ENGLISH CONSONANT CLUSTER SPELLING IN BILINGUAL SPANISH-ENGLISH KINDERGARTENERS

by

NICOLE CRUZ DIAZ

(Under the Direction of Hannah Krimm)

## ABSTRACT

The purpose of this study was to evaluate how bilingual children spell initial consonant clusters compared with final consonant clusters. Participants were sixteen bilingual kindergarten children who speak Spanish as their first language and English as their second language. Participants individually completed the Receptive One-Word Picture Vocabulary Test, 4th Spanish-Bilingual Edition (ROWPVT-4:SBE; Martin, 2013) and an experimental spelling test that included 25 words, 17 words with initial consonant clusters and 8 words with final consonant clusters. Words were scored for accuracy of initial and final consonant cluster spelling. A paired samples *t*-test showed that Spanish-English bilingual kindergartens have more difficulty spelling final consonant clusters than initial consonant clusters.

INDEX WORDS: Spelling, Consonant clusters, Bilingual children.

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# DEDICATION

I dedicate my thesis research to all monolingual speech-language pathologists who work with bilingual Spanish-English children who are willing to learn about bilingualism and its relationship with literacy.

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# CHAPTER 1

## INTRODUCTION

Spelling acquisition typically follows a predictable trajectory that is similar across English and Spanish. Several authors have described English spelling development according to stages. For example, Henderson (1985) outlined five stages of spelling development. The first stage is called the preliterate stage. It starts when the child begins to use crayons, understanding that writing is different from drawing. In the preliterate stage, however, the child does not know that they can represent speech with writing. The second stage is called the letter-name spelling stage. At this stage, the child understands that writing is a tool of communication and is aware that they can use letters to represent sounds. The third stage is called the within-word pattern stage. In this stage, the child starts correctly spelling consonant clusters and short vowels and they also start using silent markers (e.g., silent -e). The child accumulates a growing set of memorized spellings during the within-word pattern stage. The fourth stage is the syllable juncture stage. At this stage, the child progresses quickly in learning to spell. They can make distinctions about when to double or not double consonants and add suffixes. The fifth and final stage that Henderson (1985) described is called the derivational principles stage. In this stage, the child further explores the representation of meaning in spelling.

Gentry (1982) described similar steps for spelling development. The author refers to five stages as well. The first stage is called the precommunicative stage, during which the child does not know about letter-sound correspondence. In the second stage, named the semiphonetic stage, the child understands that letters are used to represent sounds. During the third stage, called the

phonetic stage, the child uses letters to represent the sounds of words. The fourth stage is named the transitional stage, during which the child is aware of the spelling process and uses morphological information to spell. The last stage is called the correct stage, during which the child achieves full awareness of the orthographic system.

Spelling acquisition in Spanish-Speaking Children, the developmental spelling levels for monolingual Spanish-speaking children proposed by Ferreiro and Teberosky (1982) are similar to those suggested by Henderson (1985) and Gentry (1982) with some notable differences. One major difference between spelling acquisition in monolingual English speakers and spelling acquisition in monolingual Spanish speakers is this use of syllabic spellings. Ferreiro (1990) stated that syllabic spellings are infrequent or absent among English-speaking preschoolers because the English language has fewer one-syllable words than Spanish. Ferreiro and Teberosky (1982) described five levels of spelling acquisition. In level one, children explore the conditions that differentiate writing and drawing, exploring how letters correspond to sounds in written words. In level two, children realize the need to use different letter combinations to communicate different meanings. Ferreiro (1990) describes level three as the child assigning syllabic value to each letter. Level four the child starts to think about the writing process using letters for syllables and individual sounds. Level five the child begins to organize one-to-one correspondence between sounds and letters.

**Dual Language Learners**

Paradis, et al. (2021) describe types of dual language learners regarding two dimensions; the sociolinguistic status of a language and second the age of acquisition.

First, the language status refers to the majority or minority language. The scholars describe the majority language as “used by most newspapers and other media, in the courts, in the schools, and by political bodies in the community” (Paradis, et al., 2021, p. 6). On the other hand, the minority language refers to individuals who “belong to a minority culture within the larger community” (Paradis, et al., 2021, p. 6).

