

PUENTE DE CUENTOS PARA LA FAMILIA: A COMMUNITY-BASED, DUAL
LANGUAGE NARRATIVE INTERVENTION TO SUPPORT LANGUAGE DEVELOPMENT
OF YOUNG SPANISH-ENGLISH DLLS

By

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Dissertation

Submitted to the Faculty of the
Graduate School of Vanderbilt University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Learning, Teaching, & Diversity

May 10, 2024

Nashville, Tennessee

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ACKNOWLEDGEMENTS

Over the past five years, I have had the honor and privilege of being part of an exceptional community at Vanderbilt, and I am deeply grateful for all of those with whom I had the pleasure of working during my doctoral studies. This dissertation represents a culmination of the patience, support, and guidance generously provided by numerous individuals who deserve distinct recognition.

Foremost, I would like to thank my advisors, Dr. Jeannette Mancilla-Martinez and Dr. Emily Phillips-Galloway, whose mentorship and wisdom have been invaluable to me. Thank you for providing me ample opportunities to work on your projects, and for instilling in me the agency and inspiration to lead my own. I also wish to express my gratitude to Dr. Gigi Luk and Dr. Ann Kaiser, who have shaped my work through their thoughtful questioning, expertise, and feedback. A special acknowledgement is owed to Dr. Bill Heerman, who graciously welcomed me onto the COACH project, which not only expanded my research horizons but also taught me the importance of perseverance in community-based research.

I am filled with gratitude for the community offered by my fellow doctoral students, colleagues at the Vanderbilt University Medical Center and Nashville Public Libraries, and professors at Peabody. In particular, I want to thank Amanda Shimizu and Chengcheng Zhou who have been a source of constant motivation and friendship, and who never refused a request to proofread my papers for the third, fourth, or tenth time. Furthermore, this work would not have been possible without the hard work and dedication of all those involved in the COACH project at VUMC. I extend my gratitude to LauraBeth Adams, Caroline Cronin, Laura Downer, Dana Guerrero, Maria Malave, and Chelsea van Wyk for their collaborative spirits, constant encouragement, and commitment to community-based research.

Outside of Vanderbilt, my heartfelt appreciation and gratitude go to my family for their boundless love and unwavering support. To my mom, who encouraged me to start a Ph.D. and motivated me when I wasn't sure if I could finish; to my dad, who is still not sure why I can't prescribe medicine, but nevertheless provided steadfast support; to my siblings, who have eagerly awaited a signed copy of this dissertation and promised to read at least part of it; and to Peter, who was my rock throughout this process and reminded me to step away from work and enjoy life – thank you for cheering me on through every milestone; your unconditional love has been my anchor throughout this endeavor.

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CHAPTER 1

Introduction and theoretical framework

1.1 Introduction

In the U.S., one-third of the nearly 23 million preschool-aged children are Dual Language Learners (DLLs), and DLLs from Spanish-speaking homes represent the fastest growing preschool demographic (Migration Policy Institute, 2022). DLL refers to the population of children who are learning more than one language while effectively developing their language skills in one or more languages (Mancilla-Martinez, 2023); DLL will be used throughout this dissertation to describe this growing population, as it acknowledges the duality of language learning without privileging English proficiency (Mancilla-Martinez, 2023).

Young DLLs from Spanish-speaking homes vary widely in their experiences learning two languages, and when these learners enter kindergarten, they have a heterogenous range of language and early literacy abilities across both Spanish and English (Hammer et al., 2014; Mancilla-Martinez, 2023). Given these diverse language experiences, the language development needs of young DLLs differ from the needs of their monolingual English-speaking peers. The already large and rapidly increasing population of young Spanish-English DLLs in U.S. preschools presents a critical need to provide targeted pedagogy and interventions that can specifically attend to the unique linguistic development of these young children.

Young children's oral language skills are foundational for later school-based reading skills, particularly reading comprehension and, in turn, future academic achievement. As a language-based process, reading comprehension is highly linked with language and narrative abilities, since the same language comprehension processes utilized in oral language are used as readers make

sense of text (Cain & Oakhill, 2011; Perfetti & Hart, 2001; Verhoeven & van Leeuwe, 2008). In the U.S., concerns persist regarding students' reading comprehension performance, given the significant negative repercussions associated with inadequate reading comprehension skills (World Literacy Foundation, 2022). This issue is particularly relevant for DLLs who are developing English proficiency while acquiring academic content in English (Mancilla-Martinez, 2023; Mancilla-Martinez et al., 2019). It is crucial to emphasize that bilingualism in itself is not a risk factor in comprised academic outcomes (Mancilla-Martinez et al., 2019); however, it is of concern that Spanish-English DLLs often come from households living in or near poverty (Gennetian et al., 2019; Lopez & Velasco, 2011), as poverty can have detrimental effects on students' academic experiences and trajectories, including reading comprehension (Heidlage et al., 2020; Luo et al., 2020). To best support young Spanish-English DLLs' academic achievement, it is imperative to attend to the development of language skills that support the complex process of reading comprehension.

For DLLs from Spanish-speaking homes in the U.S., researchers have identified the impact of early language and literacy skills, particularly those in English, such as vocabulary, language comprehension, and early word reading, on elementary school children's English reading comprehension skills (Castro et al., 2011; Mancilla-Martinez & Lesaux, 2010, 2017). This strong relationship between early oral language and literacy skills and later reading comprehension indicates that oral language should be specifically targeted for young Spanish-English to support not only their early language development, but also later English reading comprehension (Castro, Espinosa, et al., 2011a; Castro, Páez, et al., 2011; Spencer et al., 2019). This is of particular importance for preschool-aged Spanish-English DLLs in the U.S., most of whom will enter English-only elementary schools (Friedman-Krauss et al., 2019a; Nores et al., 2018); in order to

prepare young DLLs to meet the academic language demands of school, there is a need for effective language interventions that strategically provide support for the unique linguistic development of young DLLs (Castro et al., 2011). Therefore, the purpose of this dissertation is to investigate the impact of a community-based, dual language narrative intervention on young Spanish-English DLLs' oral language skills in preparation for their entry into elementary school. The following sections will delve into the extant literature that guided the development of this Puente de Cuentos para la familia intervention. Specifically, I will highlight the significance of narrative interventions for young DLLs, and underscore the merits of adopting a dual-language approach to intervention. Moreover, the advantages derived from integrating a family-centered, community-based approach to intervention will be emphasized.

1.1.1 Narrative interventions

Narrative language, often referred to as storytelling, involves presenting a sequence of events that are connected by cause-and-effect relationships and arranged in chronological order (Hughes, McGillivray, & Schmidek, 1997). Narrative language serves as a link between the informal conversational language children experience in their home and the more structured language demanded at school (C. E. Westby, 1991), as school contexts highly value well-organized narratives that follow expected patterns and incorporate sophisticated vocabulary (Orcutt et al., 2023; Spencer et al., 2013). Moreover, narratives offer the opportunity to effectively introduce underlying processes of reading comprehension, such as language comprehension and inference making, during the preschool years since decoding skills are not necessary for the comprehension of narratives (Orcutt et al., 2023).

The narrative process is often characterized by two levels that significantly influence language comprehension, and consequently reading comprehension (Spencer et al., 2013):

narrative macrostructure and narrative microstructure. The narrative macrostructure pertains to the overall organization and content of the narrative, often termed “story grammar” (Stein & Glenn, 1979). When narrating a story, one must incorporate story grammar elements that uphold the story’s structure, and make the content understandable (Stein & Glenn, 1979). These story grammar elements collectively constitute the plot, which essentially encompasses an initial event, an attempt to resolve it, and a subsequent outcome (Hudson & Shapiro, 1991; Hughes et al., 1997); in the context of early childhood learning, this story grammar structure aligns with the beginning, middle, and end of the story. The narrative microstructure focuses on the richness and intricacy of the word-level and sentence-level aspects of language used in the narration (Justice et al., 2006). This level is closely related to the academic language that children are exposed to in school settings (Hipfner-Boucher et al., 2015; Justice et al., 2006; Runnion et al., 2022). These internal linguistic constructs help the reader to comprehend the sequence of the story grammar elements, as well as their causal connections and meanings. Moreover, sentences that integrate complex vocabulary furnish a greater descriptive context, which further facilitates the listener’s understanding of the narrative (Justice et al., 2006).

While not as thoroughly explored as vocabulary knowledge, proficiency in narratives during preschool and the early elementary years predicts reading abilities, particularly reading comprehension (Dickinson & Porche, 2011; Dickinson & McCabe, 2001; Feagans & Appelbaum, 1986). To illustrate this impact, Wellman et al. (2011) observed that children’s proficiency in recounting narratives during early years (ages 3-6) predicted later literacy skills; more specifically, children’s use of narrative macrostructure in story retells correlated with their later decoding skills, reading comprehension, and writing skills (Wellman et al., 2011). Similarly, Griffin et al. (2004) found that narrative generation skills of 5-year-old children, specifically descriptions of characters’

emotions as well as their use of modifiers or qualifiers, were linked to subsequent reading comprehension at age eight (Griffin et al., 2004). Notably, Fazio et al. found that deficiencies in narrative skills at the age of four were a substantial indicator of the likelihood of requiring academic intervention by the second grade (Fazio et al., 1996).

Despite the importance of narrative skills, early language interventions have primarily focused on code-related skills; narrative language interventions that focus on oral language components such as vocabulary, narratives, listening comprehension, and use of complex sentences are less available to educators and practitioners (Cain & Oakhill, 2011; Elleman et al., 2009; Mehta et al., 2005; Spencer et al., 2013; Zucker et al., 2013). Narrative language interventions are any language intervention that requires children to narrate or recount stories intentionally designed by the interventionist to include specific language-related elements (Petersen, 2011). Extant research on narrative language interventions has shown the potential of these interventions to improve children's language production as well as comprehension. In a seminal systematic literature review of narrative language interventions, Peterson (2011) focused on narrative language interventions for preschool and elementary students with identified language impairments or disabilities; between 1980 and 2008, only nine studies were identified that met these criteria. Although the majority of the participants exhibited positive growth after participation in the intervention, Peterson emphasized the need for cautious interpretation of these outcomes, primarily due to the limited sample size and absence of rigorous experimental protocols (Petersen, 2011). Of concern, only two of the studies focused on preschool-aged children, and only one study included Spanish-English speaking DLLs.

More recently, Favot et al. (2020) conducted a systematic literature review of narrative language interventions targeting children with identified language disorders; nearly a decade later

from Petersen's (2011) review, only three out of 24 studies included Spanish-English bilingual participants, and the majority of the included studies focused on elementary-aged children. Again, most studies reported positive growth after intervention, but Favot et al. called for higher quality group design studies. Finally, Pico et al. (2023) expanded their focus to include any intervention that aims to improve some aspect of children's narrative language, rather than focus solely on narrative language interventions; furthermore, they did not limit participants to children with an identified disability. This broadened their sample to 40 studies; seven of these studies included Spanish-English DLL participants, but only one study including Spanish-English DLLs targeted preschool-aged children. In summary, although narrative language interventions have not been widely proliferated, research on narrative interventions has increased in recent years and highlights the promise of these interventions. However, this research focuses primarily on narrative interventions that target elementary school-aged children with language impairment, and little attention has been given to preschool-aged DLLs. Young DLLs in particular require targeted support in developing and producing narratives in English, due to their ongoing process of acquiring language skills in more than one language (Hipfner-Boucher et al., 2015; Spencer et al., 2019). Given the importance of narrative language skills in both reading comprehension and academic achievement, there is a need for narrative interventions that specifically target young, Spanish-English DLLs.

1.1.2 Dual language approach to intervention

A well-established body of research indicates that a dual language approach to instruction, which incorporates children's first language (L1) to facilitate development of their second language (L2), leads to greater academic achievement for Spanish-English DLLs, particularly in literacy, as compared to an English-only approach (August & Shanahan, 2006; Collier & Thomas,

2017; Rolstad et al., 2005; Slavin & Cheung, 2005). However, the majority of preschool-aged DLLs in the U.S. attend English-dominant schools (Friedman-Krauss et al., 2018) which often overlook the diverse linguistic abilities of young DLLs (Goldenberg & Wagner, 2015). Nevertheless, researchers have clearly identified that high-quality early childhood practices for DLLs differ from those that support monolingual children (Castro et al., 2011; L. Espinosa, 2013; Garcia et al., 2017); for DLLs, early childhood instruction should incorporate DLLs' L1, explicitly teach vocabulary in both L1 and L2, and support the development of academic language in both L1 and L2 (Castro et al., 2011; Garcia et al., 2017). In an effort to provide this critical and unique support for DLLs, researchers have recently advocated the importance of dual language interventions, particularly for young DLLs (Baker et al., 2016; Castro et al., 2013; Collier & Thomas, 2017; Mesa & Restrepo, 2019; Spencer et al., 2019). Early language interventions play a crucial role in preventing later reading problems, and language interventions that leverage children's L1 to support their L2 development present a powerful tool to support later reading comprehension (Kohnert et al., 2005).

Since reading comprehension relies so heavily on oral vocabulary and narrative abilities (Cain & Oakhill, 2011; Griffin et al., 2004; Mehta et al., 2005; Perfetti & Hart, 2001), narrative interventions in particular should be tailored to support young DLLs with a dual language instructional approach. Narrative structure and organization is strikingly similar in both Spanish and English, which lends support to the claim that narrative macrostructure will transfer across languages for Spanish-English DLLs (Pearson, 2002). In fact, researchers have proven that the story structure and sentence complexity of narratives produced in a child's L1 upon starting kindergarten predicted their academic achievements in English, particularly for Spanish-English DLLs (Miller et al., 2006). Moreover, Spencer et al. adapted an English-only narrative intervention

to create a dual language narrative intervention for preschool aged Spanish-English DLLs (Spencer et al., 2019). They found that children who received this dual language intervention made significant gains in their English and Spanish narrative retell abilities, as well as their vocabulary growth in both languages (Spencer et al., 2019, 2020). These studies emphasize that, for young Spanish-English DLLs, fostering a strong narrative language foundation in Spanish contributes to more robust language acquisition in English. Moreover, this emergent research underscores the idea that dual language interventions are a promising approach to support the language development of young DLLs, particularly since children are often not exposed to dual language instruction in U.S. schools.

1.1.3 Family-centered, community-based interventions

While a dual language approach supports the development of DLLs' L2 in addition to their L1, it is also critical to involve families in the promotion and retention of children's L1 (Kohnert et al., 2005). Family engagement is a critical component of early childhood education programs; however, there are many challenges in fostering family engagement in early childhood education in the U.S. One notable obstacle is the limited attendance of children in formal early childhood education programs, which usually serve as platforms to encourage and facilitate family involvement. Nationally, the enrollment of young children in official preschool programs stands at 63%; however, enrollment for Hispanic children is notably lower, with a 42% enrollment rate (National Center for Education Statistics, 2023). Consequently, the majority of Spanish-English DLL preschoolers' educational encounters predominantly transpire at home or in the greater community, where explicit and deliberate support for early learning is often lacking (Pratt et al., 2016). Therefore, a family-centered, community-based approach presents a promising framework for engaging with this population.

Language is developed through social interactions, and families play a critical role in the early social interactions that impact young children's language development. Given that parents are often children's first teachers, it is particularly important to include parents as a source of intervention when promoting early language development (Heidlage et al., 2020; Kaiser & Roberts, 2013; Reese et al., 2010). Most of the family-centered interventions that support preschool children's language and literacy development focus on one of three contexts: book-reading interventions, conversational interventions, and writing interventions; notably, narrative language interventions are not often used in family-centered interventions (Reese et al., 2010).

Family-based early interventions that serve families of DLLs in the U.S. should follow two main principles: 1) consider L1 as a family strength and 2) learn about family culture and values in order to provide culturally appropriate caregiver training (Peredo, 2016; Peredo et al., 2018). In alignment with the first principle, researchers recommend family-centered interventions be implemented in the children's L1, as families can provide complex and rich linguistic examples necessary for supporting their children's linguistic development (Hammer et al., 2009; Kohnert et al., 2005; Peredo et al., 2018). Moreover, as suggested by the second principle, interventionists must systematically teach caregivers how to implement strategies in their L1 that can support their children's language development (Peredo, 2016; Peredo et al., 2018). This framework guided the adaptation of our *Puente de Cuentos para la familia* intervention, as it provides instruction in both Spanish and English, and systematically teaches parents how to implement narrative language strategies in Spanish to support their children's language development. However, unlike most family-centered interventions, this intervention was not implemented at home, but rather employed a community-based approach.

A community-based approach to intervention is a commonly used strategy in public health research (McAllister et al., 2003); however, this approach remains largely untapped in the context of early language intervention, especially interventions that target DLLs. To date, only one known study has documented the outcome of a community-based language intervention on young Spanish-English DLLs' language development; in this instance, researchers found that a community-based language intervention supported Spanish-speaking parents' use of shared storybook reading strategies with their preschool-aged children (Gesell et al., 2012). Despite the paucity of research on community-based language interventions, numerous community-based environments have the potential to heighten family engagement in early learning and language development. An exemplar of such a setting is the public library, which boasts a long-standing history of serving as an inclusive and dependable community space catering to the entire family (Pratt et al., 2016). Therefore, we partnered with the local library in the community to implement the community-based, dual language narrative intervention that is the focus of this dissertation.

1.2 Theoretical Framework

A clearer understanding of young DLL's diverse early language and literacy experiences is critical to providing tailored interventions to promote DLLs' oral language development. In order to understand the impact of these diverse early language experiences, this dissertation draws from a conceptual framework that links three bodies of theoretical work related to young DLLs' oral language development: reading comprehension, the bilingual mental lexicon, and context of language interactions. First, this framework highlights the importance of early oral language development by describing the role of oral language in reading comprehension. Subsequently, this discussion presents relevant theoretical models that describe the intricate nature of the bilingual

mental lexicon. Finally, this section considers interactionist theories of language development to better comprehend the situated and interactional nature of young children's communication.

1.2.1 The connection between oral language and reading comprehension

The comprehension of written text is a dynamic and complex process, and depends on a multitude of interdependent skills related to the reader, the text, and the reading activity (RAND Reading Study Group, 2002). Despite the multifaceted nature of reading comprehension, there is wide consensus that successful reading comprehension requires decoding skills and oral language skills (Catts et al., 2006; Gough & Tunmer, 1986). The Simple View of Reading presents one of the most parsimonious and widely upheld theoretical models of reading comprehension, and posits that word reading and language comprehension are the foundational skills necessary for reading (Gough & Tunmer, 1986; Hoover & Gough, 1990). More recently, Duke and Cartwright (2021) proposed the Active View of Reading, which expands upon the Simple View of Reading by emphasizing the impact of the text, the reading task, and the greater sociocultural context on reading comprehension (Duke & Cartwright, 2021; RAND Reading Study Group, 2002). The Active View of Reading acknowledges that differences in vocabulary or cultural knowledge can impact reading comprehension and includes other critical contributors to reading comprehension, such as executive function, motivation, and engagement (Duke & Cartwright, 2021). The Active View of Reading provides a nuanced understanding of the complexity of reading development, while still highlighting the importance of decoding and language comprehension (Duke & Cartwright, 2021; Orcutt et al., 2023).

The key role that word reading and language comprehension play in reading comprehension evolve as development progresses. In the early elementary years, word reading holds a more prominent influence on reading comprehension as children acquire age-appropriate

word reading abilities; subsequently, as children's decoding skills are automatized, language comprehension tends to become the primary predictor of reading comprehension after the early elementary years (Kieffer & Christodoulou, 2019; Perfetti, 1988; Scarborough, 1998). However, for Spanish-English DLLs, the impact of language comprehension manifests much later, specifically around the commencement of high school (Mancilla-Martinez, 2023; Mancilla-Martinez & Lesaux, 2017). This distinct developmental trajectory of skills among Spanish-English DLLs highlights the importance of targeted and continuous support for language comprehension skills, which should start in the preschool years and be sustained throughout the formal school years.

Attention to the oral language skills that support language comprehension during the preschool years is critical to supporting reading comprehension (Dickinson et al., 2006; Snow et al., 1998). A developing body of research focused specifically on Spanish-English DLLs indicates that DLLs' early language skills are key predictors of later literacy skills (Mancilla-Martinez & Lesaux, 2010, 2011, 2017). Specifically, reading comprehension is highly linked to listening comprehension, vocabulary, and narrative ability, all of which are oral language skills that should be specifically targeted for young Spanish-English DLLs (Castro et al., 2011; Catts et al., 2006; Griffin et al., 2004; Mancilla-Martinez & Lesaux, 2010; Saunders & O'Brien, 2006).

1.2.2 Bilingual mental lexicon

Multiple theoretical models have emerged to explain the intricate nature of the bilingual mental lexicon. Cummins' (1984) common underlying proficiency theory was foundational in arguing that cognitive or literacy-related skills transfer across languages, and experience with both L1 and L2 will promote the development of the proficiency that underlies both languages (Cummins, 1984). A key implication of Cummins' (1984) research is that it is critical to support the

development of DLLs' L1, since the skills children acquire using their L1 will transfer to L2, and vice versa.

More recently, Dong and colleagues (2005) proposed the shared (distributed) asymmetrical model, which encompasses elements from other prominent models of the bilingual mental lexicon, notably the distributed model, revised hierarchical model, separate storage model, word-association model and conceptual mediation model. The shared (distributed) asymmetrical model posits that DLLs possess shared storage for conceptual representations of their two vocabularies (in this case, Spanish and English). However, there are also asymmetrical (i.e., distributed or separate) connections between concepts across the two languages. Therefore, the shared (distributed) asymmetrical model presents a valuable framework for examining the distributed nature of DLLs' language proficiency. This model theorizes that the use of either language facilitates children's conceptual knowledge development, which provides a more comprehensive understanding of DLLs' overall knowledge across both languages (Mancilla-Martínez et al., 2018).

In alignment with this shared (distributed) asymmetrical model, a large body of research supports the advantages of L1 use in the classroom to support young DLLs oral language development (Baker et al., 2016; Collier & Thomas, 2017; Francis et al., 2006; Genesee et al., 2005; Rolstad et al., 2005; Slavin & Cheung, 2005; Thomas & Collier, 2002). Although an extant body of research on bilingual education has concluded that high-quality bilingual education for DLL children results in greater academic outcomes, particularly in literacy, as compared to English-only instruction (Thomas & Collier, 2002; Rolstad et al., 2005; Francis et al., 2006; McField & McField, 2014; Baker et al., 2016; Collier & Thomas, 2017), it is again important to highlight that the majority of preschool DLLs in the U.S. are educated in English-dominant preschool classrooms (Friedman-Krauss et al., 2019). These English-dominant contexts too often

fail to leverage students' varied linguistic abilities as instruction and conversation predominantly occurs only in English (Buckley et al., 2023; Goldenberg & Wagner, 2015; McClain et al., 2021). While the use of L1 is often documented as a resource for L2 literacy learning, this resource may be less available for DLLs to leverage in English-dominant preschool classrooms (Buckley et al., 2023; McClain et al., 2021).

1.2.3 Context of language interactions

Language development for all children is influenced by the quantity and quality of their interactions, which can vary depending on the context in which these interactions occur (De Houwer, 2007; Hoff, 2006, 2010; Hurtado et al., 2008). Indeed, the developmental cascade model of language acquisition suggests that the emergence of bilingual proficiency is influenced by a series of interconnected factors related to these interactions, encompassing the timing of exposure to two languages, the cumulative language experiences of the child, and shifts in language input sources and patterns of language use across time (Ahmed et al., 2023; Guo et al., 2023). For DLLs from Spanish-speaking homes, it is especially important to consider these contextual factors of language interactions (Guo et al., 2023), as this population can receive varying amounts of language input in each language depending on whether they are at home or at school (Halpin et al., 2021; Hammer et al., 2012; Hoff & Core, 2013; Wagley et al., 2022). Therefore, it is important to consider how home language interactions and school language interactions impact children's oral language development, especially as children first enter into a school context during the preschool years (Ahmed et al., 2023).

1.2.3.1 Home language interactions

The home language interactions that young DLL children are exposed to account for a wide range of literacy activities outside of formal school contexts that impact children's language

development (Hammer et al., 2009; Hoff & Core, 2013; Ryan, 2021) and represent a critical contributor to the development of children's linguistic proficiency (Lewis et al., 2016; Manz et al., 2010; Romeo et al., 2018; Wagley et al., 2022). However, the relation between home language environment and language outcomes of young DLLs is complicated due to the heterogenous nature of home language environments, such as varying patterns of home language use (De Houwer, 2007), diverse home literacy experiences across languages (Gilliard et al., 2007; Lewis et al., 2016), and parents' beliefs about dual language development (Hwang et al., 2022).

