coherence in a stepwise fashion: coherence in the early grades, then cohesion in the middle school years.

These findings showing the discourse features EBs used to unify texts may also suggest the need to expand student's vocabulary in both English and Spanish and across grade levels. Findings revealed that there were few appearances of either synonyms or superordinate words, which are two key indicators of a diverse vocabulary. The research data also revealed that students mostly used same-word repetition, collocation, and personal pronouns to connect their texts. Although the use of collocation reflects a diverse vocabulary, there were few instances in my data that supported this. In fact, my data found there was actually a decrease in the mean percent in both languages among fifth-grade EB students in our sample. The use of lexical repetition, collocation, and personal pronouns are simple and helpful ways to help the reader to create connections and to connect text. However, the frequent use of lexical repetition, collocation, and personal pronouns are also indicators of limited and repetitive vocabulary.

Another finding that supports the need to expand EB students' vocabulary is the increase in the total number of modified c-units (TNMCus) with grammatical approximations in both languages and across grade levels. For instance, lexical development is fundamental for the development in grammar; grammatical attainment in one language is strongly associated with lexical development in that same language (Simon-Cereijido & Gutiérrez-Clellen, 2009). In addition, educational research has recurrently shown that EB students from Latino and low socioeconomic backgrounds in the United States tend to enter school with vocabulary skills below age expectations (Simon-Cereijido & Gutiérrez-Clellen, 2009). Therefore, vocabulary instruction contextualized to communicative purposes and delivered through explicit and direct instruction and interactive approaches (Genesee & Riches, 2006) may be warranted. Expanding the lexicon of EB students within the Literacy Squared classroom environment may result in students increasing textual complexity by using more sophisticated and precise vocabulary to

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construct and unify their texts while increasing reading comprehension. More importantly, when students have fewer problems with constructing appropriate grammatical form and finding more precise vocabulary, students can spend more time on higher level writing processes such as planning and textual organization (Manchon, 2012).

Coherence. Students relying on specific discourse features of coherence to organize their texts in both languages and across grade levels seem to contradict the prevailing school of thought that the writing produced by EB students is idiosyncratic. When you combine this discovery with the existing findings for biliterate development at the word and sentence level, it suggests that EB students are developing writing skills in both languages in a coordinated approach. For example, we found that in grade levels 1–5, students were using topic sentences and additive and explicative relationships across languages. In grade levels 2–5, students presented textual deviations in both languages. In grade levels 3–5, students added illustrative and resultative relationships, transitional words, and conversational markers to connect their texts. The conclusion that we can draw from this coherence data mirrors the conclusion we arrived at for cohesion: knowing the type of discourse features that students used or didn't use in both languages and across grade levels may be useful to inform biliteracy instruction and to support students in constructing more coherent texts.

Using the fifth grade CCSS ELA standards as a reference, data may suggest that students in the sample are on an encouraging path in meeting the ELA fifth-grade standards. More importantly, these students are on a positive trajectory to meet those standards not only in English but in Spanish as well, if such standards would only exist in Spanish. Overall findings also indicated that by the time students reached the fifth grade, they were incorporating a greater variety of logical relationships to organize their discourse than in the early grade levels. There

are multiple reasons why EB students are on a positive trajectory to meet the fifth-grade writing standards that have been established by CCSS ELA. First, students are expected to add a topic sentence to their compositions. With very few exceptions, most of the students in this study presented a topic sentence, which introduced the topic of the text or responded to the prompt. This was consistently shown across languages in all grade levels. Secondly, students are expected to develop the topic with facts, details, and examples related to topic. In grade levels one through five, students in the sample developed their texts mainly by adding information (additive logical relationships) and using explicative relationships in order to answer the "why?" question that was presented in the writing prompt (i.e., Who is your best friend in the entire world? Explain why that person is your best friend). However, in grade levels 3 to 5, the results showed that, along with including additional facts and explaining reasons, the writing from EB students also provided insight about the consequences that resulted from their choices. This skill is known as showing resultative relationships, which allows students to better answer more abstract questions such as "Why did you choose X person as your best friend?" Additionally, we found that it was during grade levels 3–5 where students started to provide examples as a means of communicating more clearly and with greater detail (illustrative relationships). By fifth grade, a significant percentage of students had added contrastive relationships to their writing skills toolbox, which gave them the ability to provide opposition, counterpoints, and possible alternatives to their arguments. Another reason why EB students are on a positive trajectory to meet the fifth-grade writing standards that have been established by CCSS ELA is that they have demonstrated the ability to link ideas using words, phrases, and clauses. Students in the early grades started to unify their texts mainly by using additive and causal conjunctions, and then by

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using transitional words/phrases in grade levels 3–5. This was the learning trajectory that was projected and anticipated when the fifth-grade CCSS ELA standards were established.

However, findings in this study did not provide enough evidence to support that EB students in the sample are on the right path in using precise language or domain-specific vocabulary—an expected standard of the CCSS ELA. As noted before, students relied primarily on same word repetition and collocation in order to unify their texts. Collocation indicates that EB students have the tendency to incorporate semantically related vocabulary (i.e., school, home) in an effort to better address the prompt topic and demonstrate their diverse vocabulary. Conversely, collocation appeared with less frequency than same word repetition and was actually found to decrease in the upper grade levels. Furthermore, because the prompt did not ask students to write about a scientific topic, the use of precise vocabulary and domain-specific vocabulary was not observed in the corpora. This finding may have implications for the assessment and instruction of bilingual students in the future: if Literacy Squared schools need to assess whether or not students are on the right path in acquiring precise and domain-specific vocabulary, the Literacy Squared assessment system may have to refine the writing task for that purpose. In terms of instruction, as discussed before, the fact that students displayed the tendency to use same word repetition more often than collocation could have implications that advise teachers on how they can help better facilitate the lexical expansion of EB students.

Finally, the data from this study indicated that the students in the sample did not use a conclusive sentence. According to the writing standards established by the CCSS ELA, students are expected to provide a sense of closure in their writing composition starting in the first grade. Our data revealed that the EB students in our sample are not meeting these standards, and this certainly is an area that must be addressed. In addition, findings for research question three

indicated that only 31 students out of 72 had a score of 7 in content, which suggests that students included a clear introduction and conclusion. That is, less that 50 percent of students had a conclusion sentence in their writing.

Examining and analyzing these students' writing samples for specific instances of coherence also provides us with other perspectives that could hopefully improve the future instruction for EB students. We all agree that EB students who are attending schools in the United States are expected to be proficient in English writing, reading, and verbal skills if they are expected to succeed in their academic environment. Perhaps more importantly, students are expected to produce academic written texts that meet or exceed the criteria that have already been established by recent standards-based educational reforms. The data indicated that the corpora comprised the use of some discourse features that may put a cap on the level of success a student can have when they are constructing more coherent texts in both languages. There are two important discourse features that are worth discussing in greater detail: textual deviations and conversational markers. Both of these discourse features can be better addressed and taught during writing instruction in both languages and across grade levels.

The first point for discussion is the presence of textual deviations in the English and Spanish texts of EB students. For the purposes of this study, textual deviations were defined as breaks in the development of text. Overall, deviations were more commonly observed in the Spanish texts, and the percentage of students using textual deviations in both languages steadily increased as students progressed from grade level 2–5. This finding might be explained by several factors. First, deviations may be influenced by the sociolinguistic context of each student because, when Spanish literacy instruction decreases, it also has a negative impact on the ability of students to connect written discourse. In other words, students who are receiving less formal

instruction in Spanish might have a greater tendency to rely more on their plethora of scripts, or cognitive structures, that permit them to illustrate familiar events or common behavioral routines but without a logical sequence, or coherence (Hickmann, 2004). Second, when writing in Spanish, EB students use discourse patterns that have been influenced by the linguistic and cultural resources they have been exposed to in their native language. According to Montaño-Harmon (1988), "the logical development in texts is not universal but is rather language/culture specific" (p. 7). Studies examining bilingual children's discourse production have suggested that children's families and their culture influence their discourse patterns. Unlike American-European discourse style, students from Mexican- American descendants mainly participate in oral narratives; narrating in sequence of events is not common, and their narratives may often include personal reactions (Fiestas & Peña, 2004; Escamilla and Coady, 2001). This second explanation has important implications for teaching. If deviations are considered to be a cultural resource for EB students, then these textual deviations partly represent their personal identity and connections with their culture. These textual deviations actually reflect the socialization and cultural discourse patterns of EB students. Rather than being stigmatized and discouraged by teachers and academic standards professionals, textual deviations should instead be viewed as an opportunity to make important teaching points, with the ultimate goal of helping to support students in the construction of cohesive and coherent texts (Acuña Vega, n.d.).

A third explanation is the strong possibility that the writing prompt, which asked students to compose detailed and explicit statements about their best friend, may have resulted in many compositions that were not organized in a logical fashion. Findings from this study keep leading us to revisit the thought that writing prompts within the Literacy Squared assessment system may

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have to be refined in order to provide a more accurate assessment of the writing abilities of each student being tested.