Regarding the age of acquisition of each language, the authors described simultaneous bilingual children as children who are “exposed to and given opportunities to learn two languages from birth or shortly after” (Paradis, et al., 2021, p. 58).Additionally, the authors referred to second language learners as “children who have already made significant progress toward the acquisition of one language when they begin the acquisition of the second one” (Paradis, et al., 2021, p. 7). These children often are referred to as sequential bilingual language learners. Furthermore, the authors added that “Simultaneous bilinguals most commonly acquire two languages in the home, and second language learners often have a separate home versus school and community language” (Paradis, et al., 2021, p. 8).

**Spelling Acquisition in Spanish-English Bilingual Speakers**

Bilingual children show features of transfer, deceleration, and acceleration during language learning. Transfer refers to consonants and vowels unique to one language moving to productions of the other language (Paradis & Genesee, 1996). Deceleration is when the interaction between the two languages slows the acquisition of each language, resulting in poorer linguistic skills in bilingual children compared to monolingual children (Paradis & Genesee, 1996). Acceleration is when the interaction between the two languages helps in the acquisition

process resulting in superior linguistic skills in bilingual children compared to monolingual children (Paradis & Genesee, 1996).

To characterize these interactions in spelling acquisition, Rubin and Carlan (2005) analyzed writing data from 100 Spanish-English bilingual children across Texas. They concluded that “bilingual children’s writing development seems to mirror both monolingual English and monolingual Spanish speakers' development” (Rubin & Carlan, 2005, p. 729). Most participants in this study were from low-income families in bilingual school programs. Participants drew a picture of a thing they liked and talked about it in their preferred language. After that, the children wrote about the drawing and read about what they had written. The researchers interviewed each child about their thinking during the writing process. The interviews included questions such as "Can you tell me how you knew which letters to write?" and "Why did you choose to write this word?" The identical procedure was used in the second language. Because the children communicated ideas, Rubin and Carlan (2005) concluded that regardless of whether bilingual children write in English or Spanish, they use their understanding of words, sounds, and spelling in both languages to transmit their meaning. In addition, the authors stated that “as bilingual children’s writing develops, it reflects a growing understanding of the similarities and differences between Spanish and English” (Rubin & Carlan 2005, p. 737).

**Acquisition of Consonant Cluster Spelling**

First graders have difficulty learning to spell initial and final consonant clusters because of the challenge of learning clusters' internal structure in spoken words (Treiman, 1991). In her studies, Treiman (1991) found that students tend to delete the first phoneme of final consonant

clusters rather than the second phoneme. Similarly, students tend to use only the first letter when spelling initial consonant clusters. Treiman (1991) suggested that difficulties in phonemic awareness—in this case, difficulties in analyzing clusters into constituent phonemes—lead to corresponding difficulties in spelling.

Werfel and Schuele (2012) describe children's spelling of consonant blends in kindergartener. They analyzed phonological segmentation and orthographic representation of phonemes in consonant clusters based on word position, expecting that children will have some skills but not mastery. The authors created a developmental spelling measure to analyze children's segmentation and representation of 26 two-phoneme consonant blends. The results of this study suggested that kindergarteners' ability to segment and represent consonant blends in spelling depends on the linguistic and phonetic features of the blend.

Bilingual Spanish-English children may also have difficulty acquiring consonant cluster spelling. There are differences in consonant cluster use between Spanish and English. In English, there are several permissible combinations of two or three initial consonants (i.e., initial consonant clusters; Crystal, 2003; Kuiper et al., 1996) and many permissible combinations of two or three final consonants (i.e., final consonant clusters; Baker et al., 2012). In Spanish, consonant clusters occur either at the beginning or in the middle of the word. They do not occur at the end of a word (Fernández, 1997).

This study aims to characterize the spelling of English consonant clusters in Spanish-English bilingual children. We will answer the research question: How does bilingual Spanish-English children's spelling of initial consonant clusters compare to their spelling of final

consonant clusters? We hypothesize that Spanish-English bilingual children will be more proficient spelling initial consonant clusters than final consonant clusters.

# CHAPTER 2

# METHOD

The University of Georgia Institutional Review Board approved the methods used in this study.