Two important elements of the home language environment have been identified to specifically support DLLs' oral language skills: home language experiences and home literacy experiences (Lewis et al., 2016). Home language experiences comprise of language exposure and language use in the home environment. For young Spanish-English DLLs, the impact of home language exposure has significant implications for their oral language skills. For instance, Hoff et al. (2012) followed a group of 103 Spanish-English DLLs from 22 months to 30 months and found that home language exposure was linked to children's language-specific skills; children from English-dominant households were stronger in their English skills, those from Spanish-dominant homes were stronger in their Spanish skills, and those exposed to balanced language input at home displayed a more even distribution of skills across languages (Hoff et al., 2012). Additional research on DLL toddlers and preschoolers has revealed that the amount of Spanish exposure they receive at home directly influences their Spanish vocabulary, grammar, and early literacy abilities (Hammer et al., 2009; Hoff & Core, 2013). Importantly, this impact of Spanish exposure continues into the school years (Duursma et al., 2007) without hindering the development of their English language skills (Hammer et al., 2009).

In addition to language exposure, DLLs' language use is a critical element of their home language interactions. For example, Hammer and colleagues studied a group of 191 Latino families with preschool-aged children and found that children's home language use supported their vocabulary growth in both Spanish and English, as well as their Spanish story recall ability (Hammer et al., 2012). Despite these promising findings, there is little empirical evidence that thoroughly investigates the role of DLLs' home language use in enhancing oral language proficiency or comprehension among DLLs (Lewis et al., 2016). Therefore, when investigating the home language experiences of young DLLs, it is essential to delve into both language exposure and language use to gain a better understanding of their language development.

Home literacy experiences encompass activities and materials available in the home that contribute to children's language and literacy development. While home literacy experiences have been proven to support young monolingual children's language development (Burgess, Hecht, & Lonigan, 2002; Johnson, Martin, Brooks-Gunn, & Petrill, 2008; Leseman & De Jong, 1998; Schick & Melzi, 2010), relatively few studies identify elements of home literacy experiences that specifically support young DLLs' oral language development. The limited research on home literacy experiences of young Spanish-English DLLs has primarily focused on ways in which mothers influence children's home literacy experiences. Mother-child literacy experiences such as shared book reading (Farver et al., 2007; Hoff, 2006) and storytelling (Lewis et al., 2016) have been shown to support young, Spanish-English DLL children's vocabulary and oral language skills. However, further investigation is necessary to gain a deeper understanding of the particular aspects of home literacy experiences that contribute to DLLs' language skills, especially considering the limited number of studies conducted with preschool-aged DLLs.

1.2.3.2 School language interactions

As children spend more time in schools, the impact of their home language environment begins to diminish, allowing school language interactions to exert a more prominent role in shaping children's developmental trajectory (Ahmed et al., 2023). The shift to formal schooling is a key developmental milestone, and extensive research underscores the critical role that the initial years of school play in shaping children's social, linguistic, and academic development (Ahmed et al., 2023). From a language acquisition perspective, rich classroom language environments that encourage and elicit child talk during the preschool years are essential in supporting the development of children's oral language skills (Dickinson & Porche, 2011; Kendeou et al., 2009; Storch & Whitehurst, 2002; Whorrall & Cabell, 2016). Thus, it is critical that preschool teachers engage their students in linguistically rich conversations that promote extended dialogue (National Association for the Education of Young Children, 2009); in other words, teachers should incorporate extended dialogue into instruction in an effort to be "conversationally responsive partners" (Cabell et al., 2015) with their students. Conversationally responsive pedagogies foster a language-rich environment and support students' active participation in classroom discourse (Cabell et al., 2015; Pentimonti et al., 2017; Pentimonti & Justice, 2010; Resnick et al., 2018; Sawyer et al., 2017). Research on adult-child conversations during preschool instruction has shown that adults' incorporation of pedagogically responsive strategies, such as open-ended questions (Boyd, 2015) and high and low scaffolding (Pentimonti et al., 2017), is linked to overall positive learning outcomes for students (Boyd, 2015; Cabell et al., 2015). While these pedagogically responsive strategies offer students opportunities for extended dialogue, these strategies must additionally consider students' language abilities in order to provide supplemental support for DLLs (Hammond & Gibbons, 2005). However, research suggests that both monolingual and

bilingual preschool teachers use a very limited amount of linguistically supportive pedagogy to specifically promote DLLs language development (Buysse et al., 2010; Sawyer et al., 2017).

It is widely understood that engagement in a rich language classroom environment presents an opportunity for young students to learn and develop their oral language proficiency, which is a critical skill to develop in early years (Kendeou et al., 2009, 2001; Storch & Whitehurst, 2002; Whorrall & Cabell, 2016). However, since the majority of preschool DLLs in the U.S. are educated in are English-dominant preschool classrooms (Friedman-Krauss et al., 2019), concerns arise about whether young DLL students have differential opportunities to learn (Aguirre-Munoz & Ambisca, 2010) as compared to their monolingual peers. More specifically, if young DLLs do not have support to understand or engage in classroom discourse in an English-dominant classroom, they will not have the same opportunities as their monolingual, English-speaking peers to access these rich language environments that are integral in supporting their oral language development and later literacy skills (Buckley et al., 2023; McClain et al., 2021). In other words, without linguistic support DLLs may not have “full access” (Fu et al., 2019, p. 92) to the opportunities provided by classroom dialogue and may not be able to participate as fully in these conversations as their English-speaking peers (Buckley et al., 2023; Fu et al., 2019).

This conceptual framework supports the need to better understand the nuance of young DLLs’ language development. Extant research in the field highlights the importance of conversationally rich language environments for young learners, both at home and in the preschool classroom; the interactional nature of these environments provides opportunities for rich language learning. However, in English-dominant contexts such as the U.S., DLLs may not have the same opportunities to engage in rich classroom conversations as their monolingual, English-speaking peers. Furthermore, despite research that highlights the advantages of using DLL students’ L1 to

support language development in both L1 and L2, it is critical to identify other opportunities for learning that DLLs have when their rich linguistic resources are not forefronted in the language environment. The rapidly increasing population of young Spanish-English DLLs in U.S. schools begets a pressing need to understand how to best support the unique linguistic and developmental needs of these children, in order to provide more equitable language learning and language development opportunities for DLLs both in schools and at home. Therefore, the subsequent chapter will present findings from a systematic literature review to elucidate the extant literature regarding the oral language development of preschool-aged, Spanish-English DLLs.

CHAPTER 2

Systematic literature review

2.1 Methods

This systematic literature review aims to integrate the extant literature on the oral language development of Spanish-English preschool-aged DLLs, in order to better understand how to provide targeted support of language development for this population. This review also highlights gaps in the current literature regarding the oral language development of young Spanish-English DLLs to better guide future research efforts. Furthermore, this literature review informed the development of our Puente de Cuentos para la familia intervention, which is a community-based, dual language narrative intervention that targets the unique oral language development of young DLLs from Spanish-speaking homes.

2.1.1 Research questions

This systematic literature review was guided by the following questions:

1. What are the characteristics of studies, i.e. participants, contexts, year of publication, and language analyzed, that investigate preschool-aged Spanish-English DLLs' oral language development in U.S. contexts?
2. What methodologies have researchers used to study the oral language development of young Spanish-English DLLs?
3. What are the main findings and implications from prior research related to DLL children's oral language development in both Spanish and English?

2.1.2 Inclusion Criteria

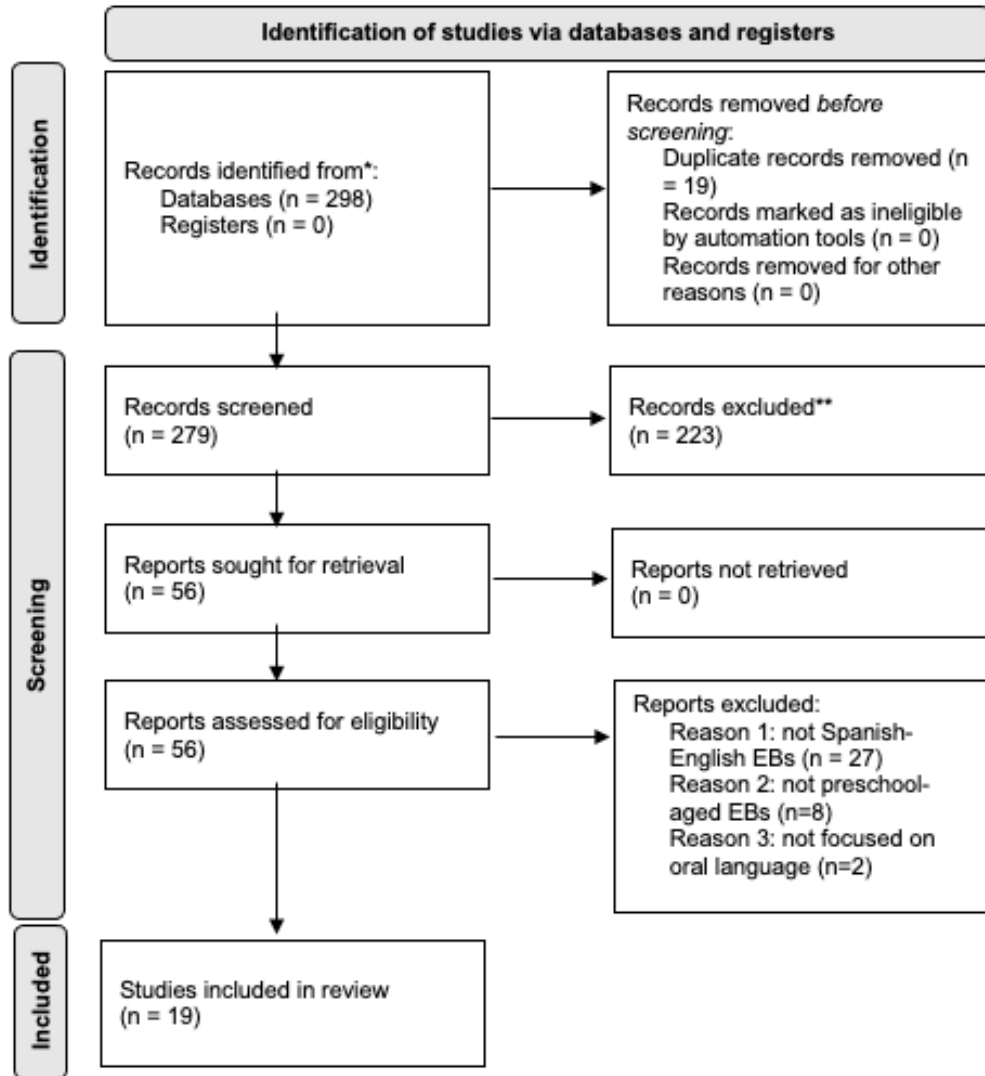
Five main inclusion criteria were established a priori. The studies identified for inclusion had to be 1) an empirical research study 2) focused on the oral language development of 3) preschool-aged 4) Spanish-English DLLs 5) in the United States. More specifically, articles were included if the study was based on observed and measured empirical evidence; therefore, theoretical papers about oral language development (Armon-Lotem, 2017; De Houwer, 2015; Pecherskikh & Shishkina, 2015), policy reports and commentary (Ackerman & Tazi, 2015; Catalano, 2020; Oliva-Olson et al., 2017), practice-oriented papers, and literature reviews (Cycyk et al., 2021; Egert et al., 2021; Ramírez et al., 2021) were excluded from the sample. Both quantitative and qualitative empirical studies were included to gain a comprehensive understanding of how researchers analyze oral language development. Articles were focused on oral language development if they included observed or measured data of children's oral language constructs such as phonological skills, morphological skills, expressive and receptive vocabulary, syntax, pragmatics, comprehension, narratives, or discourse. In this regard, articles that focused primarily on adult language practices or pedagogy (Riley-Ayers & Figueras-Daniel, 2018; Zhang et al., 2010) were excluded. Pre-school aged was defined as children between the ages of 3 and 5 years, reflecting the typical enrollment of children in preschool programs in the U.S. (*Child Development*, 2021). While the search returned research articles focused on DLL children in general, this study included only articles focused on Spanish-English DLLs. Finally, studies that occurred outside of a U.S. context or that were written in a language other than English were excluded.

2.1.3 Article Identification

Peer-reviewed, scholarly journal articles were searched in the following databases: ProQuest Central (which included the ProQuest Education, Linguistics, Psychology, and Social Sciences databases), PsycINFO, and ProQuest Social Science Premium Collection (which included the ProQuest Social Science Premium Education Collection and Social Science Premium Linguistics Collection). In the initial identification of articles, a search was conducted using terms that included at least one of the following key words per category: 1) *Target population* (emergent bilingual OR dual language learner OR English language learner OR English learner OR bilingual) AND 2) *Target context* (preschool OR early childhood OR young children) AND 3) *Target focus* (oral language OR oral language development OR language development). Initial searches resulted in 298 search returns. After removing duplicate records (n=19), 279 articles were identified to be screened for inclusion.

During the preliminary inspection phase, I reviewed titles and abstracts of all 279 articles to identify inclusion criteria. Two hundred and twenty-three articles were excluded during this process; therefore, the remaining 56 articles were sought for retrieval. I then conducted a more extensive review of the 56 retrieved articles, which included reading the full text and identifying pertinent inclusion and exclusion criteria. Thirty-seven articles were eliminated during this phase, which resulted in 19 articles that were included for data extraction (see Figure 2.1 for a flowchart detailing the search, inclusionary, and exclusionary actions). This review should be read with attention to the limitations of the inclusion and exclusion criteria, as well as the indexing features of the databases used.

Figure 2.1 Article Identification



2.1.4 Article Analysis

For the 19 articles that are included in this analysis, I first engaged in a process of data extraction, and then conducted inductive coding to analyze the information from each article. During the data extraction process, I developed analytic memos for each article, which allowed me to record pertinent information, such as research questions, data collection procedures, key findings and implications for each article. These analytic memos also recorded my initial thoughts and musings regarding emergent themes that spanned across articles.

After reviewing the articles for data extraction, I returned to the articles to begin the coding process. Data analysis followed a constant comparative method to conduct open coding using Dedoose. The coding process was iterative, and each new code was assessed to determine whether it aligned with the emerging codebook or whether it constituted the generation of a new code (Corbin & Strauss, 1990). Open coding generated 118 different codes. After the creation of these concept label codes, I proceeded to group concepts related to the same phenomenon. Categories were generated that described the pertinent information included in the articles (Corbin & Strauss, 1990). Axial coding was then used to organize categories according to a paradigm model (Strauss & Corbin, 1990). Ultimately, codes were organized within three main categories: Study characteristics, methodology, and results and implications. Each of these categories was subdivided into domains, which were further categorized with primary codes, and secondary codes if applicable.

To address research question 1, four domains were identified within the category of study characteristics: Participants, context, language analyzed, and year of publication. The primary codes within the four study characteristics domains were mutually exclusive; each study was assigned only one code for each of the four study characteristic domains.

Table 2.1 Study Characteristics Coding

Domain	Primary Code	Definition
<i>Participants</i>	Bilingual children	The researchers considered bilingual children as the study participants.
	Bilingual children and monolingual children	The researchers considered bilingual children and monolingual children as the study participants.
	Bilingual children and parents	The researchers considered bilingual children and their parents as the study participants.
	Bilingual children and teachers	The researchers considered bilingual children and their teachers as the study participants.
<i>Context</i>	Home	The study took place in a home setting.
	School	The study took place in a school setting.

	Home and school	The study took place both in a home and a school setting.
<i>Language analyzed</i>	English	The researchers analyzed English language development only.
	Spanish	The researchers analyzed Spanish language development only.
	Spanish and English	Researchers analyzed language development in both Spanish and English.
<i>Year of publication</i>	2000-2004	The study was published between the years 2000 and 2004.
	2005-2009	The study was published between the years 2005 and 2009.
	2010-2014	The study was published between the years 2010 and 2014.
	2015-2019	The study was published between the years 2015 and 2019.
	2020-present	The study was published between the years 2020 and present-day (2023).

Subsequently, three domains were established within the category of methodology: Methods, operationalization of child oral language, and measures. To better understand the nuance of the study methodologies, each of these three domains were further divided into primary codes and secondary codes. First, the methods were coded as quantitative methods, which included experimental studies, correlational studies, causal-comparative/quasi-experimental studies, and descriptive studies; or qualitative methods, which included interviews and observations. The operationalization of oral language was categorized into primary codes of narrative microstructure, i.e. the word-level or sentence-level aspects of language, or narrative macrostructure, i.e. the overall narrative organization and content; each primary code was then further delineated with secondary codes. Measures were coded as adult measures, child assessments, or observations, each of which were assigned relevant secondary codes.

All studies were coded with a minimum of one primary code and one secondary code for each domain; however, to account for the broad range of methodologies employed in these studies,

none of the primary codes were mutually exclusive. For example, a study that used a mixed-methods approach would have been coded as both qualitative and quantitative, and subsequently coded with secondary codes that aligned with the more specific analysis conducted.

Table 2.2 Methodology Coding

Domain	Primary code	Definition	Secondary codes
<i>Methods</i>	Quantitative	Research design based on numeric data that seeks to understand the causal or correlational relationship between variables	Experimental Correlational Causal-comparative/ quasi-experimental Descriptive
	Qualitative	Research design based on non-numerical data that seeks to understand or describe a phenomenon	Interviews Surveys Observations
<i>Operationalization of child oral language</i>	Narrative microstructure	Word- and sentence-level aspects of language	Vocabulary Morphology Phonology Syntactic complexity
	Narrative macrostructure	Overall narrative organization and content	Storytelling Conversations
<i>Measures</i>	Adult measures	Measures related to adults, primarily parents or teachers	Parent report or survey Parent language use Parent interview Teacher report or survey Teacher language use Teacher interview
	Child assessments	Assessments that measure child language development, production, or proficiency	Vocabulary Morphology Phonology Syntactic complexity Comprehension Narrative language production
	Observational data	Observations of language environments or child language use	Field notes Video recordings Audio recordings

Finally, to answer research question three, two domains were analyzed: Findings and implications. Findings were characterized as related to language input or language output. Language input was subsequently coded based on the context of the language input to which the child was exposed, i.e. home language environment or school language environment. Language output was further coded to denote a focus on microstructure of language or macrostructure of language. The findings primary codes were mutually exclusive, as the article findings either focused solely on the language produced by a child, or analyzed the impact of language input on child language. However, the secondary codes were not mutually exclusive, as a study could have produced findings related to both home and school language environments. Implications were coded as developmental, theoretical, policy, or instructional/practice. Articles could have been coded with as many implications as deemed appropriate.

Table 2.3 Findings Coding

Domain	Primary Code	Definition	Secondary Code
<i>Findings</i>	Language output	Language output produced by the child	Microstructure of language Macrostructure of language
	Language input	Language input that a child received	Home language environment School language environment

Table 2.4 Implications Coding

Domain	Primary Code	Definition
<i>Implications</i>	Developmental	Implications provided by the author on how the findings enhance our understanding of the development of language
	Theoretical	Implications provided by the author on how the findings can impact research in the field
	Policy	Implications provided by the author on how the findings can impact policy in the field
	Instructional/Practice	Implications provided by the author on how the findings can shape instruction or practices that target language development

All studies included in this review were then double-coded by a trained research assistant. In the first round of coding, inter-rater reliability was lower than desired and indicated moderate agreement (% agreement = 76.81, Kappa = 0.583). We resolved discrepancies and clarified the coding scheme, and agreement between coders in the subsequent round of coding was 98.09% (Kappa = 0.789), indicating substantial agreement (Cohen, 1960). All remaining disagreements were discussed and resolved by consensus.

2.2 Results

This section highlights the main findings from this systematic review of the literature, which asks three main research questions. The first research question concerns the study characteristics of the included articles. The second research question attends to the methodological approach employed by each study. Finally, the purpose of the third research question is twofold. First, the results explore the main findings of each study and synthesize findings across the studies to gain a better understanding of key insights related to oral language development of preschool-aged Spanish-English DLLs. Second, the results explore the main implications outlined by authors of each study. For clarity, the results section will discuss the findings in alignment with each of the research questions.

2.2.1 Research question 1: Study characteristics

The main study characteristics considered in this paper were: Participants, context, year of publication, and language analyzed. Over half of the studies (n=10) focused only on DLLs, while most of the other studies focused on a combination of DLLs and their monolingual peers (n=1), their teachers (n=4), or their parents (n=4). The sample sizes ranged from 7 children to 540 children. Given the inclusion criteria, all the primary child participants were Spanish-English DLLs of preschool age, ranging from an average age of 3 years to 5 years and 7 months. Across

all students, 100% of the children (except for the monolingual children in Farver et al.) were identified as Latino or Hispanic; similarly, all the studies that reported parents' ethnicity (n=4) indicated that parents were 100% Latino or Hispanic. Conversely, only one of the studies with a teacher participant reported that the preschool teacher identified as Latina. The three other studies that included teacher participants all reported that most teachers in the study self-identified as non-Hispanic/Latino. All studies that reported country of origin indicated that most children were U.S.-born DLLs, while the majority of parents across all studies were born in countries outside of the U.S., predominately in Mexico.

Table 2.5 Details regarding study participants

<i>Articles</i>		<i>Participant Details</i>						
<i>Author</i>	<i>Year</i>	<i>Participants</i>	<i>Sample size</i>	<i>Mean age of children</i>	<i>Ethnicity of child participants</i>	<i>Ethnicity of adult participants</i>	<i>Children's country of birth</i>	<i>Family's country of origin</i>
Anthony et al.	2011	Spanish-English DLL children	129 preschool children	4 years (SD = 5 months)	100% Hispanic/Latino	N/A	100% born in U.S.	N/A
Bengochea et al.	2020	Spanish-English DLL children and teachers	1 teacher, 19 children	4 years, 7 months (SD = 6 months)	100% Hispanic/Latino	Teacher was 100% Hispanic/Latino	95% born in U.S.; 1 child born in Cuba	Cuba, Nicaragua, Guatemala, Argentina, Dominican Republic, Brazil, Puerto Rico
Bitetti et al.	2020	Spanish-English DLL children	200 children	4 years, 5 months (SD = 4 months)	100% Hispanic/Latino	N/A	95% born in U.S.	N/A
Boyce et al.	2013	Spanish-English DLL children and parents	120 children	3 years (SD = 1.64 months)	100% Hispanic/Latino	Parents were 100% Hispanic/Latino	N/A	91% of mothers born outside of U.S., primarily in Mexico
Cyck et al.	2015	Spanish-English DLL children and parents	83 mother-child dyads	3 years, 7 months (SD=4.0 months)	100% Hispanic/Latino	Parents were 100% Hispanic/Latino	84% born in the U.S.; the rest were born in Puerto Rico	All mothers born in Puerto Rico
Farver et al.	2007	Spanish-English DLL children and monolingual children	540 children (273 Spanish-speaking DLLs, 267 English-speaking monolingual children)	4 years, 2 months (SD = 4.85 months)	50.6% Hispanic/Latino, 49.4% African American	N/A	100% born in U.S.	84% of parents born in Mexico or Central America
Gillanders et al.	2011	DLL children and teachers	5 teachers, 5 classrooms of children (number of	4 years	100% Hispanic/Latino	Majority of teachers were non-	N/A	N/A

			children in each classroom not specified)			Hispanic/Latino		
Kelly	2015	Spanish-English DLL children and teachers	7 teachers, 24 focal children	3 years, 5 months	100% Hispanic/Latino	Majority of teachers were non-Hispanic/Latino	N/A	N/A
Melzi et al.	2017	Spanish-English DLL children	174 children	3 years, 5 months	100% Hispanic/Latino	N/A	68% born in U.S.	100% of parents born outside of U.S., primarily in Mexico
Mesa & Restrepo	2019	Spanish-English DLL children and parents	5 mother-child dyads	4 years, 6 months (SD = 3 months)	100% Hispanic/Latino	Parents were 100% Hispanic/Latino	100% born in U.S.	100% of parents born outside of U.S., primarily in Mexico or Guatemala
Potapova et al.	2018	Spanish-English DLL children	93 children	4 years, 2 months (SD = 5.05 months)	100% Hispanic/Latino	N/A	N/A	N/A
Prezas et al.	2014	Spanish-English DLL children	56 children	4 years, 11 months	100% Hispanic/Latino	N/A	N/A	100% of parents born in Mexico
Ramírez, Rica et al.	2019	Spanish-English DLL children and teachers	217 children, 79 teachers	5 years, 1 month (SD= 7 months)	100% Hispanic/Latino	Majority of teachers were non-Hispanic/Latino	92% born in U.S.	U.S., Mexico, Cuba, Guatemala, Honduras, Puerto Rico, Colombia, Dominican Republic, Panama, El Salvador, Venezuela, Argentina, Nicaragua, Bolivia, Ecuador, and Uruguay

Reyes & Azuara	2008	Spanish-English DLL children	12 children	5 years, 4 months	100% Hispanic/Latino	N/A	100% born in Mexico	Mexico
Runnion et al.	2022	Spanish-English DLL children	44 children	4 years, 9 months	100% Hispanic/Latino	N/A	N/A	N/A
Scheffner Hammer et al.	2003	Spanish-English DLL children and parents	43 mother-child dyads	3 years, 8 months	100% Hispanic/Latino	Parents were 100% Hispanic/Latino	84% born in U.S.; the rest were born in Puerto Rico	Majority of mothers (65%) were born in Puerto Rico; the rest were U.S. born
Simon-Cerejido & Gutierrez-Clellan	2009	Spanish-English DLL children	185 children	4 years, 4 months (SD = 4 months)	100% Hispanic/Latino	N/A	Not specified, but majority of children were of Mexican-American descent	Majority of parents were born in Mexico; the rest were from Central or South America
Simon-Cerejido et al.	2013	Spanish-English DLL children	196 children	5 years, 7 months (SD = 11.45 months)	100% Hispanic/Latino	N/A	Not specified, but majority of children were of Mexican-American descent	Majority of parents were born in Mexico
Weddle et al.	2016	Spanish-English DLL children	7 children	3 years, 6 months (SD = 5 months)	100% Hispanic/Latino	N/A	N/A	N/A

Other key aspects regarding study participants included children’s language use and exposure. All studies reported that most or all of the child participants primarily spoke Spanish, and were primarily exposed to Spanish at home. Conversely, most studies (n=15) indicated that children were primarily exposed to English at school, and only three studies reported that children were exposed to both Spanish and English at school.