The second point of discussion is the use of conversational markers and rhetorical or tag questions that appeared in the EB students' written compositions. Briefly, conversational markers are defined as words or expressions that are used during oral conversation, as markers that reveal the intentions or attitudes of the writer, or act as clues to indicate who the audience is (Montaño-Harmon, 1988). On the other hand, rhetorical questions (i.e., "For these reasons Michael is someone I would like to be for a day, who would you like to be for a day?") are questions used to involve the readers and to promote their participation (Hinkel, 2002). Tag questions were mainly observed in the second grade and seemed to reflect a writing instructional strategy. Conversely, while there were few instances of conversational markers in the data, the mean percent values for this discourse feature steadily increased across grade levels, and by fifth grade, 23 percent of students used conversation markers in both languages. The use of conversational markers is troublesome since it reflects an oral tone that is not recommended for academic writing (Montaño-Harmon, 1988). It may also represent students' cultural and linguistic differences because "children learn from the narrative examples produced by their families and their culture (Fiestas & Peña, 2004). This colloquial register seems to be accepted for the oral productive and oral receptive language of teachers and students; however, that's not the case for written productive language (Council of Chief State School Officers, 2012, p. 32). Similarly, rhetorical questions are not considered to be appropriate in writing for academic purposes in English, since they can be overly personal and subjective (Swales & Freak, 1994, as cited in Hinkel 2002, p. 153). In addition, the fifth-grade writing standards that have been established by CCSS ELA do not mention the use of conversational markers or the use of

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rhetorical questions in the construction of explanatory text. It seems to be the case that the use of

conversational markers may be more appropriate for writing opinion pieces, where the writers

are required to express their personal attitudes, intentions, and opinions (Council of Chief State

School Officers, 2015). At a product level, "skilled writers must be able to produce texts that are

appropriate for given social purposes and contexts of use to meet the demands of social context"

(Manchon, 2012, p. 103). Biliterate writing instruction, then, should advance writers to

demonstrate the ability to think critically and use different rhetorical devices (as well as

discourse features) when appropriate for function, audience, and purpose in both of their

languages.

Students' Writing Performance in Content Across Data Sets

After comparing groups that responded to the same and different prompts across grade levels, I

concluded that further research is needed to provide more concrete recommendations for

improving the Literacy Squared assessment system. To recapitulate, students in the 2010–2011

sample clustered at content score 5 in English for grade levels 2–4 and in Spanish for grade

levels 1–5. Students in the first grade in English clustered at 4 in content. Few key differences in

the distribution of scores for the 2013–2014 sample were found: students clustered at score 5

instead of score 4 for first grade English content scores, clustered at score 6 instead of score 5 in

the fourth grade English content scores, and clustered at content score 7 in the fifth grade English

and Spanish content scores. That is, data seems to suggest that when using the Literacy Squared

writing rubric to score the same prompt across grade levels, students were rated higher and the

clustering at content score 5 was not observed for some groups in grade levels 4 and 5.

There are a couple of explanations to why students rated differently in the first grade and

upper grades when responding to the same prompt. One reason might be the written task. It may

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have been the case that the writing prompts used in this study may have elicited particular writing abilities that were better captured by the rubric, particularly in the first grade and fifth grade where the clustering at content score 5 was not observed. According to Jacobs, Zingraf, Wormuth, Hartfiel, and Hughey (1981), studies performed with native language speakers indicate that writers' abilities vary across different forms of discourse. Arena's (1975) study of university-level ESL students suggests that students' proficiency in narrative or descriptive mode does not carry to expository modes. To illustrate the last point, in the first grade, both writing prompts ask students to draw their favorite toys (English prompt) and favorite animal (Spanish prompt) and explain why they like it. Although the prompt may elicit an explanatory writing (e.g., explain why), students mainly provide descriptions while providing explanation. In the fifth grade, students are asked to elaborate argumentative texts, which is a different type of writing genre and elicits different writing skills that the rubric may not be capturing. In addition, as noted before, students tend to use simpler lexical and syntactical linguistic constructions when constructing argumentative texts (Hinkel, 2002), thus not scoring as high in the rubric (i.e., content score 6 requires student descriptive vocabulary and varied sentence structure; content score 7 requires students to provide a clear introduction and a clear conclusion).

The raters might be another probable reason to why the differences in scores across data sets were observed. A study on the reliability of scores for the Advanced Placement Examination in American History suggests that readers' reliability or consistency of scoring may vary due to the topic they are scoring (Swineford, 1964). In other words, evaluators tend be consistent in scoring the same test topic (Callaway, 1980). In this study, there were two scorers who rated student samples across all grade levels and with acceptable percentages of agreement in both languages, > 89.1 percent. From this evidence, we can infer that evaluators scoring prompts for

the same topic may be more consistent than evaluators scoring prompts with different topics and may therefore be at least partially responsible for the differences in the distribution of scores in this study. To conclude, sampling seems to be the reason why students clustered at score 7 in content in the fifth grade in English and Spanish when the data showed inconsistency in the use of a concluding sentence. Overall there were more writing samples in the fifth grade without conclusive sentences and only a few were randomly selected (n= 30) for qualitatively analysis.

Conclusions

Findings from this study suggest the following recommendations aimed to strengthen EB students' educational equity at three different levels—theory, educational policies, and instruction:

     Theory. Findings from this study add to theory about EB students' biliterate development in the following ways:

- Empirical evidence is added to the concept of biliterate writing trajectory (Escamilla et al., 201). Findings in this study seemed to suggest that EB students participating in a paired literacy instruction positively developed Spanish and English writing competencies at the word, sentence, and discourse levels in a coordinated manner.

- It adds to the literature that EB children can differentiate grammatical systems not only in their speech but in their writing as well (Meisel, 2001).

     Educational policies. Educational policies toward minority students in the United States have been and continue to be established on the premises that the academic difficulties for these students are attributed to their lack of proficiency in English and that learning Spanish interferes with learning English (Montaño-Harmon, 1988). Findings in this study not only confirmed the

notion that EB students can learn English in addition to Spanish within supportive environments, but it also challenged narrow and limited educational perspectives that promote educational attainment in one language only.

- Findings from this study suggest that EB students' biliterate writing development at the discourse level is compatible with the CCSS not only in English but in Spanish as well. This study could potentially contribute to the national dialogue that supports bringing bilingualism into the standards-based reform (Flores & Schissel, 2014).
- Findings provide empirical evidence about the effectiveness of paired literacy instruction in developing EB students' biliterate writing skills at the word, sentence, and discourse levels in a coordinated manner.

Biliteracy Instruction. Findings from this study suggest a few points for refining biliterate writing instruction. The following recommendations could be included in professional development sessions and during language arts instruction within Literacy Squared schools. The following instructional suggestions should be followed within a sociolinguistic approach to teach language, which suggests that written language function varies in relation to the context of textual production. Biliteracy instruction should:

- focus on expanding vocabulary use through the use of synonyms, near-synonyms, antonyms, and superordinate words in English and Spanish to expand students' discourse features to unify texts;
- elevate syntactical variation and complexity as it is suggested in the ELA CCSS, particularly in the upper grades in both English and Spanish;
- target the teaching of English and Spanish standards conventions to improve intra- and crosslinguistic grammatical approximations;

- continue to support students in the use of discourse features to connect and organize texts by adding topic sentences and adding information to their texts related to the topic sentence while also using varied types of logical relationships to provide textual organization (particularly in grade levels 1 and 2) and by adding concluding remarks;

- relieve the conflict between students' oral discourse in their written texts and the expectations for formal writing for academic purposes by providing students opportunities to rehearse different types of written register (formal and informal) for different communicative purposes and different social settings; and

- not stigmatize textual deviations in students' writing, particularly in Spanish in the upper grades, as they may reflect students' cultural discourse patterns. Instead, educators should use this discourse feature as a pedagogical strategy to increase EB students' metalinguistic awareness to unify and organize texts.

Limitations and Future Research

Despite the fact that the present study provided insights about EB students' writing development at the word, sentence, and discourse levels while attending a paired literacy instructional program, it had a number of limitations that suggest productive avenues of future research.

One limitation in this study was time: analyzing EB students' biliterate writing development using written products that were collected at one point in time meant that I was not able to examine the full scope of the writing processes EB students' used to construct, unify, and organize texts in both languages. Further research would examine the relationship between instruction and students' use of discourse features to unify and organize their texts at multiple points in time.

Another limitation in this study was the limited number of writing prompts. This study examined EB students' biliterate writing development at the word, sentence, and discourse levels while constructing explanatory texts. Findings in this study support the pre-established literature that indicates that including familiar topics in the writing prompts may result in students' using simpler texts. However, it is necessary to complete more research examining the relationship between EB students' biliterate writing development and different prompts to those currently used by the Literacy Squared assessment. Further research would examine EB students' biliterate writing development when responding to less familiar writing prompts and to writing prompts that elicit other types of genres, such as narratives and argumentative texts. Examining the type of discourse features EB students use to construct, unify, and organize texts when responding to other types of prompts may provide detailed information that could improve the Literacy Squared assessment system.

A last limitation was the use of writing prompts that required students to write in different tenses. For example, the Spanish prompt asked students to write in the present tense. Conversely, students were asked to write in the conditional tense in English. Having students answering prompts that demanded different grammatical structures may have resulted in students making different types of approximations that were unique to each language (i.e., use of modal verbs in English). Further research would examine the use of writing prompts, such as the ones I mentioned before, while ensuring prompts have similar linguistic demands.

To conclude, every individual attending our school system in the United States has the right to develop competent reading and writing skills; that is one of the milestones in one's educational success. Unfortunately, the EB population is not performing well in this subject, and we professionals have the responsibility to modify educational systems to improve their

education, particularly at the early grade levels where they are expected to receive a solid literacy foundation. I pursued the task of examining biliterate writing development in grade levels 1–5 with the forethought objective to refine biliteracy instruction and the way we assess writing development for EB students attending Literacy Squared schools. I am confident that this work could be useful to inform biliteracy instruction not only for teachers within Literacy Squared® schools but for practitioners participating in other types of bilingual programs. I am convinced that improving education through more structured and meaningful instruction is one effective way to impact EB children's academic, social, and economic advantages.