## Participants

Bilingual children were recruited from five classrooms in one public school in Georgia by sending recruitment packets home in children's backpacks. Packets included English and Spanish versions of the informed consent document and an optional demographic/educational history questionnaire. Parents were instructed to return their response to the child's teacher in a sealed envelope that was provided with the recruitment packet. Twenty-one packets were returned to classroom teachers, who returned them to the research team. Based on parent responses to the demographic questionnaire, 81% of these 21 children used Spanish as the primary language and 19% used both English and Spanish as primary languages. One parent reported that English was their child's primary language; data from this child were excluded from analysis. Data from four additional children were excluded from analysis because they could not complete the spelling tasks. Thus, the sample for this report includes 16 kindergarten children whose parents reported that they spoke English and Spanish. Each child completed the Receptive One-Word Picture Vocabulary Test - 4: Spanish-Bilingual edition (ROWPVT-4: SBE; Martin, 2013), but standard scores could not be computed for eight participants due to administration errors. The mean raw score of all children in the study was 71.56 (SD = 28.58).

## Measures

### *Receptive One-Word Picture Vocabulary Test - 4: Spanish-Bilingual edition (Martin, 2013)*

The Receptive One-Word Picture Vocabulary Test - 4: Spanish-Bilingual edition **(**ROWPVT-4: SBE; Martin, 2013) was administered to characterize the vocabulary skills of the participants. The ROWPVT-4:SBE was used because it measures vocabulary knowledge across Spanish and English for bilingual children. Martin (2013) provides robust reliability and validity data that support using the test in this population. For instance, the author reports test-retest reliability of .91 and a correlation of .67 with the Expressive One-Word Picture Vocabulary Test (ROWPVT-4: SBE; Martin, 2013). The ROWPVT-4:SBE consists of 180 color illustrations that proceed in a developmental sequence to portray vocabulary words that individuals likely have experienced at home, school, or in media. It takes approximately 20 minutes to administer. Following the manual instructions, the examiner says the target word and the participant points to the picture, from a set of four, that represents the word. In this study, the examiner initially said each word in Spanish. Administration continued until the child reached the ceiling in Spanish. At this point, the examiner re-administered missed items in English and continued until a ceiling was reached.

### *Spelling Test*

The spelling test used in this study included 25 CCVC and CVCC English words. Most of the words on the spelling test were used by Werfel and Schuele (2012), who gathered a list of two-phoneme clusters in English based on Akielski's (1998), Treiman's (1991), and Treiman's (1995) studies. Werfel and Schuele (2012) excluded extremely uncommon clusters (e.g., /gw/),

morphological clusters (e.g., /pt/), and final consonant clusters with / l /- or /r /-colored vowels (e.g., /ld/, /rt/) and created three spelling lists of 26 CCVC and CVCC real words each. Each list included 18 words with initial consonant clusters (i.e., CCVC) and 8 real words with final consonant clusters (i.e., CVCC). Werfel and Schuele (2012) reported that all words except two appeared in first-grade texts.

To create the spelling list used in this study, we reviewed the words used by Werfel and Schuele (2012). We selected one word for each cluster from the list and confirmed that the selected words appear in kindergarten texts according to *The Educator's Word Frequency Guide* (Zeno et al., 1995). Twenty-four of the twenty-five words were listed in the book; "slug" was not included, so we replaced it with "slip," which does appear in kindergarten texts.

The spelling test was administered by a native English speaker. The examiner instructed the child "I am going to say some words. I want you to write each word that I say on your paper. If you don't know how to spell a word, just try your best." The examiner said each word aloud twice. A word was repeated a third time if a child requested to hear it again. Children spelled each word using a pencil on a paper response sheet. The examiner reviewed child's answers for legibility; if the examiner was unsure about the letters that a child wrote, she asked the child "tell me what letter this is."

## Procedures

All assessments were administered to participants in a quiet room at their school. Participants individually completed each study measure, but multiple participants were present (i.e., one student completed the ROWPVT:4-SBE while another student completed the spelling

test with a different examiner). Examiners included a certified speech-language pathologist and three speech-language pathology graduate students who had read the test manual and practiced administration prior to data collection.

### *Scoring and Reliability*

#### ROWPVT-4: SBE (Martin, 2013)

Responses were scored by a research assistant who calculated raw score, standard score, and percentile. These calculations were checked by a second research assistant. Discrepancies were resolved by a third research assistant.

#### Spelling

Children's spellings were entered into Microsoft Excel for analysis. Two research assistants entered children's spellings independently. Entries were compared and discrepancies were resolved by a third research assistant. Next, spellings were assigned two types of scores for analyses: word score and cluster score.

**Word Score.** Word score was assigned automatically using Excel. A score of 1 was assigned to words that were spelled correctly. A score of 0 was assigned to words that were spelled incorrectly. For each participant, scores were summed, divided by the total number of spelling words (25), and multiplied by 100 to yield a score in terms of percent correct.