Table 2.6 Details regarding children's language use and exposure

Articles		Children’s language use and exposure		
<i>Author</i>	<i>Year</i>	<i>Children’s primary language use</i>	<i>Primary language of exposure at home</i>	<i>Primary language of exposure at school</i>
Anthony et al.	2011	Spanish	Most families reported using only Spanish at home	English
Bengochea et al.	2020	Spanish	Most families reported using only Spanish at home	Spanish and English
Bitetti et al.	2020	Spanish	Most mothers reported using only Spanish at home	English
Boyce et al.	2013	Spanish	Most mothers reported using only Spanish at home	N/A
Cyzyk et al.	2015	Spanish	Most mothers reported using only Spanish at home	English
Farver et al.	2007	Spanish for DLL children, English for monolingual children	Most mothers of DLL children reported using only Spanish at home	English
Gillanders et al.	2011	Spanish	N/A	English
Kelly	2015	Spanish	N/A	English
Melzi et al.	2017	Spanish	Predominantly Spanish	Spanish and English
Mesa & Restrepo	2019	Spanish	All mothers reported speaking only Spanish at home	English
Potapova et al.	2018	Spanish	Most families reported using only Spanish at home	English
Prezas et al.	2014	Spanish	Most families reported using only Spanish at home	English
Ramírez, Rica et al.	2019	Spanish	Spanish	English
Reyes & Azuara	2008	Spanish for all children except one, who primarily used English	Spanish	English
Runnion et al.	2022	Spanish	All mothers reported speaking predominately Spanish at home	English

Scheffner Hammer et al.	2003	Spanish	Most mothers reported using only or mostly Spanish at home	English
Simon- Cereijido & Gutierrez- Clellan	2009	Spanish	Spanish	Spanish and English
Simon- Cereijido et al.	2013	Spanish	Spanish	English
Weddle et al.	2016	Spanish for all children except for one, who primarily used English	N/A	English

The studies were conducted in diverse communities across the United States, ranging from the West Coast (California) to the East Coast (New York). The majority of the studies (n=13) were conducted within a school context. All the studies that were conducted in a school context included a sample of participants who attended schools serving children from low-income backgrounds, and the majority (n=10) had a sample that attended English-only preschool programs. Two of the school context studies did not explicitly state the language of instruction in the preschool programs, and only one school context study focused on children who attended a Spanish-English bilingual preschool. Only four studies focused on the home context. These four studies that investigated home language environments all included homes where Spanish was the dominant language spoken by adults. Interestingly, only two studies focused on both home and school contexts (Melzi et al., 2017; Reyes & Azuara, 2008). The participants in Reyes and Azuara (2008) all came from homes in which Spanish was predominantly spoken, and attended English-only schools that served low-income families. The participants in Melzi et al. (2017) also all came from homes in which Spanish was predominantly spoken; however, the children in this study attended Spanish-English bilingual preschools.

Table 2.7 Details regarding study context

Articles		Context Information		
<i>Author</i>	<i>Year</i>	<i>Location</i>	<i>Context of the study</i>	<i>Description of study setting</i>
Anthony et al.	2011	Houston, Texas	School	English-only preschool program serving children from low-income backgrounds
Bengochea et al.	2020	South Florida	School	Spanish-English dual language preschool program located in multilingual/multicultural serving children from low-income backgrounds
Bitetti et al.	2020	Florida and New York	School	English-only preschool program serving children from low-income backgrounds
Boyce et al.	2013	Salt Lake City, Utah	Home	low-income households, none of the children were enrolled in preschool programs
Cycyk et al.	2015	Urban areas in Pennsylvania	Home	All children attended Head start programs serving children from low-income backgrounds
Farver et al.	2007	Los Angeles, California	School	All children attended Head start programs serving children from low-income backgrounds
Gillanders et al.	2011	North Carolina	School	All children attended More at Four Pre-Kindergarten program, a state-funded program targeting children from economically disadvantaged families
Kelly	2015	N/A	School	All children attended early childhood centers managed by a community-based agency focused on educating children from low-income families
Melzi et al.	2017	Urban community with a largely Latino population	School and home	All children attended a Spanish-English dual language preschool program serving children from low-income families
Mesa & Restrepo	2019	Phoenix, Arizona	Home	All participants attended either Head Start preschools or a private preschool in the area
Potapova et al.	2018	N/A	School	N/A
Prezas et al.	2014	Wichita, Kansas	School	All children attended Head start programs serving children from low-income backgrounds
Ramírez, Rica et al.	2019	Southeast region of the U.S.	School	All children attended Head start programs serving children from low-income backgrounds
Reyes & Azuara	2008	Tucson, Arizona	School and home	All children attended a public, state-funded preschool program and qualified for free- or reduced-cost lunch
Runnion et al.	2022	Large metropolitan area in the Southwestern U.S.	School	All children attended Head start programs serving children from low-income backgrounds

Scheffner Hammer et al.	2003	Urban areas in Pennsylvania	Home	All children attended Head start programs serving children from low-income backgrounds
Simon-Cerejido & Gutierrez-Clellan	2009	Southern California and Arizona	School	All children attended Spanish-English bilingual preschools and the majority (76%) qualified for free- or reduced-cost lunch
Simon-Cerejido et al.	2013	Southwest region of the U.S.	School	All children attended preschools that served predominately low-income families
Weddle et al.	2016	Southwest region of the U.S.	School	All children attended Head start programs serving children from low-income backgrounds

Studies in this review spanned from the early 2000s to present, with the majority of the articles (n=7) published between 2015-2019. The absence of articles predating the year 2000 in this sample reflects the exponential population growth of Spanish-English DLLs in the U.S.; moreover, it signifies an expanding recognition among researchers that the unique linguistic development of this population is paramount to ensuring their academic success (August, 2018; August & Shanahan, 2006). As for language of analysis, more than half of the articles (n=10) analyzed oral language development in both Spanish and English; about a third of the studies (n=6) only focused on English language development and three focused solely on Spanish language development.

2.2.2 Research question 2: Methodological approach

To answer Research Question 2, the methods of analysis employed in each study were first broadly considered (Table 2.8); the majority of the articles used quantitative methods of analysis (n=15), with three studies conducting an experiment, three studies using correlational analysis, and nine studies using a causal-comparative analysis. Only four of the studies used a qualitative approach; three of these qualitative studies used both interviews and observational data, while one

study relied solely on observational data. Interestingly, none of the studies employed a mixed-methods approach to investigate child language development.

Table 2.8 Methods of analysis

Articles		Methods	
<i>Authors</i>	<i>Publication Year</i>	<i>Primary Code</i>	<i>Secondary Code</i>
Anthony et al.	2011	Quantitative	Causal-comparative
Bengochea et al.	2020	Qualitative	Observations
Bitetti et al.	2020	Quantitative	Causal-comparative
Boyce et al.	2013	Quantitative	Causal-comparative
Cyck et al.	2015	Quantitative	Causal-comparative
Farver et al.	2007	Quantitative	Causal-comparative
Gillanders et al.	2011	Qualitative	Interviews, observations
Kelly	2015	Qualitative	Interviews, observations
Melzi et al.	2017	Quantitative	Correlational
Mesa & Restrepo	2019	Quantitative	Experiment
Potapova et al.	2018	Quantitative	Causal-comparative
Prezas et al.	2014	Quantitative	Causal-comparative
Ramírez et al.	2019	Quantitative	Causal-comparative
Reyes & Azuara	2019	Qualitative	Interviews, observation
Runnion et al.	2022	Quantitative	Causal-comparative
Scheffner Hammer et al.	2003	Quantitative	Correlational
Simon-Cerejido et al.	2009	Quantitative	Correlational
Simon-Cerejido et al.	2013	Quantitative	Experiment
Weddle et al.	2016	Quantitative	Experiment

Subsequently, analysis sought to further investigate the nuance of methodological approaches used in each study by considering how child oral language use was operationalized, and what measures were used to evaluate language development (Table 2.9). Findings underscore an overwhelming emphasis on operationalizing oral language use with microstructure variables. Most of the articles analyzed the narrative microstructure of language only (n=16), while two of the articles focused on narrative macrostructure and one article analyzed both narrative microstructure and macrostructure. Overall, child vocabulary was the variable most often used to operationalize oral language. The majority of the studies included used both adult measures and

child assessment measures; however, several of the studies (n=8) relied solely on child assessment data. Only five studies used observational data, and only one of those studies relied solely on observational data.

Table 2.9 Methodological approach

Articles		Operationalization of child oral language		Measures	
<i>Authors</i>	<i>Year</i>	<i>Primary Code</i>	<i>Secondary Code</i>	<i>Primary Code</i>	<i>Secondary Code</i>
Anthony et al.	2011	Microstructure	Phonology	Child assessments	Phonology
Bengochea et al.	2020	Macrostructure	Conversation, storytelling	Observations	Field notes, video recordings
Bitetti et al.	2020	Macrostructure	Storytelling	Child assessments	Narrative language production, vocabulary, syntactic complexity
		Microstructure	Syntactic complexity		
Boyce et al.	2013	Microstructure	Vocabulary	Child assessments	Vocabulary
				Observations	Video recordings
				Adult measures	Parent report, parent language use
Cycyk et al.	2015	Microstructure	Vocabulary	Adult measures	Parent report
				Child assessments	Vocabulary
Farver et al.	2007	Microstructure	Phonology, vocabulary	Child assessment	Phonology, vocabulary
Gillanders et al.	2011	Microstructure	Vocabulary	Adult measures	Teacher reports, teacher interview
				Observations	Field notes
Kelly	2015	Microstructure	Syntactic complexity	Adult measures	Teacher interviews
				Observations	Field notes
Melzi et al.	2017	Microstructure	Vocabulary	Adult measures	Parent report, teacher report
				Child assessments	Vocabulary
Mesa & Restrepo	2019	Microstructure	Syntactic complexity, vocabulary	Adult measures	Parent language use
				Child assessments	Syntactic complexity, vocabulary
Potapova et al.	2018	Microstructure	Morphology	Child assessment	Morphology, narrative language production
Prezas et al.	2014	Microstructure	Phonology	Child assessments	Phonology
Ramírez et al. (2019)	2019	Microstructure	Vocabulary	Child assessments	Vocabulary
				Adult measures	Teacher reports

Reyes & Azuara	2019	Microstructure	Vocabulary	Adult measures	Parent interview, teacher interview
				Observations	Video recordings, field notes
Runnion et al.	2022	Microstructure	Morphology, phonology syntactic complexity	Child assessments	Morphology, phonology, syntactic complexity
Scheffner Hammer et al.	2003	Microstructure	Vocabulary, phonology	Adult measures	Parent report
				Child assessments	Phonology, vocabulary
Simon-Cerejido et al. (2009)	2009	Microstructure	Syntactic complexity	Child assessment	Narrative language production, syntactic complexity
Simon-Cerejido et al. (2013)	2013	Microstructure	Vocabulary, syntactic complexity	Adult measures	School language input, parent interview, teacher report
				Child assessments	Syntactic complexity, vocabulary
Weddle et al.	2016	Macrostructure	Storytelling	Child assessments	Narrative language production; syntactic complexity

2.2.3 Research question 3: Findings and implications

In order to respond to Research Question 3, the following section attends to the results and implications discussed in the included studies. Furthermore, this section explores how the study characteristics and methodologies informed the results. The findings from these studies will be presented according to the two main categories of findings as denoted in Table 2.3. Language input is discussed based on the context of home language input or school language input. Conversely, findings related to language output are discussed according to whether researchers focused on the narrative microstructure or narrative macrostructure of children's language output. Finally, implications are addressed according to the four main categories of implications outlined in Table 2.4.

2.2.3.1 Language input

Out of the 19 studies included in this literature review, 11 studies analyzed the role of language input on the oral language skills of preschool-aged Spanish-English DLLs. The results seem to be strongly linked to the context of the study; for example, four of these studies sought to understand the impact of the home language environment on children's language, while five studies attended to the school language environment; two studies look at both home and school language environment impact on language development. Therefore, the 11 studies that focused on language input will be discussed below according to context.

2.2.3.1.1 Home language input

Overall, the studies that focused on the impact of home language input found that home language input affects certain aspects of children's narrative microstructure development in Spanish, particularly vocabulary; however, it has no discernible relation to English microstructure. The impact of home language use on children's narrative macrostructure development was not explored. Additionally, these studies only considered the role of the parent in children's language development, and did not investigate the impact of siblings, grandparents, or other family members.

More specifically, all four studies that reported findings on the impact of home language input used a quantitative approach to identify a relationship between parent language use and the microstructure of children's language development. Most of the studies (Boyce et al., 2013; Cycyk et al., 2015; Scheffner Hammer et al., 2003) included parent reports as a measure of parent language use; Mesa and Restrepo did not use a parent report, but analyzed parent talk to derive variables of comments, high-level questions, and recasts used by parents as they implemented a language intervention at home (Mesa & Restrepo, 2019). Mesa and Restrepo was also the only

study in this group to conduct an experiment; Boyce et al. (2013) and Cychy et al. (2015) used a causal-comparative approach, while Scheffner Hammer et al. (2003) reported on correlational data.

All four studies used child vocabulary as a dependent variable; Mesa and Restrepo (2019) also analyzed children's syntactic complexity, and Scheffner Hammer et al. (2003) also investigated children's phonology. Mesa and Restrepo (2019) found that a home literacy intervention implemented by mothers impacted children's vocabulary growth in Spanish, but did not have a discernible impact on children's syntactic complexity in Spanish. Interestingly, Scheffner Hammer et al. (2003) focused only on children's development in English, and found no significant impact of home literacy experiences on children's phonology or vocabulary growth in English.

While Mesa and Restrepo (2019) and Scheffner Hammer et al. (2003) only focused on development of one language, Boyce et al. (2013) and Cychy et al. (2015) examined language development in both Spanish and English, although they only investigated the dependent variable of vocabulary. For example, Boyce et al. (2013) found that the home language environment significantly predicted the children's vocabulary knowledge in Spanish and English. Cychy et al. (2015) specifically explored the impact of maternal depressive symptomatology on children's vocabulary development; they found that mothers' depressive symptomatology significantly slowed children's receptive vocabulary growth in Spanish, but had no significant impact on English vocabulary development. Interestingly, both studies analyzed English and Spanish vocabulary separately, rather than considering children's conceptual knowledge development. As discussed in the theoretical framework, the shared (distributed) asymmetrical model for the bilingual mental lexicon posits that young DLLs' conceptual vocabulary knowledge offers a more comprehensive understanding of children's linguistic skills as it considers the distributed nature of

children's language proficiency (Dong et al. 2005). Measures that utilize conceptual vocabulary scoring credit labels across two languages for the same concept instead of assessing children's vocabulary knowledge separately in two languages (Mancilla-Martinez et al., 2020; Mancilla-Martínez et al., 2018; Mancilla-Martinez & Vagh, 2013), and therefore may have provided greater insight as to the impact of home language input on children's overall vocabulary development.

2.2.3.1.2 School language input

Five studies included in this review reported findings related to the impact of school language input on the development of DLLs' language microstructure. Overall, these five studies used a combination of quantitative and qualitative methods to highlight the influence of teacher language use on the development of DLL children's language microstructure. As with the studies that investigated home language input, these studies did not consider children's narrative macrostructure development, or the impact of peer's language input.

Three of the studies (Ramírez et al., 2019; Simon-Cereijido et al., 2013; Weddle et al., 2016) used a quantitative approach, although to different ends. Simon-Cereijido et al. (2013) used an experimental design to investigate the impact of a school-based language intervention on children's growth in Spanish; this study found that children demonstrated growth in Spanish outcomes of vocabulary and syntactic complexity over time (Simon-Cereijido et al., 2013). Weddle et al. also used an experimental design to investigate the effects of multitiered English language intervention on children's narrative macrostructure in English; results indicated that most children showed increased use of story grammar and complex linguistic structures in their story retellings (Weddle et al., 2016). Conversely, Ramírez et al. (2019) investigated the impact of various teacher characteristics on children's language development in both Spanish and English. This article illustrated that amount of teacher training had a positive, significant impact on children's Spanish

and English vocabulary development; additionally, teachers' positive cultural beliefs about multilingual learners had a significant and positive relationship with children's Spanish vocabulary growth (Ramírez et al., 2019).

Two of these studies used a qualitative methodology, specifically teacher interviews and observations, to better understand the language support practices that teachers used to support DLLs in English-only classrooms (Gillanders & Castro, 2011; Kelly, 2015). Consequently, both studies only investigated children's English language development. While Gillanders & Castro (2011) found evidence that supported the use of storybook reading to support DLLs, Kelly (2015) identified the importance of teacher intentionality in creating a rich classroom language environment.

2.2.3.1.3 Home and school language environment

Two studies included in this literature review expanded their findings to consider the impact of both the home and school language environment on DLL children's language development (Melzi et al., 2017; Reyes & Azuara, 2008). Both studies investigated elements of language microstructure in English and Spanish. Melzi et al. (2017) used parent and teacher reports to better understand how language input at home and at school was related to children's vocabulary skills in both languages; their quantitative analysis found that Spanish-dominant DLLs showed more balance in their vocabulary skills across languages than English-dominant DLLs (Melzi et al., 2017). Reyes & Azuara used a qualitative approach to investigate children's metalinguistic awareness of their biliteracy abilities, and highlighted the importance of family literacy practices in supporting children's language development. Together, these two studies provide a varied understanding of how both home and school language input influence young DLL children's language development in both Spanish and English.

2.2.3.2 Language output

While the majority of the studies included in this systematic literature review were concerned with the impact of language input on DLLs oral language development, eight studies reported findings that solely focused on the language production of Spanish-English bilingual preschoolers. Findings concerned with DLLs' language production underscore the importance of how oral language was operationalized. In other words, these eight studies analyzed either children's narrative microstructure, i.e. the word-level or sentence-level aspects of language, or narrative macrostructure, i.e. the overall narrative organization and content. This perspective on the findings again indicated that the majority of study findings addressed narrative microstructure of language; six studies focused solely on narrative microstructure, one study focused on both narrative macrostructure and microstructure, and one study focused solely on narrative macrostructure.

2.2.3.2.1 Narrative Microstructure

All six studies that focused on narrative microstructure of children's language production used causal-comparative or correlational methods to analyze children's language production in school contexts (Anthony et al., 2011; Farver et al., 2007; Potapova et al., 2018; Prezas et al., 2014; Runnion et al., 2022; Simon-Cerejido & Gutierrez-Clellen, 2009). Additionally, most of these studies operationalized phonology or vocabulary as the main variable of language microstructure; the other aspects of narrative microstructure analyzed included syntactic complexity and morphology. All studies took place in school contexts, and employed quantitative methods to better understand children's language development in Spanish, English, or both languages.

Of the six studies, one solely examined Spanish language production (Anthony et al., 2011) and two studies investigated only English language production (Potapova et al., 2018; Runnion et

al., 2022). The one study that focused on Spanish found evidence indicating that DLL children have clearly distinguishable phonological representation-related processing abilities in Spanish, as opposed to one single phonological representation ability (Anthony et al., 2011). Both studies that solely analyzed English language production focused on morphology in different capacities. For example, Runnion et al. found that Spanish-English DLLs' English morphology and syntactic complexity improved after several months of exposure to English in a preschool classroom setting (Runnion et al., 2022). Potapova et al. also investigated English morphology, and results indicate that morpheme diversity and productivity are meaningful measurements of English morphological development in Spanish-English DLLs (Potapova et al., 2018).

Three studies investigated both Spanish and English language production (Farver et al., 2007; Prezas et al., 2014; Simon-Cereijido & Gutierrez-Clellan, 2009). Simon-Cereijido and Gutierrez-Clellan (2009) found strong relations between vocabulary and syntactic complexity in both languages, although the relations were stronger in Spanish than in English. Prezas et al. (2014) focused specifically on phonology, and found significant growth in phonological skills of Spanish-English DLLs from age 4 to 5. Farver et al. (2007) was the only study to compare monolingual children to DLL children. This study analyzed the efficacy of early screening measures of phonology and vocabulary in predicting children's emergent literacy skills; they found that the Spanish screener was successful in predicting DLL children's English and Spanish emergent literacy skills (Farver et al., 2007).

2.2.3.2.2 Narrative Macrostructure

Only two studies that focused on language output investigated the narrative macrostructure of children's language production (Bengochea et al., 2018; Bitetti et al., 2020). One of these studies reported quantitative findings on both macrostructure and microstructure development (Bitetti et

al., 2020); this study found that while English macrostructure and Spanish macrostructure were not related, children's microstructure abilities in each language were strongly related to their macrostructure abilities in that same language (Bitetti et al., 2020). On the other hand, Bengochea et al. used a qualitative approach to understand DLL preschoolers' narrative macrostructure in a show-and-tell activity; researchers found that children were flexible and creative in fluidly using both Spanish and English as they told their stories (Bengochea et al., 2018). This was also the only study to consider a conversational element of children's language output; researchers considered DLL children's responses to both teachers and peers during their storytelling.

2.2.3.3 Implications

The final element that will be discussed to address research question 3 are the implications researchers offered based on their findings. Across all studies, most of the implications considered how findings can enhance our understanding of the development of language (34%) or how findings can shape instruction or practices that target language development (47%). A small portion of the studies (19%) provided theoretical implications on light of findings. Interestingly, none of the studies discussed policy implications based on their findings. As one may expect, all of the studies that discussed findings related to language input provided developmental or instructional implications for their findings; the studies that focused on language output provided theoretical implications in addition to developmental and instructional implications.

2.3 Discussion

This review seeks to understand how researchers have examined the oral language development of preschool-aged DLLs. The results indicate substantial breadth both in the ways that researchers have considered and analyzed the oral language development of young DLLs, as well as the main findings related to bilingual language development. The findings also lend support

to the theoretical framework of this paper, as many studies highlight the importance of understanding the influential nature of language input, while also considering linguistic development in both Spanish and English.

Despite the extensive information that these articles provide to better understand language development in young DLLs, there are still considerable limitations in how the literature addresses the oral language development of preschool-aged Spanish-English DLLs. This section will present five emergent themes to highlight key directions that the field must address in future research to better support the oral language development of young DLL children: (1) dichotomy of methodological approaches; (2) narrative language focus; (3) context; (4) relation between language input and oral language development; and (5) isolated language analysis.

2.3.1 Dichotomy of methodological approaches

The literature included in this review highlights the dichotomy of methodological approaches employed to understand oral language development of preschool-aged DLLs. Qualitative methods were used most often to document children's language experiences, while quantitative approaches were used to analyze the relations between linguistic input and children's language development, as well as various aspects of children's language output.

Although only four qualitative studies were included in this sample, three of these studies analyzed children's experiences in the school language environment. Furthermore, three of the four qualitative studies operationalized children's oral language with narrative microstructure variables. The three school context studies (Bengochea et al., 2018; Gillanders & Castro, 2011; Kelly, 2015) had both DLL children and their teachers as participants, which allowed the researchers to better understand how teacher talk and literacy pedagogy impacted children's language development, respectively. Only Gillanders et al. (2011) and Kelly (2015) highlight

teacher pedagogical moves that specifically support DLL learners in classroom contexts. Furthermore, although Reyes and Azuara (2008) did attend to home language input, the included anecdotes of home literacy experiences served to support classroom observations the researchers had already analyzed. Thus far, the literature generally aligns qualitative research with a greater understanding of children's language experiences and interactions with teachers within a classroom language environment.