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Appendix A

Literacy Squared® Biliteracy Block Times Allocations

Grade	Spanish Literacy	Literacy-Based ELD
K	2 hours (1 hr. for half day kindergarten)	45 minutes (30 for half day kindergarten)
1	2 hours	60 minutes
2	90 minutes	60 minutes
3	60 minutes	90 minutes
4	45 minutes	2 hours
5	45 minutes	2 hours

Appendix B

Literacy Squared® Writing Prompts and Directions (for summative purposes)

Procedures:
1. The Spanish writing prompt should be given the first week in January. The English prompt should be given the second week of January two weeks later. In kindergarten, English samples are NOT collected.
2. Prompts will be group administered and take no more than **30 minutes**. Students may do a draft and then a final copy if they have time in the allotted 30 minutes.
3. The writing sample should be completed **without** any teacher or peer assistance. The student should do all editing independently. Teachers should not prompt, think aloud, or share examples of how to respond to the prompt.
4. **All students should be provided with a pre-formatted page with the prompt**. Additional paper may be given to the students for drawing or planning.
5. **Read the prompt to the children**. Tell them that they will have 30 minutes to write to the prompt.

GRADE	SPANISH	ENGLISH
K	*Haz un dibujo de tu familia. Escríbenos como es tu familia.* (Draw a picture of your family. Write about your family.)	
1	*Dibuja el animal que más te gusta. Escríbenos por qué te gusta más.* (Draw your favorite animal and write about why it is your favorite.)	Draw a picture of your favorite toy. Write about why it is your favorite.
2	*Escríbe lo que te gusta hacer cuando no estás en la escuela. Y dí por qué.* (Write about what you like to do when you are not at school and explain why.)	What do you like to do at recess? Why?
3	*Dinos por escrito lo mejor que te ha pasado en la escuela este año. ¿Y por qué piensas que fue lo mejor?* (What is the best thing that has happened to you in school this year? Why do you think it was the best?)	Write about the best thing that has ever happened to you. Why was it the best thing?
4	*¿Quién es tu mejor amigo en todo el mundo? Escríbenos por qué esa persona es tu mejor amigo.* (Who is your best friend in the entire world? Explain why that person is your best friend.)	If you could be someone else for a day, who would you be? Why would you want to be that person?
5	*Piensa en tu vida personal y escolar, ¿Cómo te ha ayudado saber dos idiomas?* (Think about your personal and school lives. How has knowing two languages helped you in school and in your personal life?)	Think about your experiences learning Spanish and English. What is hard? What is easy?

Appendix C

Not to prompt
(Circle)

Span | Eng

Bilingual Writing Rubric: Grades K, 1, 2, 3, 4 & 5
(Circle Grade)

SPANISH SCORE	CONTENT	ENGLISH SCORE
10	Focused composition, conveys emotion or uses figurative language, is engaging to the reader; clearly addresses the prompt; book language	10
9	Organization of composition includes effective transitions & vivid examples	9
8	Writing includes complex **sentence** structures and has a discernable, consistent structure	8
7	Sense of completeness – Clear introduction and clear conclusion	7
6	Includes descriptive language (use of adjectives, adverbs at the word level) and/or varied sentence structures	6
5	Main idea discernable with supporting details, or main idea can be inferred or stated explicitly, or repetitive vocabulary: may include unrelated ideas	5
4	Two ideas– *I like my bike **and/because** it is blue*	4
3	One idea expressed through a subject & predicate, subject may be implied (*I like my bike, amo,* or *run*)	3
2	Label(s), list of words. May communicate an idea w/o subject & predicate	2
1	Prewriting: Picture only, not readable, or written in a language other than the prompt	1
0	The student did not prepare a sample	0
	STRUCTURAL ELEMENTS	
5	Multi-paragraph composition with accurate punctuation and capitalization	5
4	Controls most structural elements and includes paragraphing	4
3	Controls beginning and ending punctuation in ways that make sense and is attempting additional structural elements (commas, question marks, guiones, apostrophes, ellipses, parentheses, hyphens, and indentation)	3
2	Uses one or more of the structural elements **correctly**	2
1	Uses one or more of the structural elements **incorrectly**	1
0	Structural elements not evident	0
	SPELLING	
6	Accurate spelling	6
5	Most words are spelled conventionally	5
4	Majority of HFW are correct and child is approximating standardization in errors	4
3	Most words are not spelled conventionally but demonstrates an emerging knowledge of common spelling patterns	3
2	Represents most sounds in words and most high frequency words are spelled incorrectly	2
1	Represents some sounds in words	1
0	Message is not discernable	0

Appendix D

Literacy Squared® Qualitative Analysis of Student Writing

Bilingual Strategies

	(Spanish → English)	(English → Spanish)	Spanish ←→ English (bidirectional)
DISCOURSE ❑ *Rhetorical structures* (first, next, last) ❑ *Punctuation* (signals awareness of code switches- *me gusta* "basketball," or ¡Run fast!)			
SENTENCE/PHRASE ❑*Syntax* (subject omission, word order- the bike of my sister) ❑*Literal Translations* (*agarré todas bien*/I got them all right) ❑ *Code-switching* (*no puedo hablar* in just one language)			
WORD LEVEL ❑ *Code-switching* ❑ *Loan words* (soccer, mall) ❑ *Nativized words* (spláchate/splashed)			
PHONICS Spanish→ English (japi/happy) English → Spanish (awua/*agua*) Spanish ←→ English (bihave/behave, lecktura/*lectura*)			

Developmental Language Specific Approximations

SPANISH	ENGLISH
Structural elements, syntax, spelling, hypo/hyper segmentation	Structural elements, syntax, spelling, hypo/hyper segmentation

Appendix E

Figure 1. Distribution of Frequencies of Spanish Content Scores for Students in Grades 1 to 5 for the 2010–2011 School Year
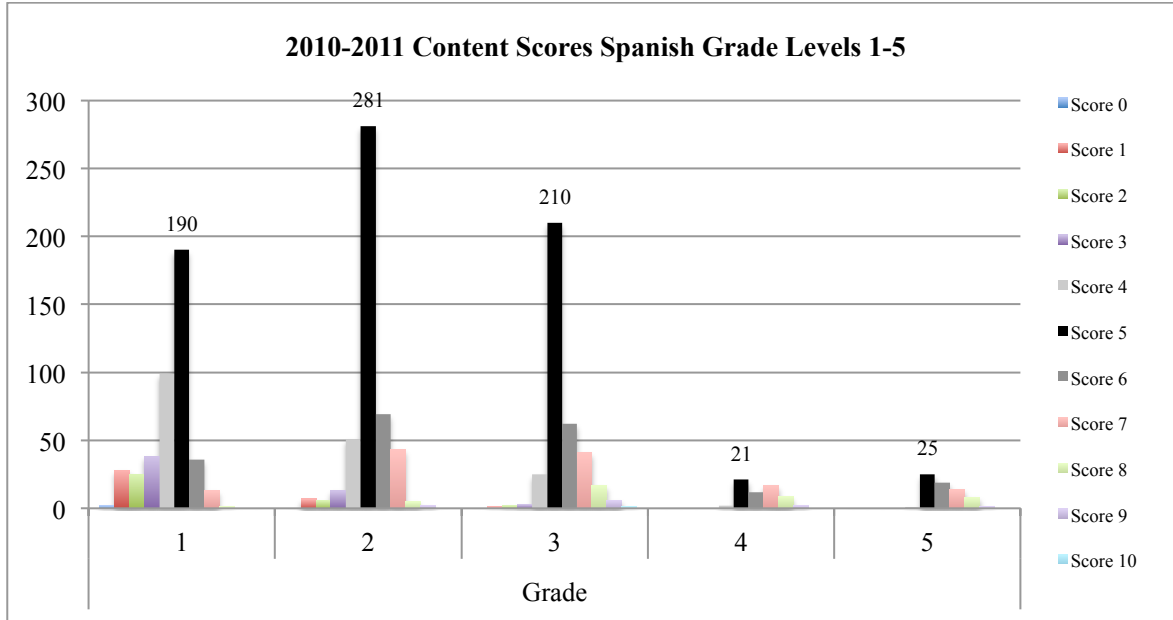
Figure 1.a. Distribution of Frequencies of English Content Scores for Students in Grades 1 to 5 for the 2010–2011 school year
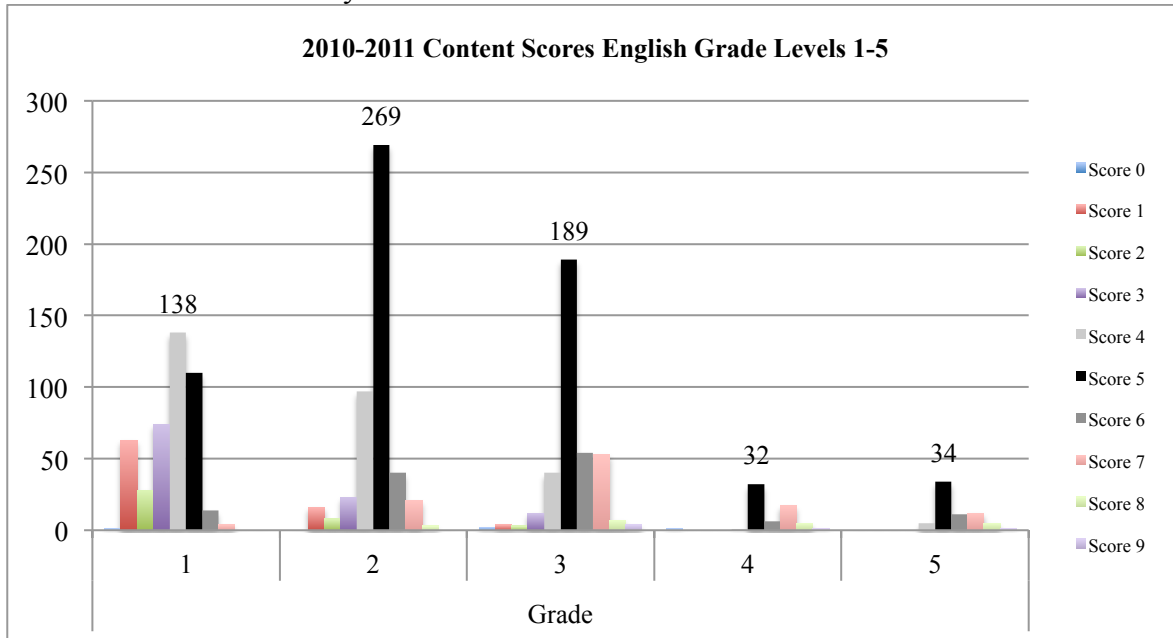
Appendix F

Same Student´s Writing Samples for Grade levels 2 and 3, Both Different Levels of
Performance, Both Scored 5 in Content

665478   3rd grade   2010-2011

Write about the best thing that has ever happened to you. Why was it the best thing?