**Cluster Score.** Cluster score was assigned manually by research assistants. A score of 1 was assigned for each cluster a child spelled correctly, regardless of the spelling of the rest of the word (e.g., "sml" for smell would receive a score of 1 for correct spelling of the sm- cluster). A score of 0 was assigned if the cluster was spelled incorrectly, regardless of the spelling of the rest

of the word (e.g., “cel” for smell would receive a score of 0). For each participant, scores were summed across all words, divided by the number of words (25), and multiplied by 100 to yield a score in terms of percent of clusters spelled correctly. Additionally, the number of initial clusters spelled correctly was summed, divided by the number of words with initial clusters (18), and multiplied by 100 to yield an initial cluster score in terms of percent of initial clusters spelled correctly. The number of final clusters spelled correctly was summed, divided by the total number of final clusters (7), and multiplied by 100 to yield a final cluster score in terms of percent of final clusters spelled correctly.

# CHAPTER 3

## RESULTS

The purpose of this study was to compare Spanish-English bilingual children's proficiency spelling initial consonant clusters to their proficiency spelling final consonant clusters. Data were analyzed descriptively, and results are displayed in Table 1. As would be expected developmentally, children were more proficient representing consonant clusters than whole words. When spellings were scored for correct representation of consonant clusters, children spelled 14% of clusters correctly. When spellings were scored for correct spelling of the whole word, children spelled only 4% of words correctly. When children's spelling of initial consonant clusters and final consonant clusters were compared, children performed half as well spelling final consonant cluster than on initial consonant clusters.

**Table 1**

*Mean proportion (and standard derivation) of correct spellings of initial and final consonant clusters.*

| Score type | Overall | | | Initial | | | Final | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean | SD | Range | Mean | SD | Range | Mean | SD | Range |
| Word Score | 0.4 | 0.10 | 0-0.40 | 0.4 | 0.10 | 0-0.39 | 0.4 | 0.11 | 0-0.43 |
| Cluster Score | 0.14 | 0.22 | 0-0.76 | 0.16 | 0.24 | 0-0.83 | 0.8 | 0.16 | 0-0.57 |

*Note.* SD = standard deviation

Figure 1 illustrates the difference in proficiency between children's spelling of initial consonant clusters and final consonant clusters. This difference was analyzed using a paired samples *t*-test because the study involved within-subjects data under two conditions (i.e., all participants completed both conditions: initial consonant clusters and final consonant clusters). There was a statistically significant difference between initial cluster scores and final cluster scores ($t(15) = 2.67$; $p < 0.05$).

There were no words spelled correctly by all of the participants. Across the 16 children, the clusters that were spelled correctly most often were "smell" (37.5%), "spin" (31%), and "slip" (31%). According to Smit et al. (1993), /sp, st, sk, sm, sn/ are among the first consonant clusters that an English monolingual speaker acquires. Although s-clusters do not occur in Spanish, we suspect that the participants' relative proficiency in spelling s-clusters may reflect cross-linguistic influences in their spelling acquisition of these words were more straightforward than the other cluster without distinguishing which language the consonant cluster exists in. Some other common errors that we found were for the word "truck"; one child spelled the cluster correctly, five children spelled the first letter of the cluster, and the rest of the children used <j>, <c>, <s>, <y> or <p> to represent the <t> and half of the children use vowels to represent the <r>. These findings are consistent with Treiman (1991), that concluded that children tend to omit the second consonant of the cluster. (e.g., the r in truck). For the word "wasp", eight children spelled <s>, and two children spelled <p> at the end of the word. None of the children correctly spelled the clusters in "drum," "hunt," and "find." When spelling "drum," five children used <g> instead of <d>. For the word "hunt" half of the children spelled <t> at the end of the word, and