The remaining fifteen articles included in this review used a quantitative approach to analyze various aspects of child oral language development. Again, the majority of the articles focused on a school context; additionally, all but two of the articles (Bitetti et al., 2020; Weddle et al., 2016) operationalized child oral language use with variables representing narrative microstructure of language, most frequently vocabulary and phonology. Very little attention was paid to narrative macrostructure analysis, except in the studies conducted by Bitetti et al. (2020) and Weddle et al. (2016). Interestingly, only three quantitative studies analyzed the impact of a language intervention on children's linguistic development (Mesa & Restrepo, 2019; Simon-Cerejido et al., 2013; Weddle et al., 2016); the remaining articles aimed to identify a causal-comparative or correlational relationship between various facets that impact children's oral language development.

Overall, the methodology applied seems to strongly dictate the research focus and findings related to children oral language development; while language experiences in classrooms are generally siloed in qualitative methods, growth in narrative microstructure seems to be strongly linked to quantitative methods. Curiously, none of the studies included in this review employed a mixed methods approach to examine children's oral language development. However, a mixed methods approach may offer a more robust way to incorporate both a descriptive analysis of the

language environment and children's language experiences, in addition to a measurable explanation of children's growth in oral language development. For instance, recent work by McClain et al. used a sequential explanatory mixed-methods approach to understand how preschool teachers' use of translanguaging strategies support DLLs' participation in classroom discourse (McClain et al., 2021). Further research on language environments experienced by DLLs in English-dominant classrooms may consider a similar incorporation of both a quantitative perspective to investigate the psycholinguistic features of home and classroom discourse, as well as a qualitative approach to better understand students' experiences in various language environments.

2.3.2 Narrative Analysis Focus

As mentioned in the results section, the majority of the studies included in this review focused on analyzing narrative microstructure; only two studies investigated children's macrostructure development, and one study explored both microstructure and macrostructure development. While the aforementioned research has contributed to a greater understanding of DLLs' oral language development in terms of the narrative microstructure, or specific linguistic level features of language, a systematic understanding of DLL children's narrative macrostructure is still lacking.

Narrative macrostructure warrants more attention, as this is recognized as one element of oral language development that is readily accessible across children's languages (Bitetti et al., 2020; Pearson, 2002). More specifically, macrostructure development relies on general cognitive processes somewhat independently from linguistic development, therefore it is theorized that the ability to produce a well-organized narrative is not necessarily a language-specific skill, but rather a cognitive skill that operates across languages (Berman, 2001; Bitetti et al., 2020; Pearson, 2002;

Trabasso et al., 1992; Verhoeven & Strömquist, 2001; C. Westby et al., 1989). Simply put, this means that when a Spanish-English DLL develops macrostructure skills in English, these features should readily transfer to their story-telling abilities in Spanish; for example, a bilingual child's ability to identify and state the main conflict of a story in English should support their ability to articulate the story problem in Spanish (Pearson, 2002). However, it is interesting to note that Bitetti's et al.'s study found no relation between children's English macrostructure and Spanish macrostructure, which contradicts the well-theorized notion that narrative macrostructure is a transferrable skill. Moreover, much of the research on narrative macrostructure of Spanish-English DLLs focuses on school-aged children, and fails to consider younger children's narrative abilities (Bitetti et al., 2020; Pearson, 2002). Therefore, a more robust understanding of how preschool-aged DLLs develop narrative macrostructure in both Spanish and English is necessary to glean clearer insight to DLL children's overall oral language development.

2.3.3 Context

While most of the studies included in this review focused on school contexts, very few examined specific strategies that teachers used to support DLL students. Furthermore, only Bengochea et al. (2020) investigated oral language development in a dual language classroom; the rest of the studies took place in English-only classrooms. Additionally, only one study investigated the pedagogical practices implemented in preschool classrooms that specifically support DLL students (Gillanders & Castro, 2011). Although there is overlap in pedagogical practices that support preschool monolingual and DLL children's language development (L. M. Espinosa, 2013), high-quality classroom instruction must be reinforced with specific strategies that support the unique needs of DLLs (Castro et al., 2011; L. M. Espinosa, 2013). This indicates a need to identify and implement these strategies in early childhood classrooms that can specifically support DLLs.

The focus on home language input in these studies was limited to maternal input, which aligns with the extant research on the impact of home language environments on young Spanish-English DLLs. However, this limited focus on maternal input is not representative of the linguistic environment that children experience at home, which often includes other conversation partners such as additional adults or siblings. While various aspects of maternal input, ranging from language used by the mother, mothers' talk, mothers' vocabulary, and mothers' education (Boyce et al., 2013; Cycyk et al., 2015; Mesa & Restrepo, 2019; Scheffner Hammer et al., 2003), were examined, all four articles focused on the dependent variable of children's vocabulary to operationalize child language development. This is important to note, as vocabulary stands out overall as the most-studied variable of children's language, but overwhelmingly so in studies that focus on home language input. Greater attention must be paid to how home language input, including but not limited to maternal input, impacts other aspects of DLLs' language development.

Another limitation of the focus on home or school language input is that the studies included fail to recognize other contextual factors that impact language development. For example, most studies only examined parent or teacher input, and the impact on child language development; only one study analyzed the broader conversation between adults and children (Bengochea et al., 2020). Bengochea et al. address a critically important aspect of the language environment that other studies, which focused on either teacher input or maternal input, fail to recognize: the language environment is a conversationally responsive space in which adult talk and child talk are interactive, reciprocal, and inter-connected processes that should be considered jointly. Furthermore, none of the studies in this review considered peer interactions, and how conversations among siblings or classmates augment the rich language environment. In fact, none of the studies included information on children's siblings or birth order, which are important factors

impact home language input (Hoff, 2010; Poston et al., 2003). Moreover, despite the increasing number of DLLs in preschool classrooms across the U.S. (Friedman-Krauss et al., 2019b), there is a dearth of research on the language interactions between DLLs and other conversation partners in the classroom (Sawyer et al., 2017, 2018). The narrow focus on teacher or maternal language input in this body of literature limits our understanding of the dynamic language environments that children experience both at home and school. Furthermore, the limited focus on home or school contexts fails to recognize that children are exposed to language and literacy practices within the broader community as well; none of the studies here investigated community language environments or experiences, which presents a critical dimension for future research.

2.3.4 Relation between language input and oral language development

Closely related to the theme of context is the robust connection between the linguistic input that young children encounter and their language development. Of the 11 studies that investigated the role of language input, three studies adopted a qualitative approach that illustrated the importance of specific literacy practices implemented by children's teachers or mothers (Gillanders & Castro, 2011; Kelly, 2015; Reyes & Azuara, 2008). These strategies emerged as influential catalysts in fostering children's language development, particularly by supporting children's increased oral language use.

In a similar manner, the eight remaining studies highlighted strong links between linguistic input and children's oral language development. Notably, all eight studies found significant and positive relations between at least one variable of parent or teacher talk on variables of children's oral language. While this literature clearly highlights the strength of the relations between linguistic input and language development of young DLLs, less attention was paid to the malleability of language input, as most studies merely investigated the correlational or predictive

nature of language input. However, three studies implemented language interventions that specifically aimed to modify the linguistic input DLLs received from their mothers or teachers (Mesa & Restrepo, 2019; Simon-Cereijido et al., 2013; Weddle et al., 2016).

For instance, Simon-Cereijido et al. (2013) found that school-based small group interventions had a positive and significant impact on children's growth on Spanish outcomes, with a small to medium effect size (Cohen's $d=0.39$). Weddle et al. (2016) conducted a single-case study analysis that indicated six out of seven participants made gains in the dependent variable of narrative retells after implementation of a narrative language intervention. Finally, Mesa and Restrepo (2019) implemented a family literacy intervention at home, yielding positive and significant effects on children's vocabulary and conversational turns for all five child participants. These intervention studies offer compelling evidence to illustrate the positive impact of early language interventions on young DLLs' language development. Nevertheless, a need for larger-scale dual-language interventions resonates; these interventions have the potential to leverage this strong connection between linguistic input and language development, providing a strategic opportunity to enrich language input and consequently bolster the language development of young DLLs.

2.3.5 Isolated language analysis

While the majority of the studies included in this review analyzed children's language development in both Spanish and English, most studies failed to note the fluid and translational nature of bilingualism. Specifically, most studies analyzed Spanish and English independently, and did not consider the within- and cross-language relations of Spanish and English. Only four studies considered within- and cross-language relations of Spanish and English (Bitetti et al., 2020; Farver et al., 2007; Prezas et al., 2014; Simon-Cereijido & Gutierrez-Clellen, 2009). All four studies found

evidence that supports the shared (distributed) asymmetrical model of language development, which indicates that cognitive and literacy-related skills can transfer across languages and results in strong cross-language relations (Bitetti et al., 2020; Cummins, 1984b; Farver et al., 2007; Prezas et al., 2014; Simon-Cereijido & Gutierrez-Clellen, 2009). However, it is important to note that evidence of cross-language relations was only illustrated in children's narrative microstructure. While Bitetti et al. provide evidence of cross-language relations in language microstructure, they did not observe any relationship between English macrostructure and Spanish macrostructure (Bitetti et al., 2020).

The complex nature of within- and cross-language relations can be influenced by the varying language skills that DLL preschoolers possess at the onset of their oral language development (Bitetti et al., 2020; Hammer et al., 2014; Mathematica Policy Research Institute, 2013), which may be one reason for the limited research in this area. Some research suggests that varying levels of language dominance may play a role in determining the strength of within- and cross-language relations, particularly for young children (Kang, 2012; Montanari, 2004; Viberg, 2001). However, Bitetti et al. (2020) found that language dominance did not impact within- or cross-language relations in their sample of Spanish-English DLL preschooler's oral language production. The lack of consensus among researchers regarding within- and cross-language relations of preschool-aged DLLs presents a significant opportunity for additional research. Moreover, it is important to again note that most of the research on Spanish-English DLLs within- and cross-language relations focuses on elementary school-aged children, which again supports the need for further investigation on this topic specifically with preschool-aged DLLs.

2.4 Conclusion

Although researchers have established the critical role that oral language development plays for later literacy skills and academic success, much of this research has focused on monolingual children; the increasing linguistic diversity in U.S. classrooms requires a more systematic and nuanced understanding of the oral language development of young DLLs, in order to provide targeted support for the language development of these children. The main goal of this systematic literature review was to provide a comprehensive, though not exhaustive, overview of what the current literature reveals about oral language development of preschool-aged Spanish-English DLLs. Given the scant literature that focuses specifically on this population, as well as the limitations of the current studies explored in the discussion, this review highlights the need to diversify the methods and contexts considered in oral language development, as well as the need to expand the field's understanding of narrative microstructure and within- and cross-language relations.

Research question one reveals that the majority of the studies included in this review take place in a school context; this indicates a need to expand the research context to better understand the impact of home language input, as well as language input that children experience outside of either school or home language environments. However, it should also be noted that home context was not included in the search terms, so the narrow focus on home context in this sample could be due to limitations of the search terms. Future literature reviews should more specifically attend to home language input, as this is a clear contributor to children's language development. Furthermore, the findings from research question two imply that the methodological approach employed by researchers must be expanded to gain a more wholistic understanding of the nature of language development. A mixed methods approach to exploring DLLs' oral language

development might help address this gap, as it could provide qualitative insight to children's diverse language experiences as well as quantitative understanding of children's growth in various aspects of oral language.

Research question three illustrates that the main findings pertaining to DLL children's oral language development related to language input and output, as the extant literature might lead us to expect. The findings related to language input underscore the strong relation between language input and children's language development. However, researchers must attend to language input outside of the school context, and consider home language input as well as language input that children experience in the greater community. Moreover, larger scale, dual-language interventions emerge as a promising avenue to bolster linguistic support for young DLLs. Such interventions can leverage the strong relationship between linguistic input and language development, offering a strategic approach to enhance language input in an effort to better support DLLs' language development. As researchers continue to explore this strong connection, recognizing and harnessing the multifaceted sources of language input becomes paramount for a more comprehensive understanding of young DLLs' language development.

Although researchers have an emergent understanding of the development of DLLs' narrative microstructure, there is still very little research concerned with children's narrative macrostructure. An increased focus on narrative macrostructure might lead to greater insight regarding cross-language relations, an element of language development that is also underrepresented in this review. Another notable gap in this literature review pertains to research implications. While the included studies highlight theoretical, developmental, and practical implications related to DLLs' language development, they fail to recognize and address implications related to policy. This omission is concerning, given the crucial role that policy plays in guiding instructional efforts.

Greater attention to policy implications could have critical impact on legislature concerning U.S. preschools, and must be considered in future work.

Notwithstanding the relatively limited sample of this review, this work offers valuable insights into future directions that the field must take in order to better understand DLL children's oral language development. This understanding is crucial in supporting teachers, parents, and other conversation partners as they engage with young bilingual children; it is also critical in ensuring that targeted pedagogy and interventions are developed that can specifically attend to the unique linguistic development of young DLL children. Specifically, this review guided our development and implementation of the Puente de Cuentos para la familia intervention that is the focus of this dissertation. This community-based, dual language narrative intervention addresses the gap in literature surrounding community-based language interventions, as well as the dearth of literature focused specifically on children's narrative macrostructure.

CHAPTER 3

Methods

3.1 Study overview

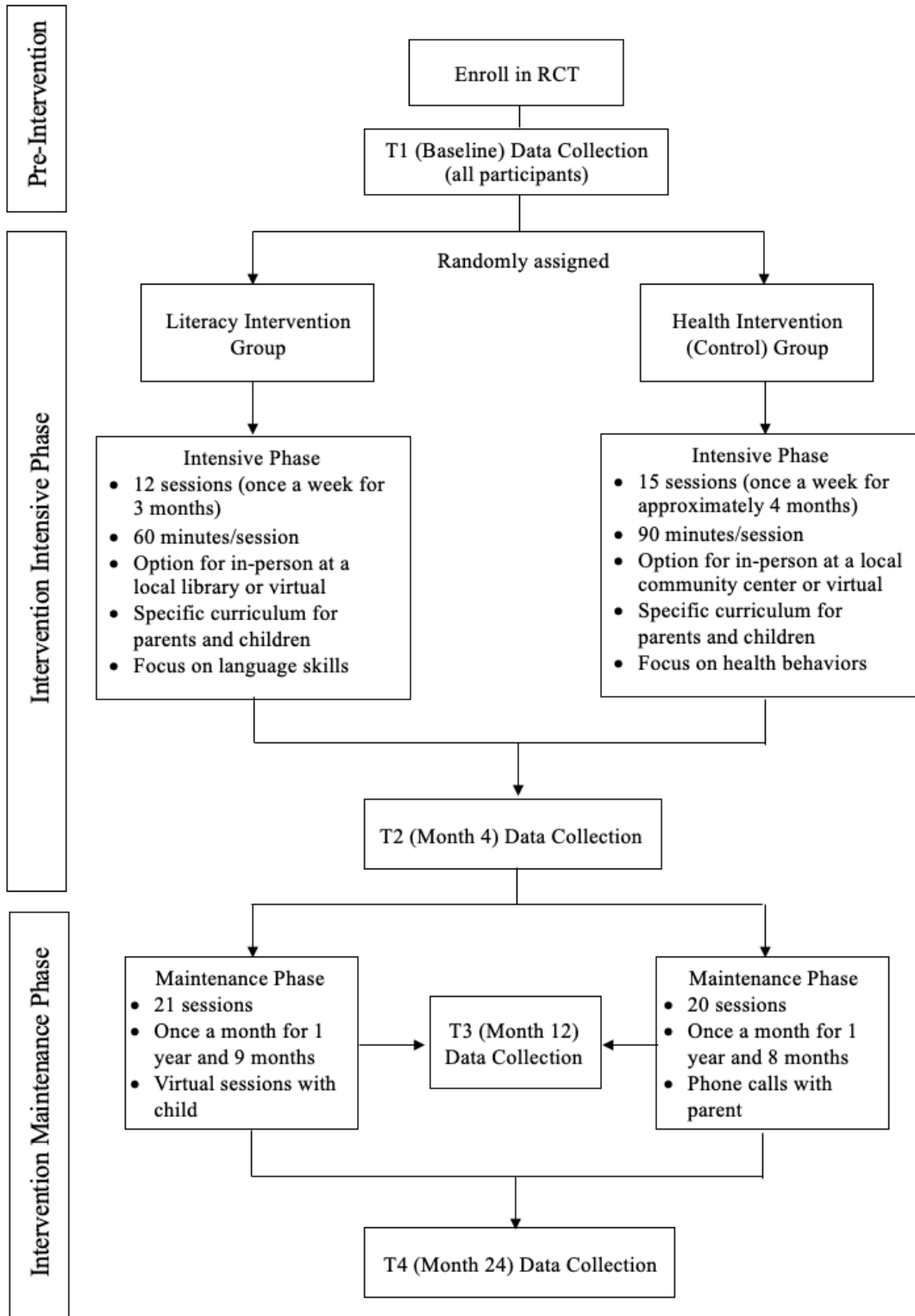
The importance of developing oral language during the preschool years is evident, as there is a strong and clear relationship between early oral language skills and reading comprehension (Cain & Oakhill, 2011; Dickinson & Tabors, 2002; Mancilla-Martinez & Lesaux, 2010, 2017; Perfetti & Hart, 2001; Verhoeven & van Leeuwe, 2008). Early cultivation of vocabulary and narrative skills is particularly critical, as these skills allow children to derive greater benefits from subsequent instruction and enhance their comprehension of both spoken and written content (Berman, 2001; Cain & Oakhill, 2011; Spencer & Petersen, 2020; Verhoeven & Strömqvist, 2001). For DLLs, incorporating children's L1 into oral language instruction facilitates the acquisition of both L1 and L2; additionally, incorporation of L1 in intervention efforts involves families in the promotion and retention of their home language (Collier & Thomas, 2017; National Academies of Sciences, Engineering, 2017; Spencer et al., 2020). Therefore, we developed and implemented a community-based, family-centered dual language intervention that targets young DLLs' oral language skills in both Spanish and English. The primary aim of this dissertation is to assess how this intervention impacts young DLL children's Spanish and English oral language skills; a secondary aim of this project is to investigate the extent to which families engaged with the intervention, and how the intervention impacted children's at-home language and literacy experiences.

3.1.1 Trial design

This dissertation reports on data collected during a parallel-group, randomized controlled trial (RCT) designed to investigate the effect of a community-based dual language intervention on young children's oral language skills, specifically story comprehension, narrative retell, and receptive vocabulary. This intervention was strategically designed to foster school readiness via oral language development, which is a meaningful indicator of academic success and later reading comprehension. Furthermore, this intervention sought to enhance parents' understanding about the advantages of bilingualism, and support their use of home literacy practices with their children.

Parent-child pairs were randomized to the intervention or control group. The community-based, dual language intervention was a two-year literacy intervention based on a Spanish-English narrative curriculum that was specifically designed for use with preschoolers from Spanish-speaking homes (Spencer et al., 2019, 2020). The control group was a two-year behavioral health intervention that focused on diet, physical activity, and engaged parenting. This trial will ultimately to enroll 10 cohorts of parent-child dyads from Latino communities around Nashville, TN. This dissertation specifically focuses on the first five cohorts, who have all completed the intensive phase of the intervention. See Figure 3.1 for participant flow through the trial.

Figure 3.1 Participant flow through trial



3.1.2 Interim analysis

Although the full RCT was not completed at the time of data analysis, this dissertation reports results from an interim analysis conducted at the mid-point of the RCT. While the full RCT aims to enroll ten cohorts of participants, this interim analysis focuses on the first five cohorts. All five cohorts have completed the intensive phase of the intervention. At this point in the trial, participant attendance at intervention sessions has been significantly lower than expected; attendance directly correlates to intervention dosage, which plays a crucial role in achieving the desired results. Therefore, this interim analysis uses current data from this ongoing RCT to investigate the efficacy and futility of the trial (Ciolino et al., 2023).

The adaptive design of this RCT allowed for modifications to intervention parameters based on interim analyses (Pallmann et al., 2018). Interim analysis is a reliable strategy used within clinical trials in order to integrate the knowledge gained through the progression of the trial, while maintaining the validity and integrity of the trial (Geller & Pocock, 1987; Kairalla et al., 2022; Kumar & Chakraborty, 2016). This approach also accounts for the prospect of modifications across all aspects of the intervention program, spanning from resource allocation to operational procedures such as logistics, monitoring, and implementation strategies (Geller & Pocock, 1987; Kairalla et al., 2022; Kumar & Chakraborty, 2016). This proactive approach strengthens the trial's ability to produce accurate and meaningful results. Specifically, this approach allowed us to determine whether the intensive phase of the intervention is impacting children's oral language skills, as well as whether families are incorporating this intervention in their home literacy practices. It also guided adaptations that will be made to ensure young DLLs and their families are supported in a productive and meaningful way.

3.1.3 Research questions

The primary aim of this dissertation was to evaluate the effectiveness of a novel community-based, dual language narrative intervention on preschool-aged DLLs' oral language skills across measures of story comprehension, narrative retell, and vocabulary. I hypothesized the intervention would significantly enhance the oral language skills of young DLLs. Specifically, I hypothesized that children in the intervention arm would demonstrate substantial improvements in story comprehension, narrative retell, and vocabulary acquisition compared to the control group. A secondary aim of this study was to evaluate the extent to which families engage with the intervention materials, and the impact of the intervention on families' home language and literacy experiences. I hypothesized that families would actively attend and engage with the intervention resources both at the library with the other families in their cohort, and at home with their own families. Similarly, I hypothesized that the intervention would have a positive impact on parents' beliefs about dual language development, children's home language use and exposure, and families' home literacy activities.

The following research questions guided my investigation of this intervention:

Research Question 1: To what extent does a community-based, dual language narrative intervention improve preschool-aged DLLs' oral language skills (i.e. story comprehension, narrative retell, and vocabulary) in English and Spanish?

Research Question 2: To what extent did families engage with the community-based dual language narrative intervention? How did families' home language and literacy experiences change over the course of the intervention?

3.1.4 Study setting and population

Since this community-based dual language intervention was developed specifically for use with Spanish-English DLL preschoolers, this study sought parent-child dyads who spoke Spanish and self-identified as Hispanic or Latino. The index parent was defined as the legal guardian of the child who spent the majority of time with the child at home and who agreed to attend the intervention sessions with their child. Participants were recruited from Nashville, TN. The intensive phase of the intervention took place at two local libraries, which were specifically chosen due to their central location and ease of access for our target population. A fully virtual option was also offered, and conducted over Zoom for those who selected that option. Participants were screened for the following inclusion criteria:

1. Child age 4-6 at time of randomization;
2. Index parent age greater than 18 years;
3. Self-identified as Latino/Hispanic;
4. Live in a home where Spanish is spoken;
5. Have consistent access to phone and wifi;
6. Committed to participate in a 2-year study;
7. Child is not diagnosed with autism;
8. Considered underserved, as measured by parent self-reporting that someone in their household is eligible for or participate in one of the following programs or services: TennCare, CoverKids, WIC, Food Stamps (SNAP), Free and Reduced Price School Lunch and Breakfast, and/or Families First (TANF).

While autism was included as an exclusionary criterion, children were not screened for developmental language disorders, so this was not included as an exclusionary criterion. Since our

partners were also conducting a health behavior intervention with the same sample, the following health-based inclusion criteria were also implemented:

1. Index parent with a body mass index of ≥ 25 kg/m² and < 40 kg/m², establishing risk for obesity without existing severe obesity;
2. Child with a body mass index $\geq 5^{\text{th}}$ percentile for age and gender on standardized CDC growth curve;
3. Participants are without medical conditions necessitating limited physical activity as evaluated by a pre-screen.

3.1.5 Recruitment and enrollment

Rolling recruitment began in October 2021. Recruitment was conducted by trained, Spanish-speaking research assistants. Recruitment sites included local clinics and community sites serving families, such as schools, community centers, and summer programs.

Prior to baseline data collection, written informed consent was obtained by all study participants. As the child participants were all under the age of 7, the index parent provided permission for their participation in the study. We obtained verbal assent from the children themselves, while being attentive to any signs of dissent that might have indicated their unwillingness to participate in the study. To ensure that participants had a comprehensive understanding of the study before they enrolled, an enhanced approach to informed consent was adopted, which incorporated visual aids, in addition to the traditional signed informed consent process. Spanish-speaking research assistants conducted the informed consent process. During the consent process, participants were able to select which library they preferred to attend during the intervention; they were also able to indicate a preference to participate in a fully virtual manner.

3.1.6 Randomization

Parent-child dyads were assigned randomly to either the intervention or control group using a sequence with randomly permuted blocks of different sizes. Since enrollment was conducted on a rolling basis, participants were randomized to cohorts based on the date they enrolled, as well as their preference for either of the two library sites or a fully virtual intervention. Just before randomization, trained research assistants ensured that the participants expressed interest and confidence in taking part in the study regardless of their assigned group. All data collectors were kept unaware of participants' group assignments (blinded). Due to the nature of this intervention, the interventionists and participants could not be blinded to their respective group assignments.