The best thing

The best thing that a have is of a cat
my finger and because a play with
my sisters? You like to play with your
sisters?

Other thing is that my mom buy
me a boll and a play with my ba-
ll? You like the bolls?

And because a go to california
to bisit my cosent and my dad go
with me to califarnia and my
mam to.

Other is that a got much toys
than my sister and a play with
old the toys and a eat much
a play with my dad.

665478   2nd grade   2009-2010

What do you like to do at recess? Why?

When I am outside, a play
run races. And I am fast.
Next I play ghost because a am
the ghost. Later I run araud the
school because a see the boys
play soccer. Last I play tag weth
my friends because a run fast
and a tag wan boy, and hi tag me
and a tag ader boy.

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Appendix G

Coding First Iteration Grade 1

CL_ENG_mechanics_comma use
CL_ENG_sentence_literal_intersentential code switching
CL_ENG_sentence_literal_translation
CL_SPA_approx_literal translation
CL_SPA_word_codeswitch
ENG_alfabetico
ENG_appox_mechanics_capital letter
ENG_appox_mechanics_period
ENG_approx_ mechanics_capital letter_propernames
ENG_approx_ mechanics_not readable
ENG_approx_ mechanics_present tense third person
ENG_approx_grammar_modal verb use
ENG_approx_grammar_preposition
ENG_approx_grammar_sentence order
ENG_approx_grammar_Verb misuse
ENG_approx_sentence_hyposegmentation
ENG_approx_sentence_incomplete
ENG_approximation_ mechanics_no internal punctuation.
ENG_approximation_not readable
ENG_approximation_rhetorical_ exclamation marks
ENG_approximation_sentence_ fragmented
ENG_approximation_sentence_ NO sentence
ENG_inconcluso
ENG_mechanics_apostrophe
ENG_pre/silabico
ENG_silabico
ENG_silabico/alfabetico
ENG_strength word conjunction
ENG_strength_ mechanics_ comma use
ENG_strength_ mechanics_ period
ENG_strength_ mechanics_capital letter_propernames
ENG_strength_mechanics_apostrophe
ENG_strength_mechanics_capital letter
ENG_strength_rhetoric_transition word
ENG_strength_sentence _oracion coordinada_usando conjuncion
ENG_strength_sentence_ simple
ENG_strength_sentence_additive
ENG_strength_sentence_adverbial_causal
ENG_strength_sentence_adverbial_sustantive
ENG_strength_sentence_compound
ENG_strength_sentence_conditional tense
ENG_strength_sentence_coordinada_explicativa
ENG_strength_sentence_coordinated_alternative
ENG_strength_sentence_coordinated_using_conjunction
ENG_strength_sentence_intro
ENG_strength_sentence_modal verb
ENG_strength_sentence_need_research_
ENG_strength_sentence_prepositional phrase
ENG_strength_sentence_SEGMENTATION
ENG_strength_sentence_subordinada_adverbial_de modo
ENG_strength_sentence_subordinada_adverbial_temporal
ENG_strength_word_ adjective
ENG_strength_word_additive details
ENG_strength_word_adverb
ENG_strength_word_collocations
ENG_strength_word_condicional
ENG_strength_word_modal verb
ENG_strength_word_preposition
ENG_strength_word_pronouns
ENG_word_sentence_hypersegmentation
SPA_alfabetico

SPA_approx_grammar_conjuncion_use
SPA_approx_mechanics_capital letter proper name
spa_approx_notreadable
SPA_approx_rhetoric_exclamation mark

SPA_approx_sentence_hyposegmentation
SPA_approx_sentence_incomplete
SPA_approx_word_hypersegmentation
SPA_approximation_ mechanics_capital letter
SPA_approximation_ mechanics_no internal punctuation.
SPA_approximation_ mechanics_NO period
SPA_approximation_grammar_verb tense
SPA_approximation_not readable
SPA_approximation_sentence_ fragmented
SPA_approximation_sentence_ NO sentence
SPA_INCONCLUSO
SPA_mechanics_accent marks
SPA_presilabico_alfabetico
SPA_silabico-alfabetico
SPA_strength_ mechanics_ comma use
SPA_strength_ mechanics_ period
SPA_strength_ mechanics_capital letter_propernames
SPA_strength_mechanics_capital letter
SPA_strength_rhetoric_exclamation mark
SPA_strength_sentence _oracion coordinada distributiva
SPA_strength_sentence _oracion coordinada_usando conjuncion
SPA_strength_sentence_additive
SPA_strength_sentence_adverbial_temporal
spa_strength_sentence_conclusion
SPA_strength_sentence_coordinada
SPA_strength_sentence_coordinada adversativa
SPA_strength_sentence_coordinada disyuntiva
SPA_strength_sentence_intro
SPA_strength_sentence_need_research_
SPA_strength_sentence_SEGMENTATION
SPA_strength_sentence_simple
SPA_strength_sentence_subordinada_adverbial_causal
SPA_strength_sentence_subordinada_adverbial_concesiva
SPA_strength_sentence_subordinada_adverbial_consecutiva
SPA_strength_sentence_subordinada_adverbial_de modo
SPA_strength_sentence_subordinada_adverbial_finales
SPA_strength_sentence_subordinada_adverbial_local(lugar)
SPA_strength_sentence_subordinada_adverbial_temporal
SPA_strength_word_adjective
SPA_strength_word_adverb
SPA_strength_word_aumentativos
SPA_strength_word_conjunction
SPA_strength_word_preposition
SPA_strength_word_pronombre
SPA_strength_word_use of negative
Spa_strength_word_verbo condicional

Appendix H

Text Genre Comparison: Narrative and Explanatory Text

Grade	Narrative Text	Explanatory Text
1	Establishes the situation with the opening sentence Recounts two or more appropriately sequenced events Includes some detail regarding what happened Uses temporal words to signal events order Provides some sense of closure Demonstrates growing commands of some of the conventions of standard written English	Names the topic (my big book about Spain) Supplies facts about the topic Provides some sense of closure Demonstrates commands of some of the conventions of standard written English
3	Establishes a situation and introduces the narrator Organizes an event sequenced that unfolds naturally and uses temporal words and phrases to signal event order Uses dialogue and description of characters' actions, thoughts, and feelings to develop experiences and events or show response of characters situations Provides a sense of closure Demonstrates commands of some of the conventions of standard written English (with occasional errors that do not interfere materially with the underlying message)	Introduces a topic Creates an organizational structure (using headers) that groups related information together Develops the topic with facts and details Uses linking words and phrases to connect ideas with categories of information Provides a conclusion section Demonstrates commands of some of the conventions of standard written English (with occasional errors that do not interfere materially with the underlying message)
5	Orients the reader by establishing a situation and introducing the narrator Organizes an event sequence that unfolds naturally and uses a variety of transitional words phrases and clauses to manage the sequence of events Uses narratives techniques to develop experiences and events or show the responses of character and situations Uses concrete words and phrases and sensory details to convey experiences and events precisely Provides a conclusion that follows from the narrated experiences or events (emphasizing closure by the use of sentence fragments) Demonstrates good commands of the conventions of standard written English (with occasional errors that do not interfere materially with the underlying message)	Introduces the topic clearly, provides a general observation and focus, and groups related information logically Develops the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic Links ideas within and across categories of information using words, phrases, and clauses Uses precise language and domain specific vocabulary to inform about or explain the topic Demonstrates good commands of the conventions of standard written English (with occasional errors that do not interfere materially with the underlying message)

Note: Adapted from the CCSS Appendix A (Council of Chief State School Officers 2012, pp.23–35).

Appendix I

Summary of SALT Transcription Software[5]

1. **Transcription Format**

C Each entry began with the symbol C to denote the speaker or writer

2. **End of Utterance Punctuation**
(.) Period, statements
(!) Exclamations
(?) Questions

3. **Unintelligible Segments**
X was used for unintelligible words, XX for unintelligible segment, XXX, for unintelligible utterance

4. **Bound Morphemes**. Words which contains "/" indicated the word is contracted, conjugated, inflected, or pluralized

English

/S	Plural. Examples: baby/s
/z	Possessive: Example Dad/z
/ED	Past tense. Example: love/ed
/3s	3rd person singular verb form: Example: go/3s
/ING	verb inflection: Exaple: go/ing
/N'T	Negative contractions: Example: do/n't
/'s	Contractives: Example He/'s

Spanish

/S	Plural. Example: casa/s

5. Omissions. Partial words, omitted wods, omitted bound morphemes, and omitted pronominal clitics were denoted by an asterisk (*)

*	preceding a word indicated that an obligatory word was omitted. Example: give it *to me
/*	following a slash the * is then followed by the bound morpheme which was omitted, indicating the omission of an obligatory bound morpheme. Example: Go/*es fast.

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[5] Retrieved from https://www.saltsoftware.com/salt/TranConvSummary.pdf.