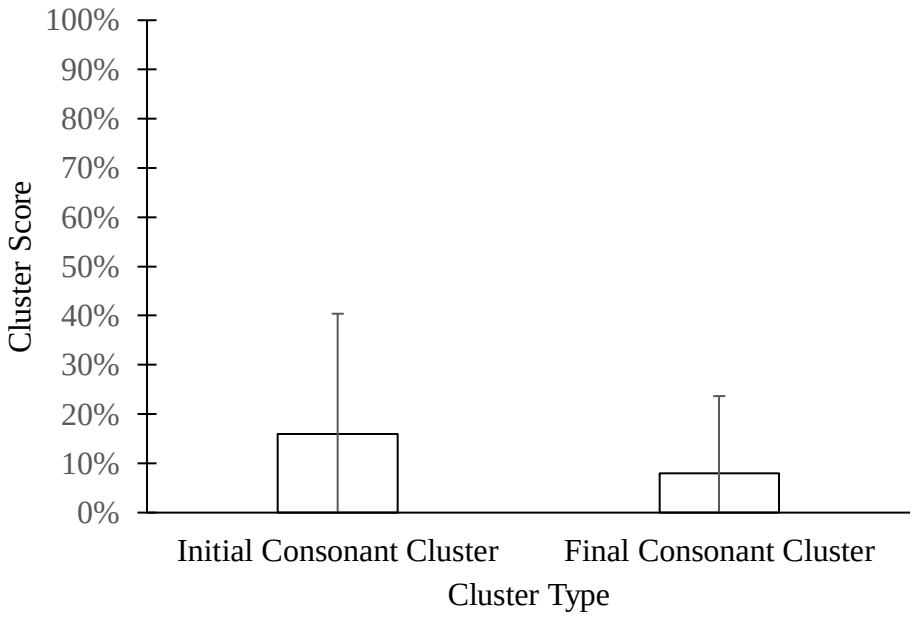
just one child spelled an <n>. Additionally, for the word “find” less than half of the children spelled the final <n> or <d>. Werfel and Schuele (2012) found an effect of blend class on children’s spelling proficiency for final consonant clusters among monolingual kindergartners. They reported that final nasal blends were especially difficult for all children in the study and suggested that proficiency with other types of blends may be necessary before children can accurately represent final nasal blends. Future studies could examine whether Spanish-English bilingual children demonstrate a similar effect of blend class on spelling.

Werfel and Schuele (2012) reported that final nasal blends were difficult for English monolingual kindergarteners' children. They found that when the two consonants in a blend were homorganic (i.e., produced with the same place of articulation), children had more difficulty representing both sounds of the blend in spelling. The present study suggests that bilingual Spanish English children also have difficulties spelling final nasal clusters.

One child offered evidence of the cross-linguistic influence proposed by Rubin and Carlan (2005). Rubin and Carlan (2005) suggest that children in the third and fourth stages of writing development may apply regularities from one language when spelling in the other language. This child added vowels to the ends of words; for example, he wrote “campo” for “camp.” Adding vowels to the ends of English words makes them more closely resemble Spanish phonology, but also changes the meaning of the target word. For example, the addition of <o> transforms “camp” into the Spanish word “campo,” which means farm.

**Figure 1**

*Initial and Final Cluster Scores.*



# CHAPTER 4

# DISCUSSION

In this study, we compared Spanish-English bilingual children's proficiency spelling initial consonant clusters to their proficiency spelling final consonant clusters. The results suggest that Spanish-English bilingual kindergartens have more difficulty spelling final consonant clusters than initial consonant clusters. These findings are consistent with previous studies of children's consonant cluster spelling (e.g., Werfel and Schuele, 2012) and with theories of writing acquisition among bilingual children (e.g., Rubin & Carlan, 2005).

Werfel and Schuele (2012) reported that monolingual English children were more proficient in spelling initial consonant clusters than final consonant clusters. Similarly, we found that Spanish-English bilingual children were more proficient in spelling initial consonant clusters than final consonant clusters. However, there was a marked difference in the overall spelling proficiency of the children in Werfel and Schuele (2012) and the overall spelling proficiency of the children in this study. Overall spelling accuracy (i.e., word score) among the participants in Werfel and Schuele (2012) was 12% whereas overall accuracy in our sample was only 4%. Werfel and Schuele's (2012) participants correctly spelled 61% of initial consonant clusters and 53% of final consonant clusters. In contrast, the participants in our study correctly spelled only 16% of initial consonant clusters and correctly spelled only 8% of final consonant clusters. Although the results of this study cannot be directly compared to the results reported by Werfel and Schuele (2012), the dramatic difference in spelling accuracy may reflect broader differences in spelling accuracy that should be considered. Werfel and Schuele's (2012) data were collected

12 years ago, but both research teams studied kindergarteners with a similar age mean. The mean age of participants in Werfel and Schuele (2012) was 71.1 months (SD = 4.3 months). The mean age of participants in this study was 74.81 months (SD = 5.7 months). However, other variables may have contributed to the children's poor performance in this study.