3.1.7 Retention

To enhance the likelihood of successful retention, we employed a comprehensive retention approach that involved multiple strategies, including:

1. Gathering various contact methods from participants and regularly updating this information.
2. Nurturing strong and positive relationships with study participants throughout the study.
3. Maintaining frequent contact through both text messages and phone calls.
4. Offering financial incentives as a motivation for attending data collection sessions.
5. Ensuring scheduling flexibility to accommodate the preferences and schedules of participants.
6. Establishing specific protocols for reengagement of participants who did not regularly attend intervention sessions.

3.2 Intervention

The community-based, dual language intervention was based on the Puente de Cuentos curriculum developed by Dr. Trina Spencer (Spencer et al., 2019, 2020). Puente de Cuentos is a multi-tiered dual language curriculum designed for classroom use with Spanish-English DLL preschoolers. Most notably, Puente de Cuentos is a culturally derived curriculum that was developed specifically for preschool-aged DLLs from Spanish-speaking homes, which was the target population of this study. Education and literacy experts on our team adapted the school-based PdC curriculum into a family-centered, community-based intervention that promoted school readiness. The community-based PdC intervention is a tiered intensity intervention comprised of a 12-week intensive phase and a subsequent 21-month maintenance phase. We partnered with the Nashville Public Library to develop and implement this program; intensive phase intervention sessions were held at local Nashville Public Libraries with an option for virtual sessions, and maintenance phase sessions were held virtually. The content of this intervention was based on a community assessment survey and focus groups that identified school readiness as a priority of the local community.

3.2.1 Interventionists

One Spanish-speaking research assistant and one Spanish-speaking NPL librarian implemented the intensive phase intervention sessions for all five cohorts. The research assistant was a PhD graduate student at Vanderbilt University, and had previously taught elementary school at a Spanish-English dual language school. The NPL librarian had experience developing storybook-based Spanish-English bilingual curriculum and implementing bilingual programming at the Nashville Public Library. Both interventionists completed a 1-hour training session and reviewed online training videos and other resources provided by Dr. Spencer. The training

introduced interventionists to the lesson activities for storytelling and vocabulary, and was reinforced through the videos and supplementary materials. Before delivering interventions, the interventionists completed a one-hour certification process, during which they led a mock intervention session and received feedback from an experienced interventionist.

The Vanderbilt research assistant and NPL librarian also led the majority of the maintenance phase sessions. Two additional Vanderbilt research assistants were trained to lead maintenance sessions; these two RAs did not speak Spanish, so they only led English maintenance phase lessons.

3.2.2 Intensive phase

The intensive phase curriculum provided instruction to both parents and children in an effort to improve children's school readiness by specifically targeting oral language skills. Each session lasted 60 minutes and was conducted in a local library (or virtually) with a cohort of 5-18 parent-child dyads. The intervention sessions provided both child-level and family-level literacy intervention content. Each session was divided into two parts; during the first part, parents and children participated in a Spanish story lesson together. After the Spanish story lesson, children participated in an English story lesson while parents attended a parent workshop.

3.2.2.1 Child-level intervention content

The intensive phase curriculum was based on the Puente de Cuentos curriculum developed by Dr. Trina Spencer (Spencer et al., 2019, 2020). The curriculum is strategically designed to foster school readiness via oral language development, which is a meaningful indicator of academic success. This curriculum features 36 lessons which each have a pair of related Spanish and English stories and target vocabulary in both languages. The stories serve as the basis for language instruction in a large group arrangement.

For the child-level literacy content in the community-based PdC intervention, the PdC curriculum was adapted as a 12-week program with weekly 60-minute Spanish-English lessons per cohort. Each lesson was scripted for interventionists in a consistent format. During each lesson, the interventionist first read the featured Spanish story, then guided the children through a series of activities designed to help them learn the meaning of target words and retell the stories. With guidance from the interventionist, parents supported and encouraged their children to incorporate story grammar elements (i.e. character, problem, feeling, action, ending) and target vocabulary words as they participated in these activities. After the Spanish story lesson, parents left to attend a parent workshop and the interventionist read the featured English story and lead the corresponding activities.

Each lesson followed the same instructional format with six activities, and the only elements that changed between lessons were the featured stories and target vocabulary (see Table 3.1). During the first activity, the interventionist displayed a set of five story illustrations that corresponded with the five story grammar elements that were explicitly taught. The interventionist read the featured story and used color-coded icons to identify each story grammar element of the story: character, problem, feeling, action, ending. During activities two and three, the interventionist introduced the target vocabulary words and referenced their use and context in the story. The interventionist also used predetermined photos to support children's understanding of the target vocabulary word.

In activity four, the interventionist read the story again and children identified the five story grammar elements in a game called Story Gestures (Spencer et al., 2013). In this game, children did a gesture that corresponds to each story grammar element as the interventionist reads each element in the story. For example, when the interventionist mentioned the character, children put

their hand on their head; during the problem, children did a thumbs down gesture. During activity five, the interventionist asked five guiding questions to help children review each element of the story grammar. The questions followed the same story grammar pattern for each story; for example, the first question asked “Who is the character?”, the second question asked, “What was the character’s problem?”, and so on. Children were encouraged to respond as a group. If an individual responded, the interventionist encouraged the whole group to repeat that part of the story. This allowed all children the opportunity to retell the story as a group.

In the sixth and final activity, children had the opportunity to retell the story themselves in a game called Champ Checks (Spencer et al., 2013). Champ Checks required that the children work in pairs, with one acting as the Storyteller and one acting as the Listener; during the Spanish lesson, children worked with their parents, and during the English lesson, children worked with one of their peers. The Storyteller retold the story first, and the Listener verified that the Storyteller included all five story grammar elements and two target vocabulary words in their retell. The Listener marked off each element on a Champ Checks card to demonstrate that they were listening and comprehending the story. After the Storyteller finished retelling the story, the roles were reversed; the Storyteller became the Listener and vice versa, and the process began again.

Throughout the course of one intervention session, children heard both the English story and the Spanish story read by the interventionist twice, and retold by a peer once. Each child retold the English story and the Spanish story once as a group and once individually per intervention session. The vocabulary activities ensured that the children said each target vocabulary word and definition as a group at least four times and individually at least once during storytelling.

The interventionists adhered to the guidelines outlined in the curriculum book for each lesson to ensure a standardized approach, but they had flexibility with the exact wording. The

main focus was to achieve the primary objective of each activity while tailoring the approach to suit the children’s language and level of engagement.

Table 3.1 Child-level intervention activities

Activity Sequence	Activity	Description
1	<i>Model Story</i>	Interventionist reads the featured story and uses color-coded icons to identify story grammar elements: character, problem, feeling, action, ending.
2	<i>Teach Target Vocabulary Word 1</i>	Interventionist introduces the first target vocabulary word. The interventionist defines the word and references it’s use and context in the story. Additional photos are used to support children’s understanding.
3	<i>Teach Target Vocabulary Word 2</i>	Interventionist introduces the second target vocabulary word. The interventionist defines the word and references it’s use and context in the story. Additional photos are used to support children’s understanding.
4	<i>Team Retell: Story Gestures</i>	Interventionist reads the story again and children identify five story grammar elements using the following gestures that correspond to each element: Character: Put one hand on top of head. Problem: Thumbs down. Feeling: Finger on the side of one eye, moving down like a tear. Action: Open closed fist as hand moves from left side of body outward and to the right. Ending: Thumbs up.
5	<i>Team Retell: Comprehension Questions</i>	Interventionist asks following guiding questions to help children review each element of the story grammar: 1. Who is the story about? 2. What was the character’s problem? 3. How did he/she feel about the problem? 4. What did he/she do to fix the problem? 5. How did the story end?
6	<i>Champ Checks</i>	Children work in pairs, with one acting as the Storyteller and one acting as the Listener. When the Storyteller retells the lesson, the Listener verifies that the Storyteller included all five story grammar elements and two target vocabulary words in their retell. After the Storyteller finishes retelling the story, the roles are reversed so each child gets a chance to retell the story.

3.2.2.2 Family-level intervention content

Parent sessions were designed to improve parent’s knowledge and skills related to improving child literacy in bilingual households. The parent component of the weekly sessions included a series of workshops with a range of topics focused on bilingual language development (see Table 3.2). The sessions were designed to be informative as well as collaborative; a trained interventionist used an informational PowerPoint designed by our team to guide the discussion, but also offered multiple opportunities for dialogue and welcomed participant discussion during the sessions.

Parents also received take-home storytelling activities that corresponded to each child lesson (see Figure 3.2). During the parent sessions, the interventionist trained parents to use the take-home activities. These take-home storytelling activities provided an opportunity for parents and caregivers to practice storytelling at home and support their children’s narrative skills. Parents were encouraged to set a family goal of completing two storytelling activities per week. Parents received weekly text messages that reminded them which storytelling activities to complete. Family engagement with the intensive phase take-home activities was tracked weekly with a short survey administered via text message. The one-question survey asked how often families met their goal to complete both storytelling activities each week. Parents responded with a number on a scale from 1 to 5, with 5 indicating *goal met all the time* and 1 indicating *goal not met at all*.


Table 3.2 Parent workshop topics

Week	Lesson topic
1	Family introductions and broad overview of the program
2	Introduction to Puente de Cuentos curriculum and the purpose of the workshop
3	Language as the foundation for reading and academic success
4	Building language: The power of storytelling and introduction to PdC storytelling Strategies
5	Storytelling strategies: Personaje, problema, sentimiento, acción, y final, Part I
6	Storytelling strategies: Personaje, problema, sentimiento, acción, y final, Part II

7	Dispelling common myths about bilingualism and biliteracy
8	Establishing routines for language interactions
9	Building language: The power of integrating book reading, Part I
10	Building language: The power of integrating book reading, Part II
11	Language interaction strategies
12	Wrap-Up - Underscoring the importance of language development and parents as facilitators

Figure 3.2 Take-home storytelling activities

Story Grammar



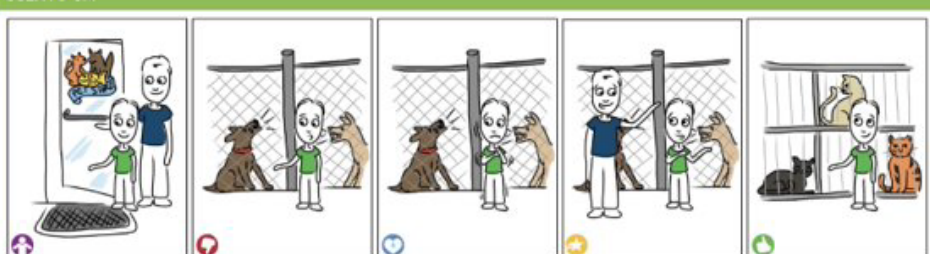
- P Personaje
- P Problema
- S Sentimiento
- A Acción
- F Final

Prompts for Parents/Caregivers

PÍDALE A SU HIJO(A):

- "Mira las fotos y cuéntame la historia lo mejor que puedas".
- "¿Alguna vez le has tenido miedo a algo? Platicame".
- "¿Qué significa **explorar**?" (conocer un lugar nuevo)
- "¿Qué significa **peligroso**?" (no seguro)
- "Clasifica cosas que son iguales pero diferentes". (p. ej., **masкота: perro/gato**)
- "¿Por qué estaba asustado Óscar?"
- "¿Por qué es que Óscar no tuvo miedo cuando fue a ver a los gatos?"

CUENTO 5A



Ayer, Óscar y su familia **exploraron** la tienda de mascotas. Las mascotas se clasificaban en diferentes áreas.

Óscar estaba viendo los perros en sus jaulas y notó sus dientes grandes.

Óscar estaba asustado porque los perros le parecían muy **peligrosos**.

Entonces, le dijo a su hermano: "¿No son **peligrosos** los perros?". Su hermano le dijo que no porque estaban en jaulas.

Después, Óscar no tuvo miedo y fue a ver la jaula de los gatos.

3.2.3 Maintenance phase

Immediately following the intensive phase, the 21-month maintenance phase commenced, during which children participated in virtual sessions which delivered additional lessons from the PdC curriculum. The sessions took place for approximately 15-30 minutes once a month. These sessions took place over Zoom or Microsoft Teams. At the beginning of the maintenance phase, parents were offered a choice of whether their child would receive the maintenance lessons in Spanish or in English. At the one-year mark, interventionists checked in again with parents

regarding the language of instruction, and parents had the option to change the language of the lessons or continue with the language they had originally selected for their child.

3.2.3.1 Child-level literacy maintenance content

During maintenance sessions, the interventionist delivered one lesson from the PdC curriculum in either Spanish or English. These lessons followed a similar format to the intensive phase intervention sessions. The maintenance phase lessons consisted of seven activities, and only changed the feature story and target vocabulary words between lessons. While activities one through four mirrored activities one through four of the intensive phase, activities five through seven differed from the intensive phase. In activity five, the child had the opportunity to retell the story three different times. During the first retell, the child used the story illustrations and story grammar icons to help them retell the story. During the second retell, the interventionist removed the story illustrations and the child retold the story with just the story grammar icons as support. For the third retell, the interventionist removed all visual support and the child retold the story. In activities six and seven, the target vocabulary words were reviewed again using photographs as visual support.

3.2.3.2 Family-level literacy maintenance content

Although the maintenance phase intervention sessions focused on child-level intervention content, parents received at-home storytelling activities that corresponded to each of the maintenance phase lessons. At the end of each maintenance phase intervention session, parents were reminded to complete two at-home activities with their children. Parents also received a text message that instructed them which activities to complete each month. The same text message system used to track family engagement during the intensive phase was used during the

maintenance phase; however, during the maintenance phase, each family's goal was to complete two storytelling activities per month, so their responses were tracked monthly.

3.2.4 Control group

The control group was enrolled in a multi-level behavioral intervention that consisted of 1) developmentally appropriate health curriculum for 4-6 year old children and 2) family-based content that targets parent weight loss and improved family health behaviors. During the intensive phase, participants attended 15 weekly sessions at local community centers. The sessions were 90 minutes long and included curriculum content and activities designed for both children and adults. The child sessions focused on promoting healthy eating habits and physical activity; the language demands of the health intervention were minimal for children. Following the intensive phase, participants received monthly coaching calls that lasted approximately 30 minutes. These maintenance phase calls primarily took place with the parent and focused on monitoring progress toward individual health goals.

3.3 Data collection

All data collection occurred at a local community center or library. In rare instances, a virtual data collection option was offered for participants who were unable to travel to data collection sites. All data were entered and stored in a secure REDCap database at the time of data collection. Data were collected from all participants at baseline, three months (immediately following the intensive phase), one year after randomization, and two years after randomization. Additionally, a parent survey focused on parent language use and beliefs about bilingualism was administered to participants in the literacy intervention group during the first session of the intensive phase, and again during the last session of the intensive phase. Finally, a survey was administered to participants in the literacy intervention group during the final intensive phase

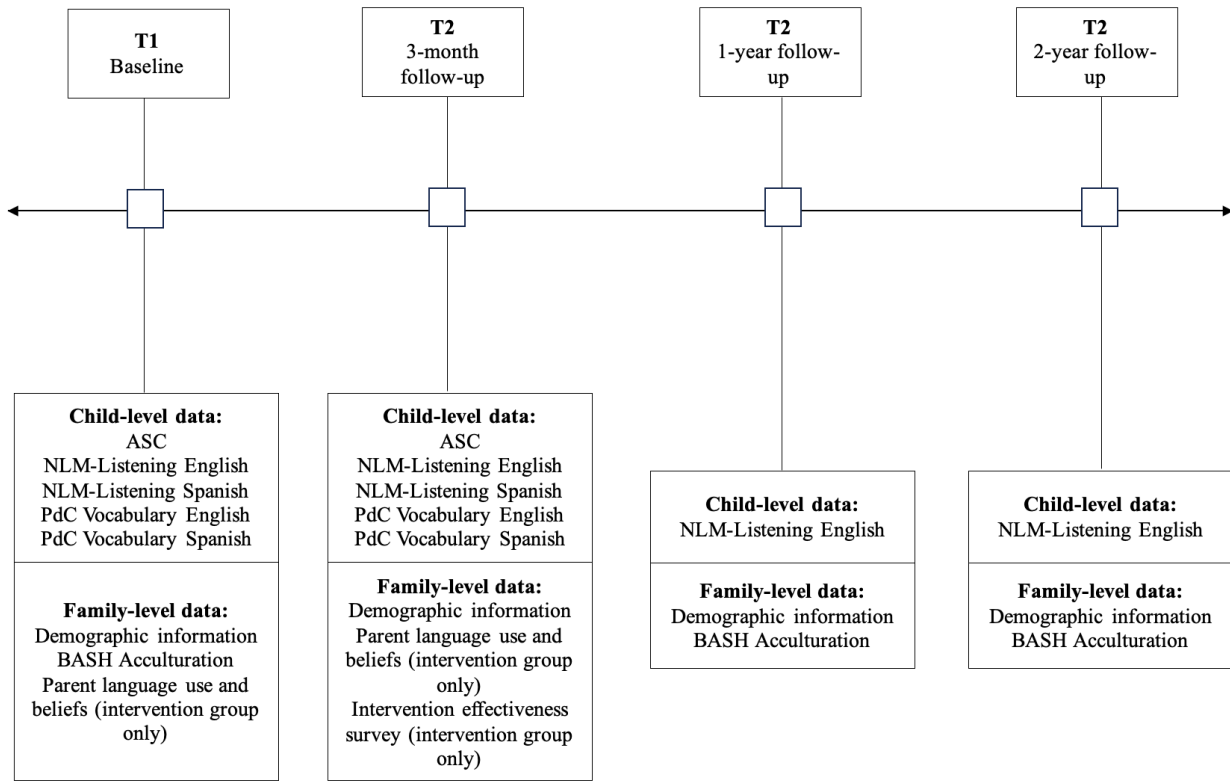
session to gauge participants' perception of the intervention's effectiveness. See Table 3.3 for a list of measures collected at each time point, and Figure 3.3 for the data collection timeline.

Table 3.3 Measurement of outcome variables

Construct	Measure	Participant	Language	Timing and frequency
Demographics	31-item survey	Parent	Spanish or English	T1, T2, T3, T4
Acculturation	Brief Acculturation Scale for Hispanics (BASH)	Parent	Spanish or English	T1, T3, T4
Story comprehension	Assessment of Story Comprehension (ASC)	Child	English	T1, T2
Narrative language abilities	Narrative Language Measure – Listening (NLM-Listening)	Child	Spanish	T1, T2
			English	T1, T2, T3, T4
Vocabulary	Puente de Cuentos Vocabulary Assessment (PdC Vocabulary)	Child	Spanish	T1, T2
			English	T1, T2
Parent language use and beliefs	48-item survey	Parent	Spanish or English	T1, T2
Intervention effectiveness	20-item survey	Parent	Spanish or English	T2

T1: Baseline; T2: 3 month follow-up; T3: 1 year follow-up; T4: 2 year follow-up

Figure 3.3 Data collection timeline



3.3.1 Data collectors

A team of researchers from both Vanderbilt University and the Vanderbilt University Medical Center served as data collectors for this study. All data collectors were trained and certified to administer child language measures, parent survey measures, or a combination of both. Additionally, data collectors were blinded to individual participants' assigned intervention group.

3.3.2 Intervention dosage

Intervention dosage was measured by tracking attendance for both intensive phase and maintenance phase intervention sessions. Each lesson counted as one dose of the intervention. Participants who attended the regularly scheduled sessions were marked as present, and received one dose for each lesson they attended.

If a participant did not attend an intervention session, the interventionist contacted families to schedule a make-up session, which counted towards attendance. During the intensive phase, one attempt was made to schedule a make-up session; during the maintenance phase, interventionists made two attempts to schedule a make-up session. If families did not respond to contact or did not attend the make-up session, they were counted as absent from the session and did not receive the corresponding dose.

3.3.3 Implementation fidelity

Fidelity of implementation was measured with fidelity monitoring checklists, which measured the interventionist's adherence to the intervention protocol. The PdC Lesson Fidelity Checklist: Large Group was used to record fidelity during the intensive phase, and recorded fidelity according to the following three domains: adherence to procedures, child responsiveness, instructional quality (Dane & Schneider, 1998; Durlak & DuPre, 2008; Spencer et al., 2019). A trained research assistant observed 10% of the intensive phase intervention sessions (n=6) to document the extent to which intervention procedures were completed with fidelity. To calculate fidelity percentage, the number of items completed as intended was divided by the total number of items on the checklist and then multiplied by 100. One of the interventionists carried the intervention with an average fidelity rate of 97.5% (ranging from 94%-100%), and the other interventionist achieved an average fidelity rate of 96% (ranging from 91%-100%).

3.3.4 Child language measures

Three separate child assessments were administered in order to evaluate children's narrative language skills, story comprehension, and vocabulary.

3.3.4.1 Narrative Language Measure - Listening

The Narrative Listening Measure - Listening (NLM-Listening) is a component of the CUBED Assessment (Petersen & Spencer, 2016) and collects narrative language samples from children in both English and Spanish. In this assessment, data collectors read a brief story to the child, who then retold the story. Children's retells were also recorded using audio recorders to allow for examination of scoring reliability. The NLM-Listening stories presented to the children were entirely new to them, and children never heard the same story twice. Data collectors assessed the retells in real time, assigning points for each story grammar element included in the retell as well as children's use of subordinating conjunctions (e.g. because, when, after), which indicated complex language use.

During each data collection timepoint, data collectors administered three parallel forms of the NLM-Listening in each language to each participant child. The highest of the NLM-Listening scores in each language was used to best reflect child performance, as advised in the CUBED examiner's manual.

In order to ensure scoring reliability, all audio recorded retells were double-scored by a trained RA who did not administer the assessment. For each of the 10 story grammar and language complexity elements, consensus was established, indicating that both scorers assigned the same point value to each item. Any initial disagreements were discussed and resolved.

3.9.4.2 Assessment of Story Comprehension

The Assessment of Story Comprehension (ASC) is a narrative-based assessment designed for use with preschoolers. It is conducted solely in English (Spencer & Goldstein, 2019). During the assessment administration, data collectors read a brief story to the child and subsequently asked a series of questions which tested both factual recall and inferential understanding. Data collectors

recorded children's responses verbatim on a digital assessment form in addition to audio recording the assessment administration. Children's responses were scored at a later timepoint.

During each data collection data collectors administered two parallel forms of the ASC, and the highest score was used for analysis. The stories differed at each data collection time point, ensuring that children did not hear the same story twice.

To complete assessment scoring, a trained RA (who did not administer the assessment) used the ASC manual to assign a point value to each of the eight items on the assessment. Another trained RA double-scored each assessment; any scoring discrepancies were discussed and resolved by consensus.

3.3.4.3 Puente de Cuentos Receptive Picture Vocabulary Assessment

A researcher-made receptive picture vocabulary assessment was used to measure children's understanding of the 24 target vocabulary words taught in the intervention. The assessment was administered in both English and Spanish. This task involved presenting four pictures on a page, with one picture correctly depicting the target word and the other three pictures serving as distractors. The same set of illustrations were used for both the Spanish and English assessments, but the arrangement of targets and distractors differed between languages. During the assessment administration, a data collector displayed the four pictures to the child and instructed them to point to the appropriate picture that corresponded to a particular vocabulary word. For each item, the data collector prompted, "Point to _____" or "Señale _____." Each correct selection earned one point, with a total of 24 possible points for each assessment. While explicit reliability estimates were not obtained for this specific experimental measure, it is worth noting that similar receptive picture vocabulary tests have been previously utilized and have demonstrated high reliability results.

Table 3.4 Supplemental information about child language measures

Instrument	Description	Psychometric Information
Narrative Language Measures (NLM) – Listening: Spanish and English	The NLM-Listening is a subtest of the CUBED (Petersen & Spencer, 2016), and tests children’s narrative retell abilities in both Spanish and English. The current study used the preschool version with 25 Spanish and 25 English parallel assessment forms. Each form contains a brief story that children listened to, and then were asked to retell. Data collectors scored children’s retells during assessment administration, giving points for each story grammar element included in the retell (scores ranged from 0-2 for each element based on completeness and clarity. Children also received points for indicators of complex language use (e.g. subordinating conjunctions).	In reliability and validation research, the NLM-Listening Spanish and English were found to have moderate to large correlations for alternative form reliability ($r=.64-.80$) (Spencer et al., 2023). Concurrent validity estimates indicated that the NLM-Listening measured similar oral language constructs as the CELF-P ($r=.48-.71$) and the FWAY ($r=.45-.63$) (Spencer et al., 2023).3/4/24 5:43:00 PM
Assessment of Story Comprehension (ASC)	The ASC (Spencer & Goldstein, 2019) helps educators identify preschool-aged children who may need supplemental language instruction, and helps to monitor their language comprehension progress once they receive intervention. Data collectors read a story to children, and then ask eight questions about the story. The questions address factual information from the story or ask children to make inferences based on the text. One question asks for the definition of a new vocabulary word used in the story.	In reliability and validation research, the ASC was found to have moderate to large correlations for alternate forms reliability ($r=.65-.83$), moderate to high scoring reliability ($r=.60-.94$), and concurrent validity with the CELF-P ($r=.79-.81$) (Spencer et al., 2017).
Puente de Cuentos (PdC) Receptive Picture Vocabulary Assessment	The PdC receptive picture vocabulary assessment assesses the target words used in the Puente de Cuentos curriculum in both Spanish and English. Data collectors showed children four different drawings in a four-square arrangement and asked children to point to the picture that corresponds to the target vocabulary word. The target illustration and three distraction illustrations all represented words from the same form class (e.g. nouns, verbs, adjectives).	This assessment has not yet undergone psychometric evaluation; however, similar receptive picture vocabulary tests such as the Receptive one-word vocabulary test-II (Bronwell, 2000) and the Peabody picture vocabulary test-4 (Dunn & Dunn, 2007) yield high internal consistency correlations. Several revisions based on item response theory were made to this assessment prior to its use in the study.