6. Linked words. The underscore "_" was used to link multiple words so they are treated as a single word. Examples include titles of movies, books, and proper names. Example: Harry_pottter

7. **Root Identification**. The vertical bar "|" was used to identify the root word.
English
Non-words used in error   Example: C He goed|go[EO:went] by himself|himself [EW:himself]
Shortened words   Example: C I like him cuz|because he is nice

Spanish use
Inflected forms   Example: habia|haber una vez un niño que tenia|tener un perro
Non-words used in error   Exampe: Yo comio|comer[EW:comi]

8. **[Codes].** Codes were used to mark words or utterances. Codes were placed in brackets [] and cannot contain blank Spaces.

a. Codes used to mark errors:
[EW:__] used to mark word-level errors , example: C He were|was[EW:was] look/ing.
[EW] used to mark extraneous words, example   C And the boy is a[EW] sleeping.
[EU] used to mark utterance error, example   C And they came to stop/ed [EU]

b. Other codes used:
[F] used to mark fragments, example   C And everbody [F]
[CS] used to mark code switch, example   C I saw him in the ventana[CS]
[WO] used to mark non-standard word order   C And then fell down the boy [WO]
[X] used to mark Spanish reflexive pronouns   C El niño se[X] fue a casa.
[CU] used to mark correct utterance   C I had a great day [CU]
[SI] Subordination index, count clause   C I went to school [SI-1]

Fully transcribed sample English

+ Grade: 2
+ Context: Writing
C I will[EmodalMU] be my mom becaus|because I will[EW:would][EmodalMU] clean evriting|everything [EU] [SI-2].
C and I love to clean a lot [CU] [SI-1].
C but I have school [CU] [SI-1].
C If I dont|don't have school I will[EmodalMU] clean eveyting|everything [CUX] [SI-2].
C Sometimes my mom let/3s me coock|cook when she is sick [CU] [SI-2].
C I make her sleep [CU] [SI-1].
C and I clean [CU] [SI-1].
C and I will[EmodalMU] clean my romm|room [CUX] [SI-1].
C and I can watch tv sometimes [CU] [SI-1].
C and a|I will[EmodalMU] go shaping|shopping for food [CUX] [SI-1].
C I will[EmodalMU] need to coock|cook [CUX] [SI-1].
C and I will[EmodalMU] go shaping|shopping again for clohes|clothes and shoe/s like toms red_toms sparkaly|sparkly toms and black toms and sandils|sandals [CUX] [SI-1].

Fully transcribed sample Spanish

+ Grade: 2
+ Context: Writing
C Mi amiga|| se|| llama|llamar Adilene y es|ser mi mejor amiga|| porque juagamos|jugar junta||/s [CU] [SI-3].
C y hablamos|hablar [CU] [SI-1].
C miramos|mirar animalitos|animal/s [CU] [SI-1].
C tambien karla es|ser mi mejor amiga|| [CU] [SI-1].
C y jugamos|jugar juego||/s junta||/s [CU] [SI-1].
C hablamos|hablar [CU] [SI-1].
C Karla, Adilene, Alejandra, Lizbeth, Andrea, Nicole, *y[SOMConj] Angelina me|| hacen|hacer sentir bien [EU] [SI-1].
C y son|ser mis mejores|mejorar amiga||/s [CU] [SI-1].
C Ellas juegan|jugar conmigo [CU] [SI-1].
C Ellas son|ser mis mejores amiga||/s porque son|ser buenas conmigo [CU] [SI-2].

Codes:
[EU] Error utterance
[CU] Correct utterance
[CUX] utterance with acceptable grammatical approximation
[SI-1] Subordination Index clause= 1
"|"= misspellings, example; everything|everything
[EmodalMU]= English Modal MisUse
[SOMConj]= Spanish OMmision Conjunction
*y= omission conjunction "y"

Approximations Examples

1. Grammatical Concordance Category

Coding

Code	Definition	Example
Subject-verb agreement–SPA [SCohVC]	Verbal coherence: The utterance does not present subject-verb agreement. The verbal inflection is in discordance with the tense.	Mi/*s[SCohG] mejor/*es[SCohG] amigo/*s[SCohG] es|ser[EW:son][SCohVC] Xavr|Xavier i|y juan Diego
Subject-verb agreement–ENG [ECOhVC]	English verbal coherence: The utterance does not present a subject-verb agreement. The verbal inflection is in discordance with the tense.	If I be[EW:were] [ECohVC] nice only
Subject-verb agreement present Tense–ENG [PT3P]	English verbal coherence present tense: The utterance does not present a subject-verb agreement. The verbal inflection is in discordance with the tense.	…and that persn|person want/*3s[PT3P] to be me [EU].
Extraneous word–SPA [EW]	Extraneous word	Siempre sabe|saber lo[EW] que decir cuando lo necisitas|necesitar [EU] [SI-2].
Extraneous word–ENG [EW]	Extraneous word	and to[EW] because he wear/3s really weird super_hero|superhero clothing.
Omitted words–SPA*	An obligatory word was omitted	Y cuando yo *me[SOMreflex] siente|sentir[EW:siento][SCohVC] mal me|| dice|decir todo esta|est· bien [EU] [SI-2].
Omitted words–ENG*	An obligatory word was omitted	*and [EOMconj] help/3s other people when they are in danger

Approximations Examples

1. Grammatical Concordance Category

Code	Definition	Example
Word order–SPA [WO]	Nonstandard word order no cross-linguistic influence	Unas‖ a otras vez/s[WO] quiere|querer compartir sus dulces o juegetes|juguetes conmigo [EU] [SI-1].
Word order–ENG [WO]	Nonstandard word order no cross-linguistic influence	If I be[EW:were] [ECohVC] nice only
Word choice–SPA [SWC]	Ineffective word choice	it is a really good name for an artist or music[EW:musician][EWC] like her [EU].
Word choice–ENG [EWC]	Ineffective word choice	C I will|would[EmodalMU] choce|choose a police[EW:policeman][EWC] because my brather|brother is a police[EW:policeman][EWC] [EU] [SI-2].

2. Grammatical Omissions Category

Code	Definition	Example
Clause-SPA [SOMCL]	The utterance is missing a subject and predicate in the utterance.	Gilberto *CLAUSE[SOMCL] por_que|porque juega|jugar con_migo|conmigo [EU] [SI-1].
Clause-ENG [EOMCL]	The utterance is missing a subject and predicate in the utterance.	*PHRASE[EOMCL] Joselyn_R and X cos|because deor|they are my frins|friends [EU].
Preposition-SPA [SOMprep]	The utterance is missing a preposition (e.g., a).	[EW:En][SOMprep] El‖…l cuarto‖ grado‖ si pone|poner a_tension|atenciÛn en la clase [EU] [SI-1].
Preposition-ENG [EOMprep]	The Utterance is missing a preposition (e.g., to).	I wan|want *to[CLPO] be a difrent|different person bcaus|because a|I like jau|how the difrent|different person du|do

Approximations Examples

2. Grammatical Omissions Category

Code	Definition	Example
Verb-SPA [SOMverb]:	The utterance is missing a verb to make it grammatically correct.	Eddie *es[SOMverb] mi amigo porque siempre ayuda a otros niÒos [EU] [SI-1].
Verb-ENG [EOMverb]	The utterance is missing a verb to make it grammatically correct.	I would be Lionel Messi because he *is[EOMverb] cool [EU] [SI-1].
Subject-SPA [SOMsubj]	The utterance is missing a personal pronoun or a noun acting as subject in the utterance.	Otra opinión de mi mejor *amigo[SOMsubj] es|ser que es|ser chistso porque cuando el|Èl me|| hace|hacer un chiste|| simpre|siempre me|| hace|hacer reir [EU] [SI-4].
Subject-ENG [EOMsubj]	The utterance is missing a noun in the utterance.	C most of the time she has her hery|hair in a pony *tail[EOMsubj] or luse|loose [EU] [SI-1].
Pronoun-SPA [SOMPron]	The utterance is missing a personal pronoun or a noun acting as subject in the utterance.	C TambiÈn, ellas siempre van|auxir a hacer|a ser mis mejores amiga||/s siempre en cualquier lado|| y en *cualquier[CLPO] grado|| [EU] [SI-1].
Pronoun-ENG [EOMpron	The utterance is missing a noun in the utterance.	I would like to be Messi because *he[CLSO] get/3s paid a lot [EU] [SI-1].
Article-SPA [SOMart]	The utterance is missing an article (e.g., el, la, los).	Tambien juegan|jugar con_migo|conmigo en *el[CLAO] recreo|| [EU] [SI-1].
Article-ENG [EOMart]	The utterance is missing an article (e.g., the, a, an).	in|and if I wear|were him I would be *the[CLAO] king of socer|soccer [EU] [SI-2].
Reflexive pronoun-SPA [SOMreflex]	The utterance is missing a reflexive pronoun (e.g., me, te, se, nos).	Naca|nunca *se||[x][SOMreflex] aparte|apartar de mi [SI-1] [EU].

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Approximations Examples

2. Grammatical Omissions Category

Code	Definition	Example
Conjunction-SPA [SOMconj]	The utterance is missing a conjunction to connect coordinated clauses.	Karla, Adilene, Alejandra, Lizbeth, Andrea, Nicole, *y[SOMConj] Angelina me‖ hacen|hacer sentir bien [EU] [SI-1].
Conjunction-ENG [EOMconj]	The utterance is missing a conjunction to connect coordinated clauses.	My favorite frute|fruit/*s is[EW:are][EcohG] mango, strabery, orene, *and[EOMconj] apple [EU] [SI-1].
Modal verb–ENG [EOMmodal]	The utterance is missing a modal verb when expressing in a condition mood.	I *would[EOMmodal] like to be chas|just one day me [EU][WO].