Lindholm-Leary (2014) studied how low-socioeconomic status affects the biliteracy of 254 Spanish-English children from preschool through second grade using three measures to determine language proficiency and preliteracy skills. The authors found that Spanish-speaking children of low socioeconomic status start preschool with low levels of phonological awareness, letter identification, and emergent literacy skills in English. However, children made progress regardless of the language of the instructional program. More than half of the parents of children in this study reported less than a high school degree. It is likely that many of the children come from homes with low socioeconomic status, which likely affected their spelling performance negatively.

Raynolds (2010) stated that phonological information across both languages (Spanish-English) could influence the sound-to-print spelling of bilingual children who are in formal education in a monolingual environment. For example, Bingham et al. (2023) argue that for bilingual Spanish English children, Spanish spelling is easier than English spelling because Spanish is a more transparent orthography than English. The authors concluded that families serve an essential role in children's writing development and suggest that teachers must be actively involved with children's families and encourage writing experiences in the home language.

Taken together, these findings may suggest that although bilingual children have similar difficulties as monolingual English-speaking children, they face additional difficulties in learning to spell. This supposition aligns with Rubin and Carlan's (2005) suggestion that bilingual children may spend longer in the transitional stage and thus may acquire spelling skills more slowly than their monolingual peers. Future studies could compare spelling skills in monolingual and bilingual children over time to more precisely characterize spelling acquisition in bilingual children.

Rubin and Carlan (2005) suggest that bilingual Spanish-English children develop writing skills along a similar trajectory as monolingual English and monolingual Spanish children. They hypothesize that bilingual children move through five stages of writing development. In the first (precommunicative) stage, bilingual children follow the same pattern as monolingual English and monolingual Spanish children, with some exceptions. In this stage, "some children will write the same letters and symbols in both languages but read them differently in English and Spanish" (Rubin & Carlan, 2005, p. 736). In the second (semiphonetic) stage, bilingual Spanish-English children follow a similar monolingual English stage. However, "some children will write the same words in both languages but read them differently in English and Spanish" (Rubin & Carlan, 2005, p. 736). In the third (phonetic) stage, bilingual children make errors due to the different letter-sound relationships in English and Spanish (e.g., in Spanish, *j* represents /h/; Rubin & Carlan). In the fourth (transitional) stage, bilingual Spanish-English children continue with the same types of errors as in the transitional stage but use increasingly complex vocabulary

and sentence structure (Rubin & Carlan, 2005). By the fifth (conventional) stage, bilingual Spanish-English children's writing is mostly correct in both languages (Rubin & Carlan, 2005).

Additional work in Spanish-English bilinguals suggests that instruction tailored to the needs of these children would be beneficial. Williams & Lowrance-Faulhaber (2018) reviewed studies on writing development in bilingual children and found that much evidence shows that instruction in the first language supports literacy development without impeding the acquisition of literacy in the second language. This effect may occur because bilingual children routinely use their knowledge of their first language to help them spell English words (Williams & Lowrance-Faulhaber, 2018). More specifically, bilingual children commonly use *phonetic transfer* (using a grapheme from one language to represent a phoneme in the other language); *syntactic transfer* (applying syntactic structures unique to one language to the other language); and *intra- and intersentential code-switching* (moving between languages within a sentence or between sentences (Soltero-Gonalez et al., 2012). Considering how language knowledge is essential for developing literacy skills, San Francisco et al., (2006) suggested that explicit instruction in the orthographic features of each language supports students acquiring literacy in a second language.

The findings about writing development in bilingual children are consistent with the larger body of evidence about language and literacy acquisition in bilingual Spanish-English children. For example, Boterma et al., (2016) studied the macro-structure and micro-structure of narrative production in monolingual and bilingual children and concluded that narrative production and comprehension skills were similar in bilingual and monolingual children. Additionally, Bedore et al., (2010) analyzed language samples from Spanish-English bilingual

kindergarteners and concluded that, like their monolingual peers, bilingual children systematically increased the length and variety of words used in narratives during the elementary school grades. Although conclusions about the trajectory of spelling acquisition cannot be made based on our data, the relative ease of spelling initial consonant clusters compared to final consonant clusters for the students in this sample may align with this suggestion.