3.3.5 Parent surveys

All parent survey data was collected in either Spanish or English (based on index parent preference) via guided administration by trained, Spanish-speaking data collectors.

3.3.5.1 Demographic information

Family demographic information was collected from all participants at all four time points with a 31-item survey. Additionally, acculturation was measured at T1, T3, and T4 using the Brief Acculturation Scale for Hispanics (BASH) (Mills et al., 2014). Scores on the BASH range from 4 to 20; low scores indicate low acculturation, while high scores indicate high acculturation.

3.3.5.2 Language use and beliefs survey

A separate survey was administered only to index parents in the intervention group at the first and last session of the intensive phase. This 48-item survey sought to understand parents' language use and beliefs regarding bilingualism, and determine whether their language use or beliefs changed over the course of the intensive phase.

For the language use portion of the survey, parents answered a set of 20 questions concerning their language patterns in the home. Questions pertaining to language exposure referred to talk directed to the children from the mother, father, other adults, and other children in the home, as applicable. Questions related to language use focused on the child's communication directed toward the mother, father, other adults, and other children in the home, as applicable. Parents provided ratings for each question using a 5-point scale, where 1 = only Spanish, 2 = mostly Spanish, 3 = Spanish and English equally, 4 = mostly English, and 5 = only English. The home language use scale used in this survey was adapted from a questionnaire generated by the Development of Literacy in Spanish Speakers (DeLSS) research project, which is widely used in research with Spanish-speaking DLLs (August, 2004).

On the parental beliefs section of the survey, parents were asked to rank 22 statements about their beliefs and values regarding their children's dual language development. Parents indicated their level of agreement with each statement on a 5-point scale, where 1 = strongly disagree, 2 = disagree, 3 = unsure, 4 = agree, 5 = strongly agree. This section of the survey pertaining to parental beliefs was developed by Mancilla-Martinez and Lesaux (2014), drawing from questions on Johnston and Wong's (2002) questionnaire of childrearing beliefs.

A final section of the language use and beliefs survey asked four questions about parents' storytelling and book reading habits at home. Parents responded based on how frequently they engage with their children in these activities on a 4-point scale, as follows: 1 = almost never, 2 = 2-3 times a month, 3 = a few times each week, 4 = all the time.

3.3.5.3 Intervention effectiveness survey

At the end of the intensive phase, parents in the intervention group completed a final survey to record their perception of the intervention effectiveness. This 20-item survey first measured parents' confidence in using the PdC language strategies taught during the intervention with their child. Parents ranked their confidence on a 3-point scale, as follows: 1 = not at all confident, 2 = somewhat confident, 3 = very confident. The survey then used open-ended questions to understand whether parents felt the intervention helped to support their children's oral language skills.

The next two chapters present the findings of this study as well as a discussion of the results. Chapter 4 discusses the extent to which the intensive phase of a community-based dual language narrative intervention improved preschool-aged Spanish-English DLLs' oral language skills, specifically story comprehension, narrative retell, and vocabulary. Chapter five investigates research question two by examining how families engaged with the intervention, and how the intervention impacted family's at-home language and literacy experiences. This chapter will

present data from attendance records, parent-reported use of intervention materials, and parent surveys in order to understand the extent to which families engaged with the intervention both at the library and at home.

CHAPTER 4

Results and discussion: Child-level impact

4.1 Introduction

The aim of research question one was to evaluate the extent to which our *Puente de Cuentos para la familia* intervention improved young DLL's oral language skills in both English and Spanish. Of the 745 parent-child pairs assessed for eligibility, 105 were ultimately randomized to five cohorts (see Figure 4.1). Five participants withdrew after randomization; four families were no longer able to attend the weekly sessions, and one family was no longer interested in participating in the study. Therefore, 100 parent-child dyads were ultimately included in this sample.

4.1.1 Preliminary data

Child demographic data is displayed in Table 4.1, and index parent demographic data is displayed in Table 4.2. Demographic data indicates slight variations between the control group and intervention group despite randomization, but none of these differences were statistically significant between groups. Participants in all five cohorts completed the intensive phase of intervention, as well as T1 and T2 data collection. After T1 and T2 data collection, less than 10% of the child assessment scores were missing at random overall (94/1000, or 9.4%); missing assessment data was handled with multiple imputation, in order to preserve all cases and minimize bias (Li et al., 2015).

Figure 4.1 Randomization flowchart

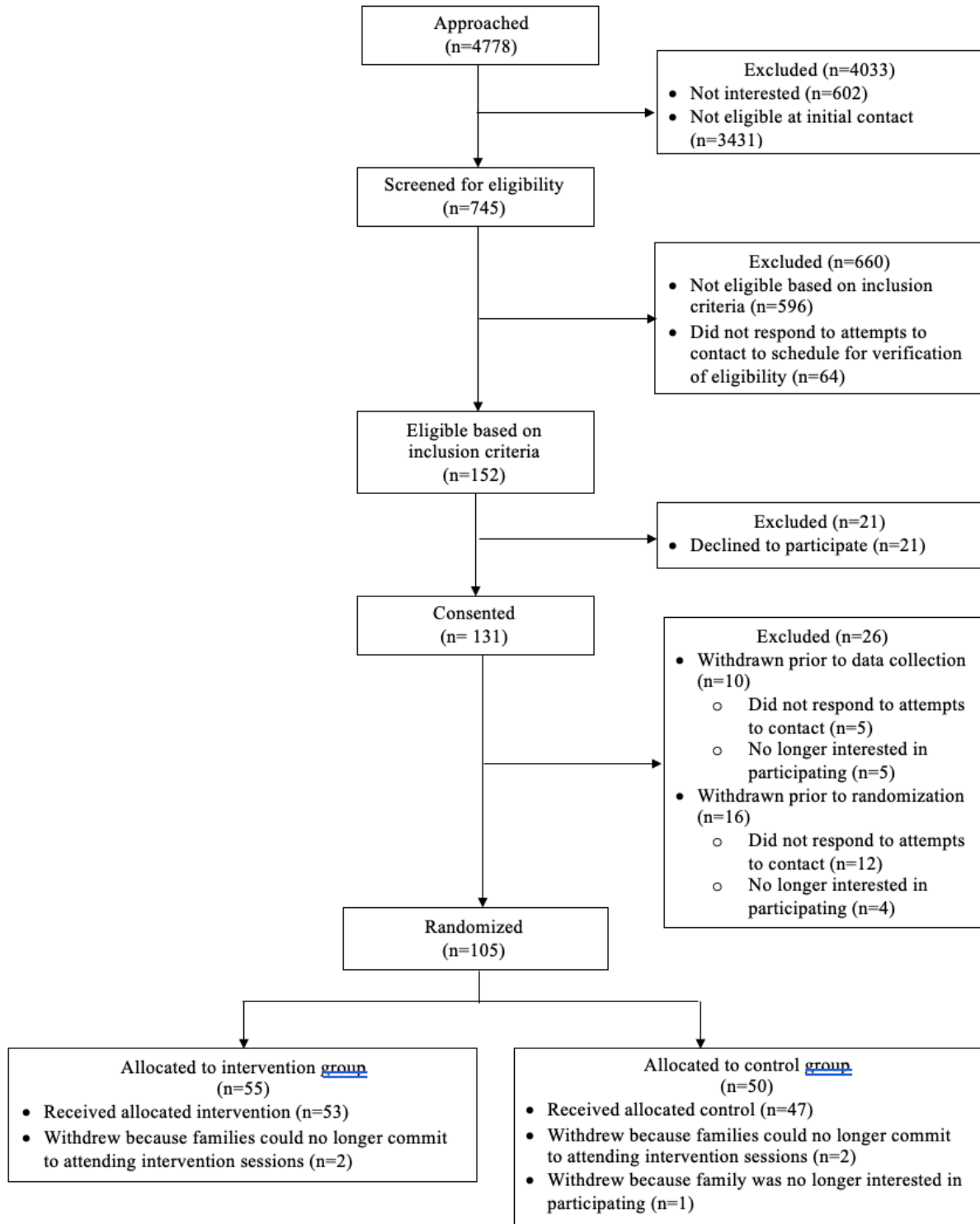


Table 4.1 Child demographic data

Characteristics	Means or Frequencies		
	Total (N=100)	Intervention (N=53)	Control (N=47)
Age at enrollment (Years)			
	5.3	5.2	5.4
Gender, N (%)			
Male	47 (47%)	26 (49%)	21 (45%)
Female	53 (53%)	27 (51%)	26 (55%)
Race/ethnicity, N (%)			
Hispanic/Latino	100 (100%)	53 (100%)	47 (100%)

Table 4.2 Index parent demographic data

Characteristics	Means or Frequencies		
	Total (N=100)	Intervention (N=53)	Control (N=47)
Gender, N (%)			
<i>Female</i>	95 (95%)	51 (96%)	44 (94%)
<i>Male</i>	5 (5%)	2 (3%)	3 (6%)
Race/ethnicity, N (%)			
<i>Hispanic/Latino</i>	100 (100%)	53 (100%)	47 (100%)
Relationship to child, N (%)			
<i>Mother</i>	95 (95%)	51 (96%)	44 (94%)
<i>Father</i>	5 (5%)	2 (3%)	3 (6%)
Brief Acculturation Scale for Hispanics			
<i>Scores range from 4-20, higher scores indicate higher acculturation</i>	5.45	5.23	5.70
Number of children (including participant child), N (%)			
<i>1</i>	17 (17%)	6 (11%)	11 (23%)
<i>2</i>	34 (34%)	20 (38%)	14 (30%)
<i>3</i>	21 (21%)	12 (23%)	9 (19%)
<i>4</i>	17 (17%)	8 (15%)	9 (19%)
<i>5</i>	6 (6%)	4 (7%)	2 (4%)
<i>6</i>	5 (5%)	3 (6%)	2 (4%)
Country of birth, N (%)			
<i>Dominican Republic</i>	1 (1%)	1 (2%)	0 (0%)
<i>Ecuador</i>	1 (1%)	1 (2%)	0 (0%)
<i>El Salvador</i>	10 (10%)	5 (9%)	5 (11%)
<i>Guatemala</i>	13 (13%)	8 (15%)	5 (11%)

<i>Honduras</i>	23 (23%)	11 (21%)	12 (26%)
<i>Mexico</i>	41 (41%)	23 (43%)	18 (38%)
<i>Nicaragua</i>	1 (1%)	0 (0%)	1 (2%)
<i>Puerto Rico</i>	1 (1%)	1 (2%)	0 (0%)
<i>USA</i>	3 (3%)	1 (2%)	2 (4%)
<i>Venezuela</i>	6 (6%)	2 (4%)	4 (9%)
Marital Status, N (%)			
<i>Married</i>	45 (45%)	30 (57%)	15 (32%)
<i>Member of unmarried couple living together</i>	35 (35%)	16 (30%)	19 (40%)
<i>Divorced, separated, or widowed</i>	4 (4%)	3 (6%)	1 (2%)
<i>Single, never married</i>	16 (16%)	4 (7%)	12 (26%)
Employment, N (%)			
<i>Employed (full-time or self-employed)</i>	26 (26%)	16 (30%)	10 (21%)
<i>Employed (part-time)</i>	20 (20%)	10 (19%)	10 (21%)
<i>Unemployed (looking for a job)</i>	4 (4%)	0 (0%)	4 (9%)
<i>Homemaker/stay at home parent or caregiver</i>	50 (50%)	27 (51%)	23 (49%)
Household Income, N (%)			
<i>Less than \$10,000</i>	5 (5%)	3 (6%)	2 (4%)
<i>\$10,000-\$19,999</i>	12 (12%)	5 (9%)	7 (15%)
<i>\$20,000-\$34,999</i>	30 (30%)	15 (28%)	15 (32%)
<i>\$35,000-\$49,999</i>	14 (14%)	4 (7%)	10 (21%)
<i>\$50,000-\$74,999</i>	7 (7%)	7 (13%)	0 (0%)
<i>Do not know/Not sure</i>	25 (25%)	15 (28%)	10 (21%)
<i>Prefer not to answer</i>	7 (7%)	4 (7%)	3 (6%)
Parent education, N (%)			
<i>No school</i>	1 (1%)	0 (0%)	1 (2%)
<i>Grade school (K-4)</i>	2 (2%)	2 (4%)	0 (0%)
<i>Middle school (5-8)</i>	15 (15%)	5 (9%)	10 (21%)
<i>Some high school (9-12)</i>	32 (32%)	16 (30%)	16 (34%)
<i>High school graduate or GED</i>	27 (27%)	17 (32%)	10 (21%)
<i>Some college or technical/vocational school</i>	11 (11%)	4 (7%)	7 (15%)

<i>College degree (associate's or bachelor's)</i>	12 (12%)	9 (17%)	3 (6%)
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4.1.2 Power Analysis

The study design used a blocked individual randomization process and assumed two levels of data clustering, one at the language intervention group level and one at the control group level. A power analysis was conducted using the PowerUp! Tool (N. Dong & Maynard, 2013) with specified standard conventions $\alpha = 0.05$, a two-tailed test, and 80% power. To specify the minimum relevant effect size for the intervention, Dr. Trina Spencer's early efficacy study of the school-based PdC intervention was consulted (Spencer et al., 2020). Spencer et al. reported moderate to large effect sizes in favor of the intervention group, with an average effect size of .53. Using this as guidance while also considering Cohen's guidance on effect sizes for behavioral sciences, an effect size of 0.4 was selected, which would indicate a moderate effect size (Cohen, 1988). Power analysis indicated that a sample size of 100 yields a minimum relevant effect size of 0.4.

4.2 Data analysis

The aim of research question one was to determine the child-level effects of the intervention; specifically, this analysis investigated whether children who received the intervention differed significantly from children who did not receive the intervention on measures of story comprehension, narrative retell, and receptive vocabulary.

A random-intercept analysis of covariance (ANCOVA) was conducted to test differences between treatment and control groups on T2 scores of each assessment. This approach was selected to minimize error variance and account for variance in T1 assessment performance; furthermore, ANCOVA was favored because of its greater statistical power in the context of a small sample size. Initially, baseline equivalence was evaluated across treatment and control groups on pretest

scores for each outcome measure, in order to ensure that this covariate met the requirements to run an ANCOVA. One-way random intercept ANOVAs were run with the treatment group indicator (0=control, 1=treatment) as the sole predictor of child pretest scores.

Subsequently, data underwent additional screening to determine the suitability of performing an ANCOVA, involving the examination of two key assumptions: the homogeneity of slopes and the homogeneity of variances. The homogeneity of slopes was investigated by assessing the interaction between pre-intervention measure and the intervention group, while the homogeneity of variances assumption was evaluated using Levene's test.

When both assumptions were met, an ANCOVA was conducted with a significance level of 0.05. In the ANCOVA analyses, the pretest covariate and intervention group indicator were used as predictors of children's posttest scores. Figure 4.2 represents the statistical formula for the ANCOVA analysis that was conducted. In this model, the coefficient β_1 captures the relationship between the pretest score and the posttest score. The coefficient β_2 captures the effect of the intervention group on the posttest scores, after controlling for the pretest scores. For any significant results detected, partial eta squared (η^2) was used as a measure of effect size.

The ANCOVA analyses investigated students both in an Intent-To-Treat (ITT) group and a Per-Protocol (PP) group. The ITT analysis analyzed participants according to their randomized treatment assignment, regardless of whether they received or completed the intended intervention (Brody, 2016; McCoy, 2017). The subsequent PP analysis only included participants who attended 50% or more of the intensive phase intervention sessions as determined a priori in order to provide an estimate of the intervention's efficacy when it is completed as intended (Brody, 2016). All participants were included in the ITT analysis (n=100), while the PP analysis included only the 20 participants who completed at least half of the intensive phase of the intervention as well as the 47

participants who were randomized to the control group (n=67). Results from these complementary analyses are reported to provide a comprehensive picture of the intervention's impact.

Figure 4.2 ANCOVA Equation for RQ1

$$Y_{ij} = \beta_0 + \beta_1 * Pretest_{ij} + \beta_2 * Group_i + \epsilon_{ij}$$

Y_{ij} represents the posttest score for the j^{th} individual in the i^{th} group.

β_0 is the intercept of the model, representing the expected posttest score when both the pretest score and group are zero.

β_1 is the coefficient for the pretest score, indicating how much the posttest score changes for each unit change in the pretest score.

$Pretest_{ij}$ is the pretest score for the j^{th} individual in the i^{th} group.

β_2 is the coefficient of the treatment group indicator, which represents the estimate of the difference in posttest scores between the two groups after accounting for pretest scores.

$Group_i$ is the dummy variable that equals 1 for the intervention group or 0 for the control group.

ϵ_{ij} is the error term for the j^{th} individual in the i^{th} group.

4.3 Results

Tables 4.3 and 4.4 present descriptive statistics from both ITT and PP analyses for all measures across the intervention and control group, including adjusted posttest means that were corrected for group differences on the pretest and used in conducting the ANCOVAs. Table 4.5 presents the results from the random-intercept ANCOVAs, which tested the estimated difference between groups on the adjusted means for all measures at T2.

Table 4.3 Descriptive statistics for intent-to-treat analysis

Measure	Intervention Group (<i>N_I</i> = 53)			Control Group (<i>N_C</i> = 47)		
	Pretest M (SD)	Posttest M (SD)	Posttest _{adj} M (SE)	Pretest M (SD)	Posttest M (SD)	Posttest _{adj} M (SE)
Assessment of Story Comprehension	4.79 (5.59)	6.26 (5.42)	6.03 (0.52)	4.11 (4.22)	4.99 (5.10)	5.25 (0.55)
Narrative Language Measure, English	4.36 (6.03)	7.41 (6.91)	7.36 (0.72)	4.21 (5.49)	5.28 (6.04)	5.34 (0.77)
Narrative Language Measure, Spanish	3.53 (5.03)	10.38 (6.5)	10.63 (0.78)	4.70 (6.31)	5.85 (5.80)	5.56 (0.83)
Puente de Cuentos Vocabulary, English	11.72 (6.09)	15.39 (5.74)	15.79 (0.69)	13.42 (5.15)	14.95 (5.70)	14.50 (0.73)
Puente de Cuentos Vocabulary, Spanish	14.19 (4.8)	17.42 (3.99)	17.40 (0.62)	14.06 (6.86)	15.91 (6.40)	16.10 (0.70)

Table 4.4 Descriptive statistics for per-protocol analysis

Measure	Intervention Group (<i>N_I</i> = 20)			Control Group (<i>N_C</i> = 47)		
	Pretest M (SD)	Posttest M (SD)	Posttest _{adj} M (SE)	Pretest M (SD)	Posttest M (SD)	Posttest _{adj} M (SE)
Assessment of Story Comprehension	3.20 (4.54)	4.90 (5.64)	5.45 (0.80)	4.11 (4.22)	4.99 (5.10)	4.75 (0.52)
Narrative Language Measure, English	2.95 (5.31)	5.30 (7.21)	5.90 (1.19)	4.21 (5.49)	5.28 (6.04)	5.03 (0.78)
Narrative Language Measure, Spanish	3.25 (4.62)	11.10 (7.28)	11.48 (1.33)	4.70 (6.31)	5.85 (5.80)	5.68 (0.86)
Puente de Cuentos Vocabulary, English	10.75 (6.22)	14.40 (6.23)	15.34 (1.19)	13.42 (5.15)	14.95 (5.70)	14.55 (0.77)
Puente de Cuentos Vocabulary, Spanish	13.50 (4.20)	17.35 (3.40)	17.48 (1.22)	14.06 (6.86)	15.91 (6.40)	15.85 (0.80)

Table 4.5 Test of postintervention differences in adjusted means (Random-intercept ANCOVA)

Measure	Intent-to-Treat Analysis (<i>N</i> = 100)			Per-Protocol Analysis (<i>N</i> = 67)		
	Estimated <i>M_{adjI}</i> - <i>M_{adjC}</i>	Significance	Partial eta squared	Estimated <i>M_{adjI}</i> - <i>M_{adjC}</i>	Significance	Partial eta squared
Assessment of Story Comprehension	0.78	.313	.011	0.70	.468	.008
Narrative Language Measure, English	2.02	.056	.037	0.87	.546	.006
Narrative Language Measure, Spanish	5.07	<.001	.170	5.80	<.001	.172
Puente de Cuentos Vocabulary, English	1.29	.206	.016	0.79	.580	.005
Puente de Cuentos Vocabulary, Spanish	1.3	.168	.021	1.63	.268	.019

4.3.1 Assessment of Story Comprehension

The T1 ASC raw score was used as a covariate for language comprehension analyses. The ANOVA results for the T1 ASC were nonsignificant, $F(1,98)=0.470$, $p=0.494$, indicating scores for the control and intervention groups did not have a statistically significant difference at pretest. Homogeneity of slopes and homogeneity of variances for the ASC were examined to determine whether ANCOVA was an appropriate analysis. The interaction between intervention and control group at treatment at pretest was nonsignificant, $F(1, 96)=0.354$, $p=.553$. Levene's test indicated that the posttest error variances did not differ significantly between groups, $F(1, 98)=0.200$, $p=0.656$.

Because these assumptions were met, an ANCOVA was first conducted in an ITT analysis, and then in a PP analysis. The ITT ANCOVA analysis was nonsignificant, $F(1, 97)=1.030$, $p=0.313$, indicating that there was no significant difference between the mean ASC score of the treatment group and the control group at T2. The PP ANCOVA analysis was also nonsignificant, $F(1, 64)=0.532$, $p=0.468$, indicating no significant difference between the mean ASC score of those who received the intervention as intended and the control group at T2. Although no significant differences were detected between groups, the intervention group scored higher than the control group, on average, in both the ITT analysis and the PP analysis.

Figure 4.3 ITT analysis: Control vs intervention group, T2 ASC

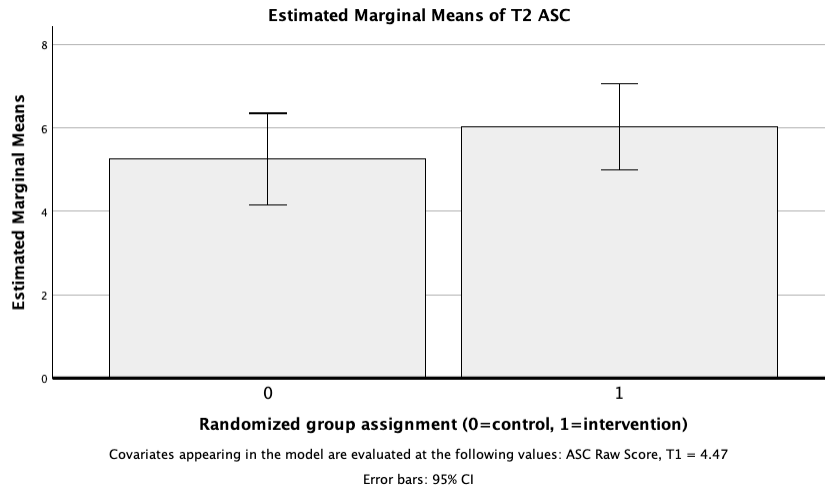
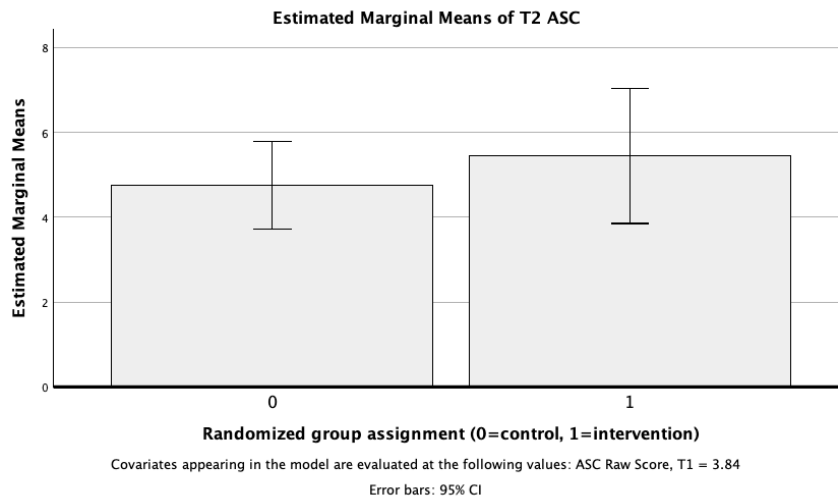


Figure 4.4 PP analysis: Control vs intervention group, T2 ASC



4.3.2 Narrative Language Measure-Listening: English

The T1 NLM-Listening: English raw score was used as a covariate for English narrative retell analyses. The ANOVA results for the T1 NLM: English were nonsignificant, $F(1,98) = .016$, $p=0.900$, indicating there was no statistically significant difference between control and intervention groups on the T1 NLM: English assessment. Homogeneity of slopes and homogeneity of variances for the NLM: English were examined to determine whether ANCOVA was an

appropriate analysis. The interaction between intervention and control group at T1 was nonsignificant, $F(1, 96)=0.3376, p=0.069$. Levene's test indicated that the posttest error variances did not differ significantly between groups, $F(1, 98)=0.203, p=0.653$.