3. Grammatical Misuse Category

Code	Definition	Example
Verb-SPA [SverbMU]	Spanish verb Misuse: The utterance presents a verb that is not effective in the communicative context.	hemos|haber sido|ser compañero/s desde‖ que estabamos[EW:eramos][SverbMU] unos ñino|niños [EU] [SI-2] [FR].
Verb-ENG [EverbMU]	English verb Misuse: The utterance presents a verb that is not effective in the communicative context.	If I could be someone else for one day I would be my brather|brother because he has[EW:is][EverbMU] 12 year/s old[CLLT] [EU] [SI-3].
Pronoun-SPA [SpronMU]	Spanish pronoun misuse: The utterance presents a pronoun misuse.	siempre va|auxir hacer|a ser el[EW:lo][SpronMU] mejor con mi amiga‖ Karina_H [CLLT] [EU] [SI-1].
Pronoun-ENG [EpronMU]	Spanish pronoun misuse: The utterance presents a pronoun misuse.	The person what[EW:that][EpronMU] i will|would[EmodalMU] like to be is jaideu|Jaideu [EU] [SI-1].

Approximations Examples

3. Grammatical Misuse Category

Code	Definition	Example
Preposition-SPA [SprepMU]	Spanish preposition misuse: The utterance includes a preposition misuse.	Tersero|tercero[TWPH], t·mbien|tambiÈn jugamos|jugar a[EW:al][SprepMU] futbol|fˋtbol y a[EW:al][SprepMU] futbol_americano o Basketball [EU] [SI-1].
Preposition-ENG [EprepMU]	English preposition misuse: The utterance includes a preposition misuse.	ai|I uant|want tu|to du|do[EW:be][EverbMU] tichr|teacher for[EW:so][EprepMU] ai|I an|can sou|show the boy/s ean|learn gros|English [EU] [CLLT].
Possessive-ENG [EpossMU]	English possessive misuse: The utterance presents a possessive misuse.	Also she is ey|a go|God/*s[EOMposs] sister [EU] [SI-1].
Modal verb–ENG [EModalMU]	English modal misuse: The utterance presents, for example, the use of an auxiliary verb (e.g., will) instead of a modal verb when expressing in conditional mood.	If I be[EW:were][ECohVC] nice only[WO] I can[EW:could][EmodalMU] go to her house [EU] [SI-2].
Reflexive pronoun–SPA [SreflexMU]	Spanish reflexive pronoun misuse: The utterance presents a reflexive pronoun misuse (e.g., me,te, se).	Cuando no los[EW:nos][SreflexMU] vemos|ver TambiÈn puedemos|poder ir a un lado|| [EU].
Conjunction-ENG [EconjMU]	Conjunction misuse	No examples in the data
Conjunction-SPA [EconjMU]		No examples in the data

Approximations Examples

4. Cross-Linguistic Approximations

Code	Definition	Example
Rhetorical		
Punctuation–SPA [CLpunct]	Spanish cross-language punctuation: The utterance presents examples of punctuation using the other language rules.	Not present in the data
Punctuation–ENG [CLpunct]	English cross-language punctuation: The utterance presents examples of punctuation using the other language rules.	C ¡Hi[EW:!°][CLPunct] [SI-X]!
Sentence level		
Literal translation–SPA [CLLT]	Spanish cross-language literal translation: The utterance presents an ineffective phrase or sentence that is a literal translation derived from the other language.	C siempre va|auxir hacer|a ser el[EW:lo][SpronMU] mejor con mi amiga|| Karina_H [CLLT] [EU] [SI-1].
Literal translation–ENG [CLLT]	English cross-language literal translation: The utterance presents an ineffective phrase or sentence that is a literal translation derived from the other language.	1. Other times[CLLT] I like to be chas|just me [CU]!
Word order–SPA [CLWO]	Spanish cross-language word order: The utterance presents bidirectional syntax, English syntax applied to English and vice versa.	C Su favorito color es|ser rosado|| [CLWO] [EU] [SI-1].

Approximations Examples

4. Cross-Linguistic Approximations

Sentence Level		
Code	Definition	Example
Word order–ENG [CLWO]	English cross-language word order: The utterance presents bidirectional syntax, English syntax applied to English and vice versa.	C and also making awesome desins|designs of clothes[CLWO] [EU] [SI-0].
Intersentential-ENG [ISCS]	Intersentential code switching: code switching that occurs at sentence boundaries.	C el|Èl me||[x] dijo|decir "helo|hello best friend [CS]"[ISCS] [CU] [SI-1].
Word level		
Code	Definition	Example
Code switch–SPA [CS]	Spanish code switch: The utterance presents instances of code switching to connect text.	C cuando entre|entrar en la cancha no sabia que hacer [CU] [SI-2]. C so[CS] me||[x] salÌ|salir [EU] [SI-1].
Code switch–ENG [CS]	Spanish code switch: The utterance presents instances of code switching to connect text.	No present in the data
Loan words–SPA [CSLW]	Spanish code-switch loan word: The utterance presents a word or a label that although has a language-specific equivalent, the word represents students' social and academic contexts (e.g., gym).	1. C Mi mejor amiga|| es|ser Isabella y Nadiah porque siempre juegan|jugar con_migo|conmigo como|| a Friz_tag[CSLW] y a Jaide_go_sic_tag[CSLW].
Loan word–ENG [CSLW]	English code-switch loan word: The utterance presents a word or a label that although has a language-specific equivalent, the word represents students' social and academic contexts (e.g., Tienda [store]).	C he talk/3s in Ingles[CSLW] and Spanish [CU] [SI-1].

Approximations Examples

4. Cross-Linguistic Approximations

Word Level		
Code	Definition	Example
Nativized word–SPA [CLNW]	Spanish code-switch nativized words: word that originates in one language and is morphologically changed to fit the structure of the other language.	C y nunca me‖ disturba[EW:molesta][CLNW] a mi cuando yo esta|estar[EW:estoy][SCohVC] trabajando|trabajar [EU] [SI-2].
Nativized word–ENG [CLNW]	Spanish code-switch nativized words: word that originates in one language and is morphologically changed to fit the structure of the other language.	Not present in the data

Appendix L

Cohesion and Coherence Examples

The texts in the study were analyzed using text analysis procedures for features as noted by Halliday & Hassan (1976) as well as using the analytical framework proposed by Montaño-Harmon (1988, p. 26). According to Halliday & Hassan (1976), the "basic concept that is employed analyzing the cohesion of a text is that of a TIE… a tie is a complex notion, because it includes not only the cohesive element <u>itself</u> but also which is <u>presupposed</u> by it" (p. 329). A tie is considered a logical relationship between these two elements.

An Example 1 from Halliday & Hassan (p. 340):

The last word ended in a long bleat, so like a sheep that **<u>Alice</u>** quite started (1). **She** *looked* at the Queen, who seemed to have suddenly wrapped herself in wool (2). *Alice* rubbed her eyes, and *looked* again (3). **She** couldn't make out what had happened at all (4). Was **she** in a shop (5)? And was that really—was it really a *sheep* that was sitting on the other side of the counter (6)? Rub as she would, she could make nothing more of **it** (7).

1) Do not code sentence 1.

2) In sentence (2), **she** (personal reference) refers to **Alice** in sentence (1). Simplest form of presupposition, relating the sentence to that which immediately precedes it.

3) In sentence (3), *wool* refers to sheep (Collocation), *Alice* (reiteration: same word), *looked* (reiteration: same word), *again* (conjunction: repetitive).

According to Halliday and Hassan (1976), "cohesive ties between sentences stand out more clearly because they are the ONLY source of texture, whereas within the sentence there are the structural relationships as well" (p. 9). For this reason, coding for cohesion and coherence

in emerging bilingual students´ writing was mainly done across modified c-units, with of course some exceptions for instances of lexical cohesion.

The categorical linguistic definitions for cohesion and coherence included in this analytical framework were taken from Montaño-Harmon (1988), Jackson (1982), and Esparza Torres (2006).

Cohesion: Lexical Relationships

According to Halliday & Hasan (1976), lexical cohesion is the "cohesive effect achieved by the selection of vocabulary" (p. 276). "Lexical cohesion refers to the use of the same, similar or related words in successive sentences, so that later ocurrences of such words refer back to and link up with previous ocurrences (Jackson, 1982). According to Halliday & Hasan (1976), there are two types of lexical cohesion: reiteration and collocation.

1) Reiteration or *Recurrencia* in Spanish: "is a form of lexical cohesion which involves the repetition of a lexical item" (Halliday & Hassan, 1976), and this can be done in one of four different ways: repetition, use of synonyms, semantically superordinate word, and general class word. However, other subcategories are also described for the Spanish language.

   a. Repetition or *copia* in Spanish: is the exact same word is used in the subsequent sentence.

Example 1: He kicked the **ball**. He threw the **ball**.
Ejemplo 2: El **viajero**, de Guadalajara sale a pie por la calle Zaragoza. El **viajero** anda por la cuneta, cerca del río (Example 1 taken from Esparza Torres, 2006, p. 70)

   b. Synonyms or near-synonyms: a word that means exactly or nearly the same as another word in the same language.

Example 1: He worked the **whole** day. He took **all** day to finish.
Ejemplo 2: El niño de la **pelambrera roja**. El niño **pelirrojo**.

   c. Superordinate: A word or concept that represents a superior order category within a system of classification (Dictionaty Oxford, 2011). Superordinate are more general terms placed higher in the lexical taxonomy: **the climb** replaced by **the task**. Within this category of superordinates, I also included the

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categories of *hyponyms* (hiponimia in Spanish) and *hypernym* (hipronimia in Spanish).