**Fostering Biliteracy**

There is still a misconception among parents and professionals that caregivers should interact with their bilingual children in the language that the child is learning at school while minimizing use of the language spoken in the home (Paradis et al., 2021). However, decades of research support that there are many advantages of bilingualism. Peal and Lambert (1962) reported that bilinguals have greater flexibility in solving problems, greater metalinguistic awareness, and better phonological awareness than monolinguals. Paradis et al., (2021) included additional cognitive advantages to bilingualism including superior verbal and spatial working memory, theory of mind, and executive functioning. Considering these advantages, it is critical for educators to support young children's emerging bilingualism in spoken and written language by making curricular space for, and scaffolding the process of, bilingual literacy acquisition without being overly focused on eliminating speech and language errors (Paradis et al., 2014; Williams & Lowrance-Faulhaber, 2018).

Given the cross-language influence described above, education professionals must be familiar with the phonological and orthographic features of both languages, as well as the expected trajectory of spelling acquisition for bilingual children. For writing specifically, we

suggest that bilingual children first should be encouraged to communicate their ideas in their preferred language, or combine their first and second language, to maximize their communication competence. We expect that Spanish-English bilingual children may spend longer in Rubin and Carlan's (2005) transitional stage, wherein they mix languages, before reaching the conventional stage and we suggest that explicit instruction that helps children differentiate the phonological and orthographic patterns of Spanish and English in the transitional stage may be vital in supporting Spanish-English bilingual children's writing acquisition. To provide such instruction, educators must be familiar with cross-language strategies and must be able to analyze writing skills of bilingual students. Presently, there is a critical need for professional development that enables educators to do so (Soltero-Gonzalez & Butvilofsky, 2016).

Rubin and Carlan (2005) described a similar case in which the child added a vowel at the end of the word ("banco" for "bank"). These children may be (a) modifying English words to conform to Spanish orthographic conventions (e.g., no final consonant clusters) or may be (b) spelling Spanish words that are phonologically similar to the presented English word, especially if the English words are absent from their lexicons. Indeed, "campo" is a Spanish word for field and "banco" is a Spanish word for bank. when English words are absent from their lexicons.

**Limitations**

In this study, we relied on parents to report their child's primary language, and we collected no information regarding timing and length of exposure to English (i.e., whether children were learning English simultaneously or sequentially with Spanish). This is important to

consider because results could vary depending on the time of language exposure. For example, a child exposed to English for two months would likely have different outcomes than a child exposed to English for a longer time.

A second limitation is that the number of initial consonant clusters versus final consonant clusters was not even (18 vs. 7, respectively). This difference resulted from the procedure that was used to select clusters (e.g., requiring the cluster to be represented in kindergarten texts and to not include a grammatical morpheme). It is possible, though unlikely, that children could have stronger skills spelling final consonant clusters that were not included in our stimuli.

# CHAPTER 5

# CONCLUSION

The results of this study suggest that bilingual Spanish-English kindergarteners, like monolingual peers, have more difficulty spelling final consonant clusters than they do spelling initial consonant clusters. Future research should directly compare the spelling skills of bilingual and monolingual children to determine whether bilingual Spanish-English children have inordinate difficulty learning to spell final consonant clusters due to the influence of Spanish phonology. Additionally, longitudinal data could be used to compare developmental trajectories in monolingual and bilingual children in the later grades to confirm Rubin and Carlan's (2005) hypothesis about an extended transitional stage for bilingual children. Finally, follow-up studies could examine whether bilingual Spanish-English children demonstrate sensitivity to the phonological features of consonant clusters, as was shown in monolingual English-speaking children by Werfel and Schuele (2012).

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**Appendix.**

**Spelling word list**

| Initial Consonant Cluster | Word | Final Consonant Cluster | Word |
|---|---|---|---|
| /st-/ | step | /-sk/ | mask |
| /br-/ | bread | /-st/ | fast |
| /sm-/ | smell | /-nt/ | hunt |
| /pr-/ | press | /-mp/ | camp |
| /cl-/ | clap | /-nd/ | find |
| /cr-/ | crib | /-ft/ | soft |
| /sn-/ | snack | /-sp/ | wasp |
| /fr-/ | frog | | |
| /gr-/ | grass | | |
| /sp-/ | spin | | |
| /sk-/ | skip | | |
| /sl-/ | slip | | |
| /fl-/ | flag | | |
| /pl-/ | plum | | |
| /bl-/ | block | | |
| /gl-/ | glass | | |
| /dr-/ | drum | | |
| /tr-/ | truck | | |