ANCOVA was conducted because the previous analyses were nonsignificant. The ITT ANCOVA analysis was nonsignificant, $F(1, 97)=3.729, p=0.056$, indicating that there was no significant difference between the mean NLM: English score of the treatment group and the control group at T2. However, this value was approaching significance with a small effect size, $\eta^2 = .037$. The PP ANCOVA analysis was also nonsignificant, $F(1, 64)=0.369, p=0.546$, indicating no significant difference between the mean NLM: English score of those who received the intervention as intended and the control group at T2. Despite no significance difference between groups, the intervention group scored higher on average than the control group in both the ITT and PP analyses after adjusting for pretest scores.

Figure 4.5 ITT analysis: Control vs intervention group, T2 NLM: English

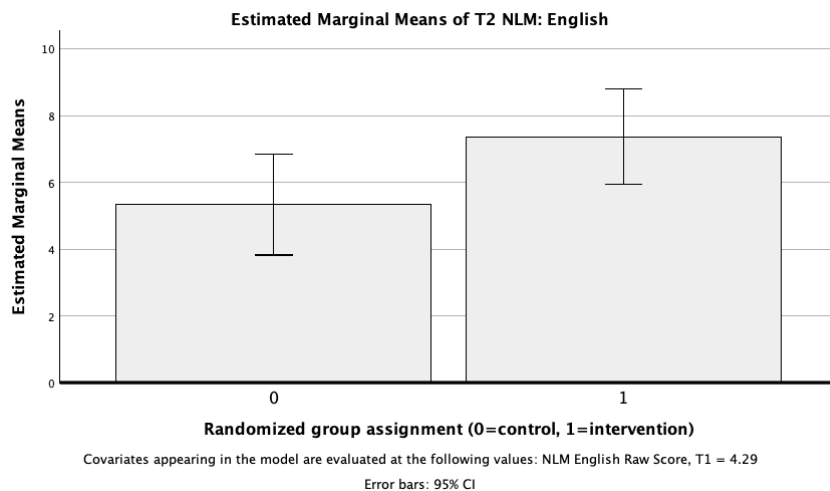
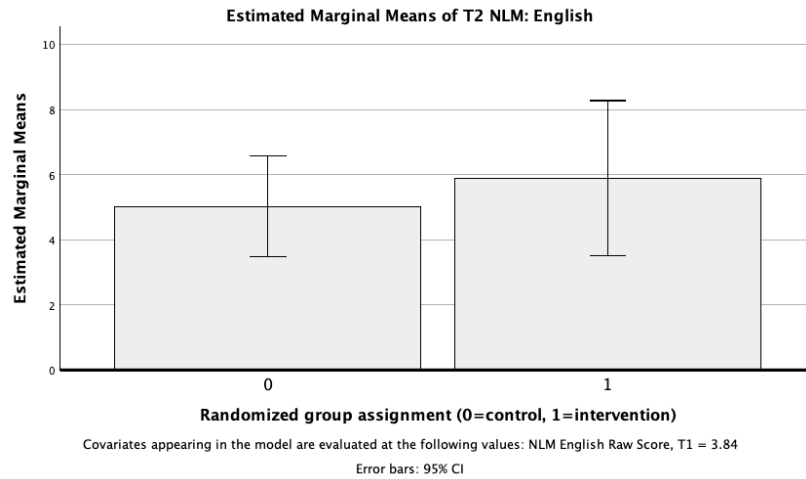


Figure 4.6 PP analysis: Control vs intervention group, T2 NLM: English



4.3.3 Narrative Language Measure-Listening: Spanish

The T1 NLM: Spanish raw score was used as a covariate for the Spanish narrative retell analyses. The ANOVA results for the T1 NLM: Spanish were nonsignificant, $F(1,98)=1.070$, $p=0.303$, indicating there was no statistically significant difference between control and intervention groups at pretest. Homogeneity of slopes and homogeneity of variances for the NLM: Spanish were examined to determine whether ANCOVA was an appropriate analysis. The interaction between intervention and control group at pretest was nonsignificant, $F(1, 96) = 4.557$, $p = .350$. Levene's test indicated that the posttest error variances did not differ significantly between groups, $F(1, 98)=0.048$, $p=0.826$.

Because these assumptions were met, an ANCOVA was first conducted in an ITT analysis, and then in a PP analysis. The ITT ANCOVA analysis was significant, $F(1, 97)=19.886$, $p<0.001$, indicating that there was a significant difference between the mean NLM: Spanish score of the treatment group and the control group at T2. The partial eta squared value of 0.170 suggests a large effect of treatment condition. The PP ANCOVA analysis was also nonsignificant, $F(1, 64)=13.339$, $p<0.001$, indicating a significant difference between the mean NLM: Spanish score of those who

received the intervention as intended and the control group at T2. The partial eta squared value of 0.172 again suggests a large effect of treatment condition.

Figure 4.7 ITT analysis: Control vs intervention group, T2 NLM: Spanish

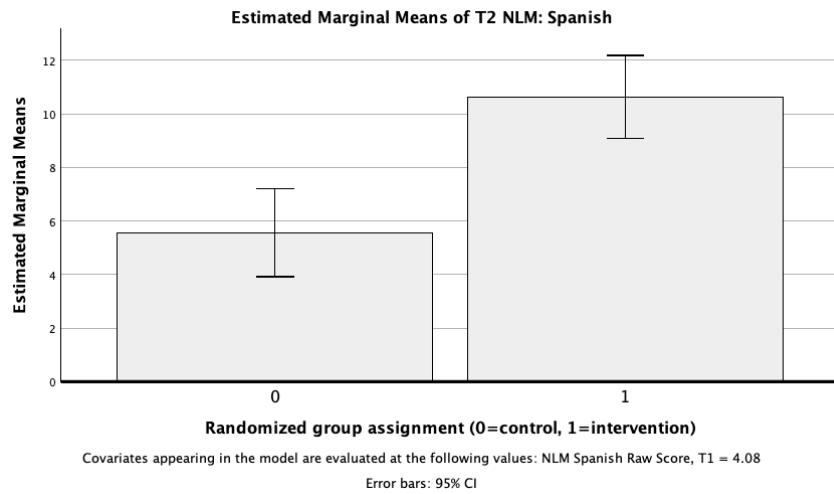
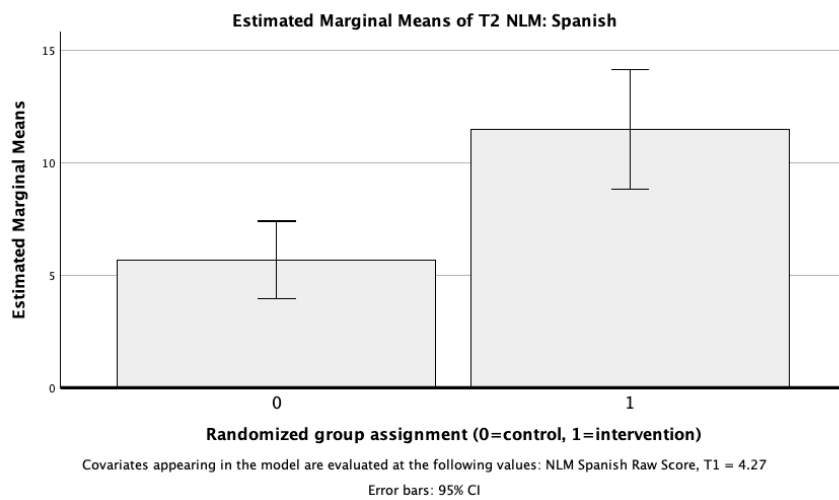


Figure 4.8 PP analysis: Control vs intervention group, T2 NLM: Spanish



4.3.4 Puente de Cuentos Vocabulary Assessment: English

The T1 PdC: English assessment raw score was used as a covariate for the English vocabulary assessment analyses. The ANOVA results for the T1 PdC: English were nonsignificant, $F(1,98)=2.239$, $p=0.138$, indicating there was no statistical difference between control and intervention groups at pretest. Homogeneity of slopes and homogeneity of variances for the PdC:

English were examined to determine whether ANCOVA was an appropriate analysis. The interaction between intervention and control group at pretest was nonsignificant, $F(1, 96) = 2.233$, $p = .138$. Levene’s test indicated that the posttest error variances did not differ significantly between groups, $F(1, 83)=0.120$, $p=0.729$.

As these assumptions were met, an ANCOVA was first conducted in an ITT analysis, and then in a PP analysis. The ITT ANCOVA analysis was not significant, $F(1, 97)=1.618$, $p=0.206$, indicating that there was no significant difference between the mean PdC: English score of the treatment group and the control group at T2. The PP ANCOVA analysis was also nonsignificant, $F(1, 64)=0.310$, $p=0.580$, indicating no significant difference between the mean PdC: English score of those who received the intervention as intended and the control group at T2. While no significance differences were detected between groups, the T2 adjusted mean for the intervention group was higher than that of the control group.

Figure 4.9 ITT analysis: Control vs intervention group, T2 PdC: English

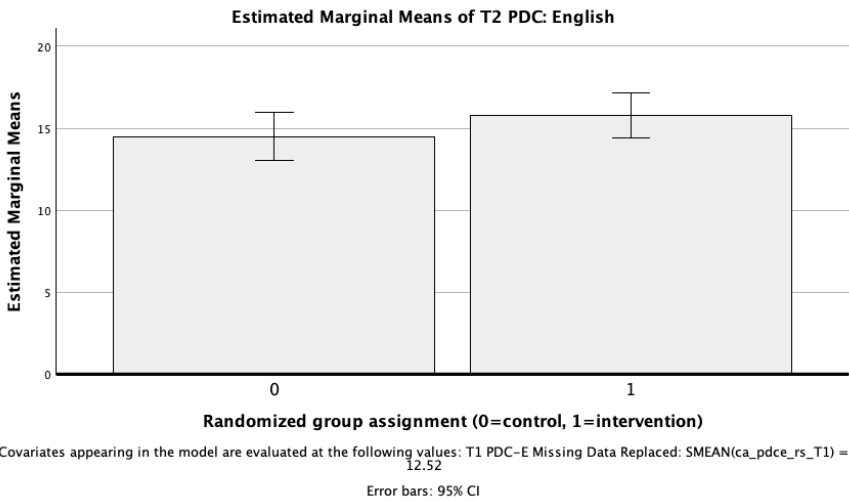
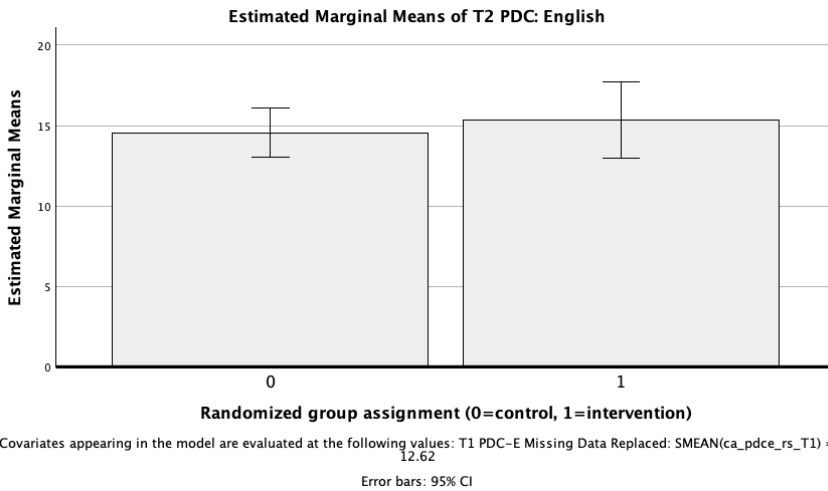


Figure 4.10 PP analysis: Control vs intervention group, T2 PdC: English



4.3.5 Puente de Cuentos Vocabulary Assessment: Spanish

The T1 PdC: Spanish assessment raw score was used as a covariate for the Spanish vocabulary assessment analyses. The ANOVA results for the T1 PdC: Spanish were nonsignificant, $F(1,98)=0.013$, $p=0.910$, indicating there was no statistically significant difference between control and intervention groups at pretest. Homogeneity of slopes and homogeneity of variances for the PdC: Spanish assessment were examined to determine whether ANCOVA was an appropriate analysis. The interaction between intervention and control group at pretest was nonsignificant, $F(1, 96) = 3.091$, $p = 0.082$. Levene's test indicated that the equality of error variances was met, $F(1, 98)=3.118$, $p=0.081$.

Because these assumptions were met, an ANCOVA was first conducted in an ITT analysis, and then in a PP analysis. The ITT ANCOVA analysis was nonsignificant, $F(1, 97)=1.935$, $p=0.168$, indicating no significant difference between the mean PdC: Spanish score of the treatment group and the control group at T2. The PP ANCOVA analysis was also nonsignificant, $F(1, 64)=1.251$, $p=0.268$, indicating no significant difference between the mean PdC Spanish score of those who received the intervention as intended and the control group at T2. Although there

were no significant differences between groups, both the ITT and PP analysis indicate that the intervention group scored higher on average than the control group.

Figure 4.11 ITT analysis: Control vs intervention group, T2 PdC: Spanish

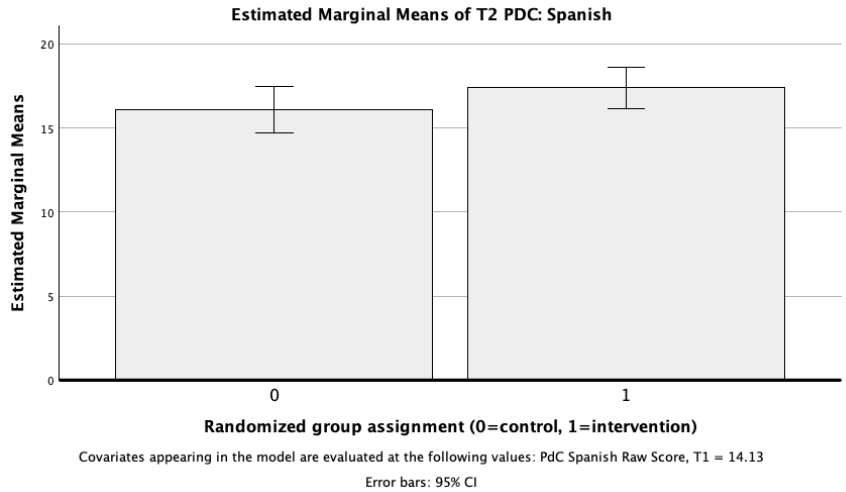
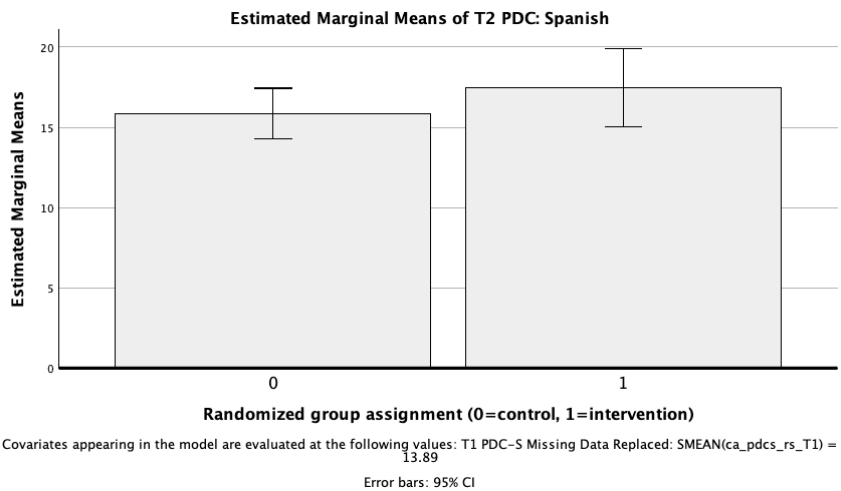


Figure 4.12 PP analysis: Control vs intervention group, T2 PdC: Spanish



4.4 Discussion

The robust connection between early oral language skills and later reading comprehension underscores the importance of specifically addressing the oral language development of young Spanish-English DLLs (Castro et al., 2011; Mancilla-Martinez & Lesaux, 2010, 2017). Targeted early language interventions play a critical role in preventing later reading problems, and dual-

language interventions promise to bolster DLLs' early language acquisition and subsequently contribute to later reading skills (Kohnert et al., 2005; Castro et al., 2011a; Castro et al., 2011b; Spencer et al., 2019). Therefore, the purpose of this analysis was to examine the extent to which a community-based, dual language narrative intervention improved children's Spanish and English language skills on measures of narrative retells, story comprehension and vocabulary. The results of this interim analysis indicate that children in this study improved their Spanish narrative skills as a result of the dual language intervention. Furthermore, children in the intervention group scored higher, on average, than children in the control group on measures of English story comprehension, English narrative skills, English vocabulary, and Spanish vocabulary, although significant differences were not observed.

4.4.1 Narrative retell skills

Narrative retelling was the most prominent activity of this intervention, as interventionists supported children's story retells during intensive phase sessions and parents reinforced these narrative skills through the at-home engagement activities. Consistent with Spencer et al.'s work implementing the PdC intervention in schools (Spencer et al., 2019, 2020), narrative retells in Spanish yielded statistically significant effects with substantial effect sizes, as observed in both the ITT and PP analysis. In the case of English narrative retells, results approached significance in the ITT analysis with small effect sizes. Notably, the intervention group's T2 scores on the NLM-English were well above the benchmark score of 8 points; the control group scored less than 8 points on average at T2, indicating moderate or high risk. This overall observed growth in narrative language skills holds considerable significance for young DLLs, as such skills has been shown to be closely linked to later academic success (Catts et al., 2006; Heidlage et al., 2020).

Interestingly, when Spencer et al. (2020) implemented PdC in classrooms, the effect sizes for English narrative retells were larger than those for Spanish narrative retells. This discrepancy could be attributed to variations in children's exposure to English language input; in Spencer et al.'s study, all students were enrolled in an English-only preschool program, presumably receiving ample English language exposure at school. In the current study, BASH scores indicate that 92% of families in the intervention group (n=49) spoke only Spanish or mostly Spanish at home. Moreover, almost half of the children in the intervention group (n=25) were not enrolled in preschool at T1, meaning that children predominately experienced Spanish language exposure at home and many were not receiving English language input at school. Consequently, children in this sample may not have sufficient exposure to English, which may have impacted their ability to produce narrative retells in English. However, it is plausible to hypothesize that as children attend school and receive more English input, the narrative language skills they developed in this intervention will transfer across languages. In other words, developing a strong narrative foundation in Spanish will contribute to more robust language acquisition in both Spanish and English (Spencer et al., 2019, 2020), as this ability to generate a coherent and well-structured narrative is not inherently tied to a particular language, but rather reflects a cognitive skill that operates across languages (Berman, 2001; Bitetti et al., 2020; Pearson, 2002; Trabasso et al., 1992; Westby et al., 1989).

Furthermore, the family-oriented dimension of this intervention may have contributed to differences in effect size for Spanish and English retell outcomes. The at-home family engagement activities were exclusively conducted in Spanish, reinforcing the Spanish lessons taught each week during the intervention session. Therefore, children received additional support each week to enhance their Spanish narrative retell abilities. I speculate that this additional exposure to Spanish

narrative structure due to the at-home engagement activities, combined with limited English language input, influenced the significant effect this intervention had on children's Spanish narrative skills. However, it is important to note that I did not isolate the effect of the family engagement activities or language input, so this hypothesis will require more rigorous investigation in the future.

4.4.2 Story comprehension

The ASC is a standardized assessment tool that uses stories and comprehension questions to evaluate children's language comprehension skills. Notably, the ASC stories are more extensive and complex compared to the stories featured in the PdC curriculum, and were strategically designed to measure children's inferential comprehension. Furthermore, the intervention did not explicitly instruct children to answer the kinds of factual and inferential questions that comprise the ASC.

At T1, children's scores across both groups were strikingly low, ranging from 3.20-4.79 points out of a total of 17 possible points. These low scores indicate an inability to respond to questions about the stories, which could be attributed to either a lack of understanding of the stories or a deficiency in English expressive language to articulate a response. Following the intervention intensive phase, the intervention group showed modest but meaningful improvements compared to their counterparts in the control group in both the ITT and PP analyses, although the differences between groups were not statistically significant. Despite the improvement in scores, there remains ample room for further advancement, given that children in the intervention group achieved an average adjusted posttest ASC score of 6.03 and 5.45 in the ITT and PP analyses, respectively.

4.4.3 Vocabulary skills

Over the 12-week intervention period, interventionists explicitly taught two new vocabulary words in Spanish and English each week for a total of 24 new words taught in each language. These words were strategically selected to be more complex, Tier 2 vocabulary words (Beck & McKeown, 2007). The PdC assessments evaluated children's receptive knowledge of all 24 words taught in both Spanish and English.

Although not statistically significant, group differences on the English and Spanish PdC assessments favored the intervention group. Both the ITT analysis and the PP analysis indicate that, on average, the intervention group outperformed the control group on both the English PdC and the Spanish PdC assessments. In particular, the PP analysis indicates that although children in the intervention group had lower average scores at T1 compared to the control group, they exhibited higher scores at T2 in both Spanish and English. While no statistically significant differences were found between groups, there were small effect sizes observed in Spanish vocabulary for both the ITT analysis ($\eta^2 = .021$) and the PP analysis ($\eta^2 = .019$), along with a small effect size in English vocabulary for the ITT analysis ($\eta^2 = .016$).

Once again, the meaningful improvements in Spanish receptive vocabulary suggest that the combination of small-group intervention lessons and at-home family engagement activities played a pivotal role in helping children master the target vocabulary words in Spanish. While the English vocabulary words were taught in the small-group lessons, they were not included in the at-home engagement activities.

In summary, these results establish a causal relationship between the dual language narrative intervention and children's Spanish narrative retell outcomes. While no other significant relationships were detected, it is noteworthy that the intervention group consistently outperformed

the control group on all measures of narrative retell, story comprehension, and receptive vocabulary. The effect sizes were larger on the Spanish measures than on the English measures, indicating the impact was more pronounced on children's Spanish language skills than English language skills. These findings suggest that this intervention has promise for supporting children's Spanish language development, which is a critical foundation for enhancing their English language development.

While the primary objective of this intervention was to enhance young DLLs' oral language development, a secondary aim was to explore the broader impact of the intervention on families. The following chapter delves into research question two, exploring the ways in which families engaged with the intervention, both during sessions and in their homes. Furthermore, chapter five aims to gain insight into how parents provided support for their children's language development throughout the intervention.

CHAPTER 5

Results and discussion: Family-level impact

5.1 Introduction

As discussed in Chapter 1, a large body of literature, including both monolingual children and DLLs, has established a strong connection between children's early reading skill development and their home language and literacy experiences (Collins, 2014; De Houwer, 2009; Farver et al., 2013; Mancilla-Martinez et al., 2019). Research on home language exposure among DLLs from Spanish-speaking homes in the U.S. indicates that consistent exposure to language, either Spanish or English, at home contributes to language acquisition in the respective language (Hoff, 2020; Mancilla-Martinez & Lesaux, 2011; Oller & Eilers, 2002; Weisleder & Fernald, 2013). While less explored, researchers have also emphasized the relation between Spanish-English DLLs' home language use and language acquisition across both Spanish and English (Hoff & Ribot, 2017; Mancilla-Martinez & Lesaux, 2011; Winsler et al., 2014). Moreover, studies have revealed links between Spanish-speaking parents' beliefs regarding dual language development, their home language use, and their children's vocabulary development, particularly for young DLLs who are still developing their English skills (Hwang et al., 2022; Mancilla-Martinez & Lesaux, 2011). This extant research underscores the significance of the home language environment, suggesting that parents' language practices and beliefs serve as critical indicators of how parents support their DLL children's language development (Hwang et al., 2022; Mancilla-Martinez & Lesaux, 2014). Consequently, research question two explores changes in families' home language and literacy experiences, as well as parents' beliefs about bilingualism, to garner a deeper understanding of how parents supported their children's language development throughout the intervention.