Example 1: She played with a ***basketball*** (hyponym). She threw the ***ball*** (hypernym) high.
Ejemplo 2: En los alrededores se veían ***olivos***, ***almendros*** y ***naranjos*** (Hiponimos). Todos esos **arboles** (hiperonimos) son de plantación reciente (Example 1 taken from Esparza Torres, 2006, p. 71).

d. General class: A word may be replaced in a following sentence by a 'general word' which describes a general class of objects (Jackson, 1982, p. 105). According to Jackson (1982), general words referring to humans could be: *people, person, man, woman, child, boy, girl.* Referring to non-human animates: *creature.* Referring to inanimate concrete nouns: *thing, object.* Referring to inanimate concrete mass: *stuff.* Referring to inanimate abstract nouns: *business, matter, affair.* Referring to action is: *move.* Referring to places: *place*. And referring to facts: *question, idea.*

Example 1: I turned the ***ascent*** of the peak. The ***thing*** is perfectly easy (Example 1 taken from Halliday & Hassan, 1976, p. 279)..
Ejemplo 2: ***José*** tiene excelente calificaciones. Este ***niño*** es un genio.

2) Collocation: "cohesion that is achieved through the association of lexical items that regularly co-occur" (Halliday & Hassan, 1976). These words are likely to occur within the same context or environments. According to Halliday and Hassan (1976) the lexical relationships could be: antonyms (i.e., black…white), ordered series (Tuesday… Thursday), unordered lexical sets (i.e., basement…roof), parts to whole or *Sinecdoques* in Spanish (i.e. car…brakes), or words that tend to appear in similar contexts or environments or *meronimia* in Spanish (i.e., door…window).

Example 1 1: Then I would go to the **gym**, and do **exercise** to **run** faster.
Ejemplo 2: Jorge se porta bien en la ***escuela***. Siempre pone atencion en la ***clase***, en la ***cafeteria***, en el ***recreo***, y en ***gimnasio***. Siempre hace la ***tarea***.

Cohesion: Syntactic Relationships

Halliday &Hasan (1976) identified five subcategories of lexical and syntactical cohesion. Besides lexical cohesion, Halliday and Hassan (1976) described four types of syntactical cohesion, or the linking of sentences together using grammatical features of language: reference, substitution, ellipsis, and conjunction.

1. Reference by type: Reference involves the use of items that cannot be interpreted in their own right, but which make reference to something else for their interpretation (Jackson, 1982, p.182)
   a. Personal reference: the use of personal pronouns, possessive pronouns and possessive identifiers to refer to something else.

Example 1 1: One person I would like to be is my **brother**. I would like to be my brother because **he** can go anywhere he wants with **his** car.
Example 1 2: Mi mejor amiga es **Sonya** porque nunca se enoja conmigo y siempre me comprende. Y cuando yo estoy en problemas **ella** esta alli para ayudarme.

      b. Demonstrative reference: a form of verbal pointing to indicate proximity of ideas in a text by use of demonstratives (this, that) and adverbs (here, there, now, then).

Example 1 1: I want to be a **person** who **rescues poor animals**. When I was little girl I watched animals lost by **their** people. I really want to be **that** person just for a day.
Example 1 2: Mi mejor amiga es **Jazmine**. Nada mas quiero qu est feliz para siempre en su vida. **Esa** es mi mejor amiga.

      c. Comparative reference: general comparative reference to express the identity, similarity or difference between things or particular comparative reference to express a qualitative or quantitative comparison.

Example 1 1: They just bought a house in the Heights. I wish my parents had *such* a house. [Example 1 take from Jackson (1982)].
Example 1 2: Mi mejor amigo es Misel porque jugamos juntos. **Vamos al parque y jugamos a los jueguitos como a los columpios a la resbaladilla y los monkey bars**. Me gustaria ir con Misel **otra** vez a jugar los juegos.

2. Reference by Position/situational: refers to the position in the text to which the reference word points for meaning in relation to the location of the reference. According to Jackson (1982), reference may be of two kinds: exophoric and endophoric. Jackson (1982) compares exophoric reference outside the text to endophoric reference, which is reference to items within the text, and states that only endophoric reference is cohesive. Endophoric reference could be cataphoric or anaphoric.

      a. Exophoric reference: the reference points outside of the text for meaning for the speaker/writer assumes that the listener/reader has the background knowledge to get meaning from the reference.

Example 1 1: (Exophoric) I want to have so much fun because I can be good and be nice for our friendship, and be good with all my friends for only a day. If I were nice only, I could go to **her** house. (The referent is situational and outside the text)
Example 1 2: (Exophoric) A él le gusta dibujar casi todas las cosas que me gustan, futbol, corre y dibujar. Y esos son los que más me gustan, imaginate **lo** demás.

      b. Anaphoric reference: which refers back to some item already stated in the text.

Example 1 1: If I can be a lawyer with my friend we can work together, work really hard. I can help **people**. **They** need help with **their** bills.

Example 1 2: Mi mejor amigo es **Raúl**. <u>**Él**</u> es un gran amigo.

      c. Cataphoric reference: reference which points forward to something which will be stated next in the text.

Example 1 1: **This** may be weird but, <u>**I want to be pushed to try my best**</u>, meanwhile doing something I love.
Example 1 2: <u>Mi **otro** mejor amigo es **Laner** porque a él le gusta jugar soccer.</u>

3. Substitution: a grammatical relation defined as a replacement of one linguistic item by another (Halliday & Hassan, 1976, p. 88), so that the substitute item is interpretable only by reference to the original longer item. There are three kinds of substitution: nominal, verbal, and clausal.

      a. Nominal: the substitution of a noun as head of a noun phrase by one or ones, or the substitution of a whole noun phrase by the same (Jackson, 1982, p. 103).

Example 1 1: I want to dance everyday until I am sore. I want to be the <u>***one***</u> who sets an Example 1 to anyone.
Example 1 2: Mi mejor amigo en todo el mundo es <u>***Giovanny***</u> porque tenemos mucho en común como jugamos los mismos juegos. Y tenemos los mismo suéteres. También somos tíos los <u>***dos.***</u>

      b. Verbal: The substitution of do for lexical verb.

Example 1 1: Beyonce has so many pretty songs. A lot of people <u>***don't like***</u> her songs, and others <u>***do.***</u>
Example 1 2: Mi mejor amiga es Dafney. Ella es muy creativa. Ella siempre anda <u>***haciendo dibujos***</u> o <u>***creando***</u> diseños. Ella me inspira a levantarme y <u>***hacer***</u> lo mismo.

      c. Clausal: the substitution of so for a positive clause and not for a negative one so that an entire clause is presupposed.

Example 1: Argentina is <u>***a very good team***</u>. And <u>***so***</u> is Barcelona.
Example 1: "Y cuando estoy en problema <u>***ella esta allí para ayudarme***</u>. Por <u>***eso***</u> yo siempre la ayudo también."

4. Ellipsis: similar to substitution, except that the substitution is *nothing* in ellipsis—some grammatical item is left out, yet understood and the sentence is grammatically complete. It is a substitution by zero.

      a. Nominal: The head of a noun phrase, sometimes together with its modifiers, is left out.

Example 1 1: My friend has a big house. The house has three bathrooms. One is in the bottom. The second Ø is in her room. And the third Ø is in her mom's and dad's room.
Example 1 2: Mi mejor amigo es **Joel** porque afuera jugamos a los zombies. Ø es mi mejor amigo porque es de mi edad.

       b.   Verbal: the lexical verb from a verb phrase, and possibly an auxiliary or two is left out.

Example 1 1: John brough some carrots, and Catherine Ø some peas.
Example 1 2: Nos portamos bien. **Estamos** en verde siempre, pero ella a veces Ø en azul.

5.   Conjunctions: refers to specific devices (conjunctions) used for linking one sentence to another. They can be divided in four main categories: additive, adversative, causal, and temporal.

       a.   Additive: adds a sentence as additional information or afterthought, for Example 1 and, also.

Example 1 1: I would like to be just me. And other times I like to be other persons.
Ejemplo 2 2: Mi mejor amigo es Xavier porque juegan conmigo, y porque Xavier no se rie de mi cuando me caigo.

       b.   Adversative: draws a contrast between the two clauses or sentences, for Example 1 but, yet

Example 1: They can score more than that. But the other players got tired.
Ejemplo 2: Estamos en verde siempre, pero ella a veces Ø en azul.

       c.   Causal: makes a causal link between two sentences, for Example 1 because, so, hence.

Example 1: I would like to be Xavier because he goes to the yellow table. And because it is my favorite color.
Ejemplo 2: Mi mejor amigo es Joel porque jugamos a los zombies. Es mi mejor amigo porque es de mi edad.

       d.   Temporal: makes a time link, usually sequential in nature, between one sentence or clause and another, for Example 1 then, after that, while, when.

Example 1: Only if you play around with him, like shake them they would get mad. **Then** that time my cousin said that they were friendly.
Ejemplo 2: Jugamos al Nintendo y **después** vamos a su casa todo el rato.

Coherence: Logical Relationships

According to Montaño-Harmon (1988) a text is both cohesive and coherent. Coherence is achieved by the appropriate use and sequencing of rhetorical devices (Palmer, 1981, as cited in Montaño-harmon, 1988, p. 259). Based on the work by Mackay (1978), which is based on Halliday and Hassan (1976), Montaño-Harmon (1988) listed the basic logical relationships between sentences or clauses in her analytical framework.

1. Topic sentence: the sentence that introduces or summarizes the topic for an entire or total text or for a particular portion of the text.

Example 1: If I could be a person for a day I would be a teacher.
Ejemplo 2: Mi mejor amiga es Ariana porque la conoci en el salon ocho.

2. Enumerative relationship: introduces the order in which points are to be made or the time sequence in which actions or processes that place.

Example 1: The person I would like to be is Jade. The first reason is because she had lots of friends.
Ejemplo 2: Primero te voy a contar quien es mi mejor amigo.

3. Additive relationships: introduces a statement of similarity with what has preceded or reinforces what has been stated by confirming it.

Example 1: If I could be another person I would be my mom. I want to be that person because it could help me when I grow up. Another idea is that I could play with my kids outside when it's sunny or hot day.
Ejemplo 2: Mi mejor amiga es alguien que se llama Jacqueline. Eso es porque me hace reir. Y hace que me sienta feliz. Además, las dos nos las pasamos muy bien juntas.

4. Summative relationship: introduces a summary of what has preceded.

Example 1: I also love the name Gecky G. It is a really good name for an artist or music like her. All these are reasons why I would want to be Becky G.
Ejemplo 2: También nos ayudamos cuando hacemos matemáticas. Por estas razones Lupe es mi mejor amiga del mundo.

5. Resultative relationship: introduces the result or consequence of what preceded.
Example 1: I really wish I could be her for one day. And sing like her. That is because she is my favorite singer.
Ejemplo 2: Y a mi me encanta tener amigas porque son buenas amigas. Y por eso me gusta venir a la escuela porque siempre tienes amigas o amigos.

6. Explicative relationship: introduces an explanation or reformulation of what preceded.

Example 1: I want to be Rosalinda because she is nice. And she is polite. And because she is thankful to other people.
Ejemplo 2: Ellas juegan conmigo. Ellas son mis mejores amigas porque son buenas conmigo.

7. Illustrative relationship: introduces an illustration or Example 1 of what preceded.

Example 1: If I could be someone else for a day I would be a millionaire. I would be a millionaire because I could buy anything I want. Like I want to buy the new Carmelo Jordan shoes because my dad has them.
Ejemplo 2: Y me gustaba lo que hacia mi amigo. Por Ejemplo 2 cuanod mira que hay un niño que puede causar problemas no se junta con él.

8. Contrastive relationship: introduces information in opposition to what preceded or offers an alternative to what preceded.

Example 1: I want to be Shakira. I want to be Shakira because she is bilingual like me. **But** usually she talks more English than Spanish.
Ejemplo 2: Siempre compartimos lo que pesamos. Aunque a veces nos peleamos por cosas sencillas que no valen la pena.

9. Transitional words or phrases: These are explicit discourse markers or linking words and phrases noting the logical relationship of one sentence to another.

Example 1: If I could be someone else I would be my friend Liliana. She is a lot friendly, but I don't see her anymore. But I hope to see her someday.
Ejemplo 2: Mi mejor amigo es Salvador Aguilar. Primero por que es muy chistoso. Segundo no me dice cosas malas. A continuacion le gustan los videos juegos.

10. Deviations (breaks in the development of text): instances when the relationship of one sentence to the preceding one is not clear in that the second sentence breaks the logical sequence of ideas in the text. The writer digresses from the topic or expects the reader to fill in so much information that the reader's comprehension of the text is threatened.

Example 1: And she is pretty. And her mom lets her get whatever she wants.
Ejemplo 2: Melisa es una Buena amiga. La primera vez que la conoci nada mas era por sus juguetes.

11. Conversational markers: words or expressions used for emphasis, for clarification, or as pauses during oral conversation.

Example 1: Hi!, I will tell you if I could be another person for a day.
Ejemplo 2: El es mi mejor amigo porque nos gusta origami. Ojo- al final nos enseñamos de todo de origami.

Appendix M

Table M1. *Across Languages Correlation Matrix for Textual Productivity, Lexical Diversity, and Syntactical Complexity Grade Levels 1–5*

Measure	All Grade Levels	Grade 1 (n= 30)	Grade 2 (n= 30)	Grade 3 (n= 30)	Grade 4 (n= 30)	Grade 5 (n= 30)
Productivity						
TNW	.807**	0.273	.593**	.661**	.750**	.514**
TNMCu	.738**	-0.065	.613**	.468**	.648**	.519**
Lexical diversity						
NDW	.829**	0.498**	.636**	.688**	.770**	.526**
Syntactical complexity						
MLMCu	.305**	0.334	.123	.585**	.187	.321
SI	.222**	.237	.231	.289	.317	.150
%_ACC	.199*	.437*	.061	-.017	.071	.21
%_APPROX	.169*	.437*	.062	-0.07	.08	.24

** Correlation across language is significant at the 0.01 level (2-tailed).
Note. TNMCu = Total Number of Modified C-units. NTW = Total Number of Words. NDW = Total Number of Different Words. MLMCu = Mean Length of Modified C-units. SI = Subordination Index. %_ACC = Percentage of Grammatically Correct Modified C-units. %_APPROX = Percentage of Modified C-units with Grammatical Approximations.

Table M2. *Statistical Significance Summary Textual Productivity, Lexical Diversity, and Syntactical Complexity Grade Levels 1–5*

	Grade 2		Grade 3	
Measure	English	Spanish	English	Spanish
Lexical productivity				
NTW	*p<.001*	*p<.001*	*p<.001*	*p<.001*
TNMCu	*p<.001*	*p<.001*	*p<.001*	*p<.001*
Lexical diversity				
NDW	*p<.001*	*p<.001*	*p<. 001*	*p<.001*
Syntactical complexity				
MLMCu				
SI				
%_ACC	*p<.008*	*p<.007*		*p<.003*
%_APPROX	*p<.007*	*p<.018*		*p<.003*

Note. TNMCu = Total Number of Modified C-units. NTW = Total Number of Words. NDW = Total Number of Different Words. MLMCu = Mean Length of Modified C-units. SI = Subordination Index. %_ACC = Percentage of Grammatically Correct Modified C-units. %_APPROX = Percentage of Modified C-units with Grammatical Approximations

Table M3. *Statistical Significance Summary Textual Productivity, Lexical Diversity, and Syntactical Complexity Grade Levels 1–5*

Measure	Grade 2		Grade 3		Grade 5	
	English	Spanish	English	Spanish	English	Spanish
Reiteration	*p < .001*	*p < .001*	*p < .001*	*p < .003*		*p < .044*
Collocation	*p < .048*		*p < .004*	*p < .019*		*p < .013*

Table M4. *Summary of Syntactical Cohesive Ties: Statistical Significance Compared with Previous Grade Level Spanish and English*

	Level of Significance					
Discourse feature	Grade 2 (n = 30)		Grade 3 (n = 30)		Grade 5 (n = 30)	
	English	Spanish	English	Spanish	English	Spanish
Reference by type						
Personal	*p <. 001*	*p <. 001*	*p <. 003*	*p <. 009*		
Demonstrative		*p <. 040*	*p <. 001*	*p <. 018*		
Comparative						
Reference by position						
Anaphoric	*p <. 003*	*p <. 001*	*p <. 001*	*p <. 003*		
Cataphoric						
Exophoric						
Substitution						
Nominal				*p <. 034*		
Verbal			*p <. 046*	*p <. 001*		
Clausal						
Ellipsis						
Nominal						
Verbal				*p <. 029*		
Conjunction						
Additive			*p <. 025*	*p <. 026*	*p <. 043*	
Adversative			*p <. 014*			
Causal			*p <. 007*			
Temporal			*p <. 002*			*p <. 025*

Table M5. *Summary of Coherence Measures: Statistical Significance Compared with Previous Grade Level Spanish and English*

Discourse feature	Grade 2 (n= 30)		Grade 3 (n= 30)		Grade 4 (n= 30)		Grade 5 (n= 30)	
	English	Spanish	English	Spanish	English	Spanish	English	Spanish
Topic Sentence								
Enumerative								
Additive	$p<.001$	$p<.012$	$p<.016$	$p<.002$				
Summative								
Resultative				$p<.001$				
Explicative			$p<.001$				$p<.001$	
Illustrative			$p<.005$	$p<.001$		$p<.045$		$p<.001$
Contrastive			$p<.029$	$p<.008$				
Conclusive sentence								
Transitional words/ phrases			$p<.003$	$p<.001$				
Conversational markers								
Deviations	$p<.001$					$p<.045$		

Appendix N

Table N.1. *Normal Distribution Values for All Variables With and Without Outliers*

Variable	Language	With Outliers			Without Outliers		
		N	Skewness	Kurtosis	N	Skewness	Kurtosis
productivity							
TNMCu	ENG	150	0.849	1.36	149	.566	.241
	SPA	150	1.14	*2.76	149	.71	.711
TNCL	ENG	150	1.58	*5.29	149	.834	.76
	SPA	150	1.05	*1.71	149	.733	.214
NTW	ENG	150	1.17	*2.84	149	.64	-.0001
	SPA	150	.879	.892	**		
Lexical diversity							
NDW	ENG	150	.488	-0.067	**		
	SPA	150	.389	-0.369	**		
Grammaticality							
MLMCu	ENG	150	.763	*1.99	147	.196	.789
	SPA	150	*2.81	*18.34	148	.31	.709
SI	ENG	150	1.96	*9.11	148	.416	.004
	SPA	150	.609	*4.63	148	-0.174	2.79*
CU	ENG	150	1.17	*2.09	148	.731	.329
	SPA	150	1.05	*2.10	149	.636	.085
EU	ENG	150	1.27	1.8	148	.929	.435
	SPA	150	1.42	*1.95	147	1.21	1.25
%_ACC	ENG	150	-1.61	*2.19	140	-1	.598
	SPA	150	-1.12	.82	**		
%_APPROX	ENG	150	1.61	*2.19	140	1	.598
	SPA	150	-1.12	.82	**		

* = Value Greater than 2. ** = No outliers identified.
Note. TNMCu = Total Number of Modified C-units. TNCL = Total Number of Clauses. NTW = Total Number of Words. NDW = Total Number of Different Words. MLMCu = Mean Length of Modified C-units. SI = Subordination Index. CU = Modified C-units Grammatically Correct. EU = Modified C-units with Grammatical Approximations. %_ACC = Percentage of Grammatically Correct Modified C-units. %_APPROX = Percentage of Modified C-units with Grammatical Approximations.