Specifically, this investigation assesses the extent to which 1) families engaged with the intervention and 2) the intervention impacted families' home language and literacy practices, along with parents' beliefs about bilingualism.

5.2 Data Analysis

This analysis focuses primarily on four data sources: attendance data across intensive phase intervention sessions; parent-reported use of at-home family engagement activities; the language use and beliefs survey; and the intervention effectiveness survey. The first part of this analysis presents attendance data from all intensive phase sessions, as well as parent-reported use of the at-home family engagement activities provided in the intervention. Subsequently, data from the pre-intervention and post-intervention language use and beliefs survey details differences in home language exposure and use, as well as parents' beliefs about dual language development. Finally, the intervention effectiveness survey data is presented to better understand parents' confidence in implementing the strategies taught in the intervention, as well as parents' perception of the intervention's overall effectiveness.

Surveys included both Likert scale questions and open-ended questions. The Likert scale data was analyzed descriptively. Open-ended responses from the intervention effectiveness survey were qualitatively coded to identify patterns in responses. Dedoose was employed to conduct open coding, and a constant comparative method generated five codes related to the impact of the intervention (Brown et al., 2007; De Houwer, 2009; Farver et al., 2013; Mancilla-Martinez et al., 2019).

5.2 Results

5.2.1 Attendance and home engagement with intervention

Participant attendance is displayed in Figure 5.1 and Table 5.1. Overall, attendance rates were low, ranging from 19%-53%. Attendance rates slowly declined over the course of the intervention; the first session was the most attended overall, while the eleventh session was the least attended overall. Attendance plateaued around the middle of the intervention with sessions six and seven, and then sharply declined after session seven.

Only participants who attended the intervention session each week received a text message with an assignment of at-home engagement activities, as well as a survey to report their use of these activities. Parents reported their use of at-home activities on a scale ranging from 1-5; 1 indicated that the family did not complete any at-home engagement activities, while 5 indicated that families completed all their weekly at-home activities. Despite low attendance rates, response rates were high, particularly starting with session two. Additionally, parents reported high use of at-home activities, with an overall average rating of 4.70 ($SD=0.16$) across all weeks of the intervention, indicating that families who attended the weekly intervention sessions tended to complete almost all of their weekly at-home engagement activities.

At the end of the 12-week intensive phase, parents were surveyed regarding how much time they spent using the intervention strategies at home with their child each week (see Figure 5.2). The majority of participants ($n=10$) indicated that they used the intervention strategies for approximately 15-30 minutes weekly.

Figure 5.1 Participant attendance across intensive phase

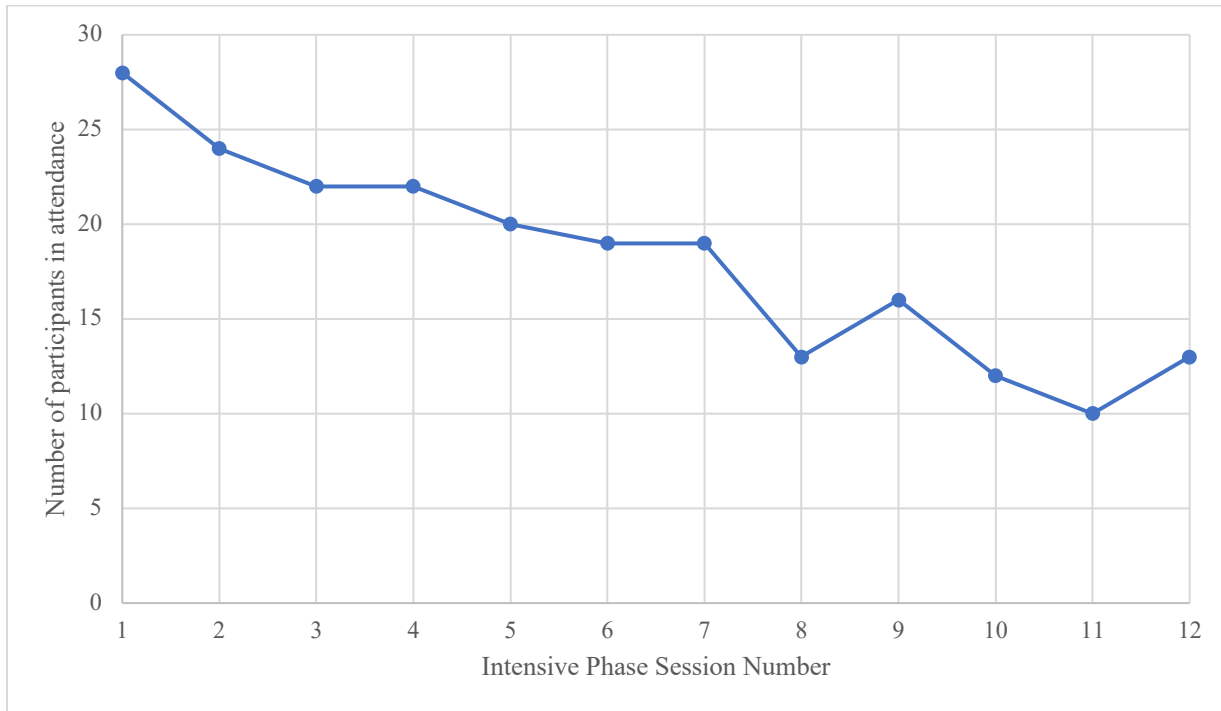
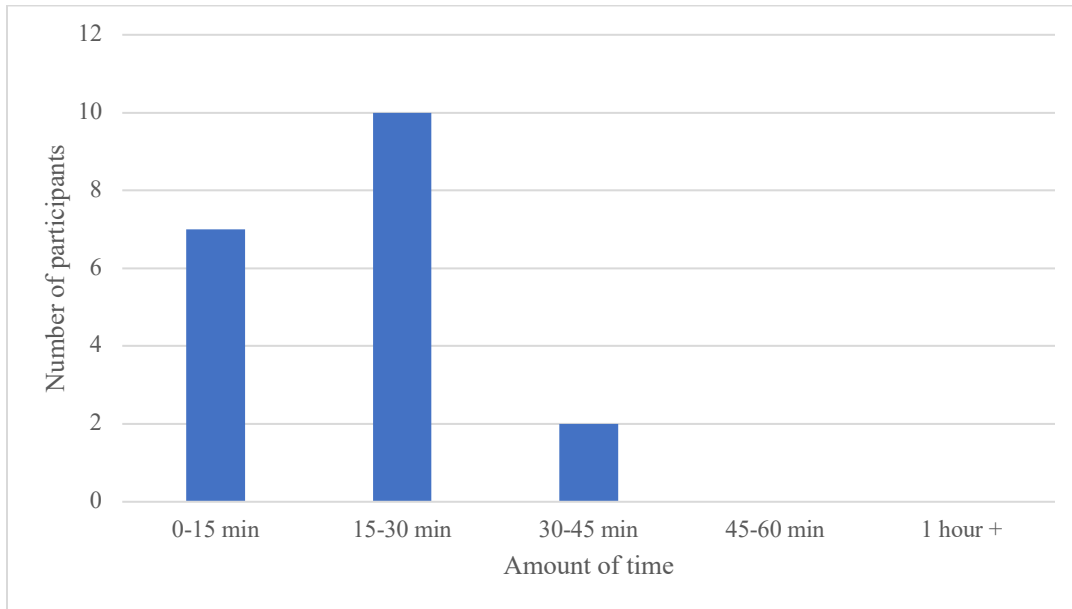


Table 5.1 Attendance and parent-reported use of at-home engagement activities

Intervention Session	Number of Participants who attended	Attendance rate	Participants who reported use of at-home engagement activities	Response Rate	Average rating of at-home engagement activity use
1	28	53%	15	54%	4.67
2	24	45%	21	88%	4.71
3	22	42%	20	91%	4.45
4	22	42%	22	100%	4.39
5	20	38%	19	95%	4.84
6	19	36%	19	100%	4.79
7	19	36%	18	95%	4.61
8	13	25%	13	100%	4.92
9	16	30%	16	100%	4.67
10	12	23%	12	100%	4.75
11	10	19%	10	100%	4.9
12	13	25%	13	100%	4.64

Figure 5.2 Time spent using intervention strategies each week



5.2.2 Home language use and exposure

In addition to measuring families' at-home engagement with the intervention activities, we also investigated other language and literacy experiences that occurred in the home. Parents completed a language use and beliefs survey at T1 and T2, in order to determine whether patterns of home language use and exposure changed over the course of the intervention. Table 5.2 displays descriptive statistics of parents' reported home language use patterns. As previously noted, a 5-point scale was used; higher values indicate that language exposure/use occurred more frequently, while lower values indicate that language exposure/use was less frequent. Parents reported that the language exposure children received from their mother, father, and other adults in the home was more Spanish-dominant both at T1 and T2. Similarly, children's language use with their mother, father, and other adults in the home was more Spanish-dominant at both T1 and T2. Data indicate very slight increases in children's English language use with their mothers and fathers at T2. Notably, standard deviations reveal substantial variation in levels of language use and exposure.

Children’s language use and exposure with other children at home reflects more balance between English and Spanish. Children’s language exposure with other children was slightly more Spanish-dominant at T1 (Spanish exposure: $M=3.71$, $SD=0.85$; English exposure: $M=3.15$, $SD=1.04$), while at T2 other children spoke English more frequently with the child (Spanish exposure: $M=3.23$, $SD=1.42$; English exposure: $M=3.46$, $SD = 1.39$). Children’s language use reflected a similar trend, with a notable increase in English language use from T1 ($M=2.85$, $SD=1.39$) to T2 ($M=3.46$, $SD=1.66$).

Table 5.2 Patterns of home language exposure to child and home language use by child

	T1 (n=21) Mean (SD)	T2 (n=13) Mean (SD)
Child and mother		
How often does the mother speak Spanish to the child on a daily basis?	4.76 (0.44)	4.77 (0.44)
How often does the mother speak English to the child on a daily basis?	2.00 (1.10)	2.54 (1.27)
How often does the child speak Spanish to the mother on a daily basis?	4.29 (0.64)	4.00 (1.08)
How often does the child speak English to the mother on a daily basis?	2.55 (0.99)	2.69 (1.18)
Child and father		
How often does the father speak Spanish to the child on a daily basis?	4.42 (0.77)	4.31 (1.11)
How often does the father speak English to the child on a daily basis?	2.05 (1.08)	2.23 (0.93)
How often does the child speak Spanish to the father on a daily basis?	3.74 (1.24)	4.00 (1.29)
How often does the child speak English to the father on a daily basis?	2.37 (0.96)	2.46 (0.96)
Child and other adults		
How often do the other adults speak Spanish to the child on a daily basis?	4.00 (1.10)	4.54 (0.66)
How often do the other adults speak English to the child on a daily basis?	2.75 (1.21)	2.46 (1.39)
How often does the child speak Spanish to the other adults on a daily basis?	3.62 (1.07)	4.23 (0.83)
How often does the child speak English to the other adults on a daily basis?	2.7 (1.03)	2.62 (1.19)

Child and other children		
How often do the other children speak Spanish to the child on a daily basis?	3.71 (0.85)	3.23 (1.42)
How often do the other children speak English to the child on a daily basis?	3.15 (1.04)	3.46 (1.39)
How often does the child speak Spanish to the other children on a daily basis?	3.71 (1.10)	3.85 (1.41)
How often does the child speak English to the other children on a daily basis?	2.85 (1.39)	3.46 (1.66)

Parents responded to each question on a 5-point scale: 1 = Never, 2 = Occasionally, 3 = Sometimes, 4 = Most of the time, 5 = All the time

5.2.3 Family storytelling and book-reading practices

In alignment with the intervention, this study specifically focused on the home literacy experiences of storytelling and book reading. Table 5.3 presents descriptive statistics for patterns of engagement in family storytelling and book reading at T1 and T2. The sample means indicate that parents partook in these activities with their children at a somewhat sporadic frequency, ranging from approximately 2-3 times a month to a few times each week. The predominant language employed during these literacy experiences was Spanish, a consistent theme across both time points. A discernible trend in the data is the subtle uptick in all four literacy experiences from T1 to T2. Particularly striking is the marked increase in the frequency of parents reading to their children in Spanish. At T1, parents reported that they read with their child in Spanish about 2-3 times a month on average ($M=2.76$, $SD=1.09$); contrastingly, by T2 parents reported reading books with their child in Spanish a few times each week on average ($M=3.15$, $SD=0.69$).

Table 5.3 Patterns of at-home book reading and storytelling

	T1 (n=21)	T2 (n=13)
	Mean (SD)	Mean (SD)
How often do you or does someone in your house read with your child in Spanish?	2.76 (1.09)	3.15 (0.69)
How often do you or does someone in your house read with your child in English?	2.57 (1.25)	2.62 (0.96)
How often do you or does someone in your house tell stories with your child in Spanish?	2.67 (1.15)	2.77 (0.73)
How often do you or does someone in your house tell stories with your child in English?	2.38 (1.20)	2.54 (1.05)

Parents responded to each question on a 4-point scale: 1 = Almost never, 2 = 2-3 times a month, 3 = A few times each week, 4 = All the time

5.2.4 Parent beliefs about dual language development

Given the connection between Spanish-speaking parents' beliefs about bilingualism and the home language environment, the parent survey administered at T1 and T2 also asked parents about their beliefs regarding dual language development. Table 5.4 displays the average scores for each of the parental beliefs items. The items were organized into three groups, based on whether the item gauged parents' views regarding their children's overall oral language development, dual language development, or the role of conversation partners in supporting their child's language development. The sample means indicate that, overall, parents generally agreed with the statements, as higher values signify stronger agreement with the statements. However, the standard deviations illustrate significant diversity in parents' average levels of agreement with the statements. Furthermore, there appears to be minimal disparity in the average agreement levels of parents between T1 and T2, indicating parents' beliefs did not change drastically over the course of the intervention.

Table 5.4 Parent beliefs about dual language development

	T1 (n=21)	T2 (n=13)
	Mean (SD)	Mean (SD)
Beliefs about language development		
Providing opportunities for children to produce language can help their later school success.	4.71 (0.64)	4.69 (0.48)
It is important for children to have the opportunity to tell stories to others.	4.62 (0.59)	4.77 (0.43)
It is difficult to find time to build daily routines for language interactions with children.	3.14 (1.06)	3.38 (1.26)
Storytelling can be a great opportunity to build children's language skills.	4.57 (0.68)	4.46 (1.13)
Some children are natural talkers, others are silent.	3 (1.10)	3.15 (1.46)
It is more important that children be able to understand Spanish than to speak it.	2.62 (1.02)	3.31 (1.43)
It is important for children to learn to read and write in Spanish.	4.38 (0.86)	4.46 (0.66)
Beliefs about bilingualism		
Young children who are exposed to two languages will naturally learn both well.	4.29 (1.19)	4.08 (1.44)
Young children can easily keep two languages separate and know which one to use in different situations.	4.14 (0.91)	4.08 (1.04)
Children should be corrected when they mix two languages in the same sentence.	3.43 (1.25)	3.31 (1.55)
Learning two languages can have long-term negative consequences for language development.	1.90 (1.22)	2.15 (1.21)
Young children become confused if they are learning two languages at the same time.	2.67 (1.28)	2.6 (1.12)
Using Spanish and English during oral language and storytelling activities are equally helpful for later academic success.	4.67 (0.58)	4.62 (0.51)
Instead of Spanish, English should be used during children's oral language and storytelling activities for their later academic success.	4.52 (0.68)	4.08 (1.12)
Beliefs about children's conversation partners		
If possible, families should use English with their children.	3.67 (1.15)	3.92 (0.95)
It is helpful to children's language development to use Spanish with adults and others in the community even if that language is not English.	3.90 (0.83)	4.38 (0.87)
Adults should avoid mixing two languages in conversation with young children.	3.14 (1.23)	3.15 (1.21)

Children learn English from peers and siblings, so it is not necessary that parents teach them English.	3.38 (1.43)	3.00 (1.58)
Parents should correct children if their pronunciation in Spanish sounds "foreign."	3.48 (1.17)	3.38 (1.50)
During storytelling, it is important for parents to ask children questions about their story.	4.76 (0.54)	4.77 (0.44)
Parents can play an important role in children's language development.	4.86 (0.48)	4.77 (0.44)
It is important for parents and caregivers to have strategies for supporting children's language use.	4.67 (0.58)	4.54 (0.52)

Parents responded to each question on a 5-point scale: 1 = Strongly disagree, 2 = Disagree, 3 = Unsure, 4 = Agree, 5 = Strongly agree

5.2.5 Parents' confidence in implementing intervention strategies

The intervention effectiveness survey asked participants how confident they felt using the strategies that were explicitly taught during the intervention. Figure 5.3 illustrates participant responses. Notably, the majority of participants indicated that they felt "very confident" using each of the strategies introduced in the intervention. Parents' open responses indicated that these strategies helped them to more actively engage in conversation with their children. For example, one mother wrote, "I learned how to be present when I interact with my child and we do language activities together." Another mother explained, "When my child talks about a certain topic, I know how to respond well...to support my child's language development." In addition to responding to children's talk, another mother mentioned that she now considers her own talk as a model for her child, so she tries "to talk as best as (she) can...so that (her) child can learn." Overall, parents expressed confidence in implementing specific intervention strategies that allowed them to be active conversation partners with their child.

Figure 5.3 Parents' confidence level in using intervention strategies



5.2.6 Parents' perception of intervention effectiveness

Remarkably, all participants indicated that the intervention helped their child to develop stronger language skills and helped them to better understand their child's language development and oral language skills. Parents' responses reflect an appreciation for the interventions' impact on their child's vocabulary, narrative skills, and story comprehension, which were the main objectives of the intervention. For instance, one parent highlighted that her child "learned a lot of new words" over the course of the intervention, while another parent indicated that her child "learned new English words and how to pronounce them." The emergence of improved narrative skills among the children was another recurring theme, as one parent wrote that her child "is practicing telling stories more" while others observed their children engaging in more frequent narrations in English, Spanish, or both languages. Another family noted that their child does a much better job explaining stories now, as the child tries to incorporate the "problem, feeling, and action" story grammar elements taught in the intervention. Finally, a particularly salient observation was the impact that the intervention had on their children's story comprehension. Parents expressed that the

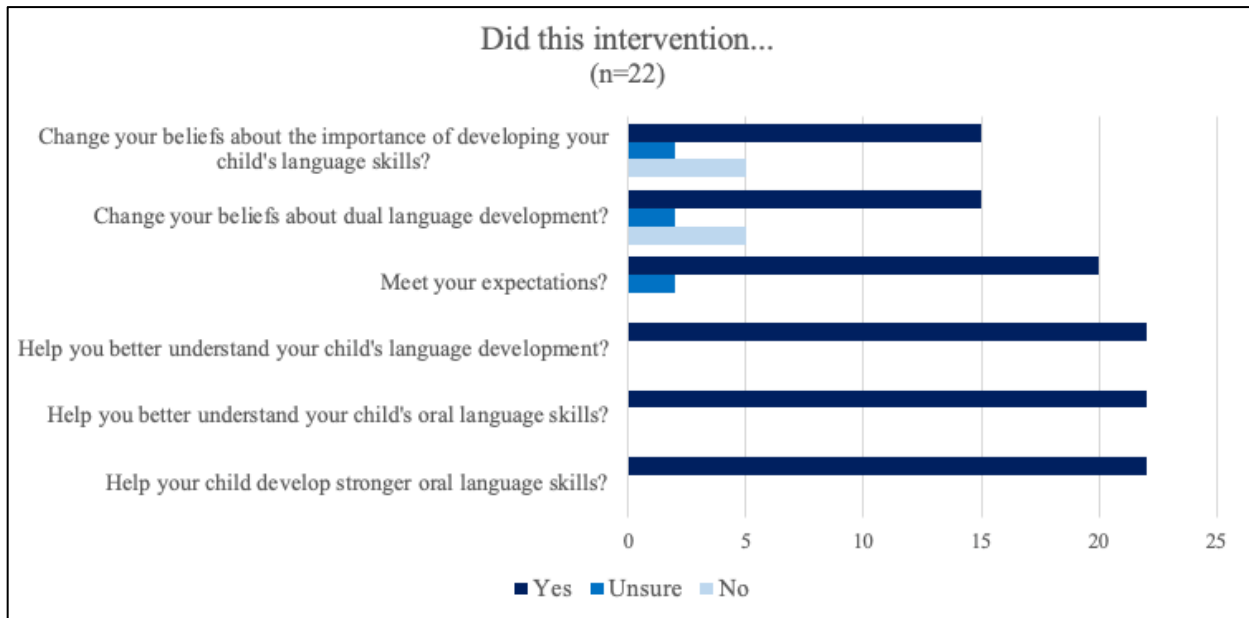
intervention helped their children to identify the different parts of a story, ultimately leading to a deeper understanding of narrative structures. One parent wrote that her child “is more interested in the stories (I) read (her)”, due to her improved comprehension abilities.

In addition to impacting children’s vocabulary, narrative retell skills, and story comprehension, parents’ feedback underscored an appreciation for the community aspect of the intervention. Several parents expressed their satisfaction with the collaborative experience; one family explained that they liked interacting with other families to “do the activities together” each week, while another family indicated they liked the “dynamic” of participating in the sessions with other families. Interestingly, parents also highlighted the social benefits their children gained from interacting with their peers. For example, one mom said that her son is “very shy, but now he talks more with other people. The other children helped him.” Another parent said her child feels “more comfortable interacting with other children,” while two other parents indicated that their children are more “confident” and “proactive” in their interactions with other children after participating in the intervention. Additionally, parents commended the relationships fostered between the interventionists and the families. Parents mentioned that the interventionists were “very kind and...helped so much” and expressed gratitude for the “time they dedicated to (their) children.” Although attendance fluctuations impacted the community-based nature of the intervention, parents valued the sense of community and connection cultivated within the intervention cohort.

It is interesting to note that parents seemed divided on whether the intervention changed their beliefs about their children’s dual language development. While the majority of parents (n=15) did agree that the intervention changed their beliefs about the importance of developing their children’s language skills and about dual language development, some parents (n=2) were unsure whether the intervention changed their beliefs about either topic, and five parents indicated

that the intervention did not change their beliefs about developing children’s language skills or dual language development. One parent who responded “No” to these questions explained that she “already knew that her child should learn both Spanish and English.” This is consistent with the responses to the parent belief’s survey, which did not indicate any major changes in parent beliefs over the course of the intervention.

Figure 5.4 Parent perception of intervention effectiveness



5.3 Discussion

Research question two focuses on the family-level impact of the intervention, to ascertain how families engaged with the intervention and the extent to which the intervention impacted family’s home language and literacy experiences. Given that this dissertation presents an interim analysis of the overall RCT, it is critical to use this data to guide modifications to the intervention that can be implemented in the second half of the RCT to better support families. Therefore, the family-level data was analyzed to identify the strengths of the intervention, as well as the challenges faced in implementation. The intervention demonstrated strengths in its impact on family engagement in home language and literacy experiences, parent empowerment, and

community building. However, it faced challenges related to low attendance rates, which potentially limited impact on parental beliefs.

5.3.1 Strengths of the intervention

Chapter four illustrated the positive impact of the Puente de Cuentos para la familia intervention on young DLLs' language development. Most notably, children who received the intervention demonstrated significant growth in their Spanish narrative retell skills, and showed improvement across measures of English narrative retell, English language comprehension, and Spanish and English vocabulary. Parents' survey responses corroborated the strength of this intervention's impact on children's language skills, as parents reported notable improvements in children's vocabulary, storytelling abilities, and story comprehension. These findings support prior research on the effectiveness of targeted dual language narrative interventions (Spencer et al., 2019, 2020), and highlight the importance of early language intervention to support children's language development (Spencer et al., 2015; Weddle et al., 2016).

The results also illustrated high levels of family engagement from families who attended the intervention sessions. Despite low attendance rates and a gradual decline over the course of the intensive phase, response rates on weekly surveys remained consistently high, suggesting a strong commitment from participating families. Furthermore, the high level of engagement in at-home activities, with families completing the majority of their weekly engagement tasks, reinforces this strong commitment to the program among those who attended the weekly sessions. This dedication is a testament to the program's potential impact, even in the face of logistical challenges related to attendance.

In addition to family engagement with the intervention, there were also slight changes in families' overall home literacy experiences. Primarily, the intervention instilled a high level of

confidence in parents' implementation of the strategies introduced, and parents reported using intervention strategies with their child for 15-30 minutes per week on average. The empowerment of parents as active conversation partners with their children is a key strength, as it ensures the sustainability of positive changes beyond the intervention period. Although parents engaged in storytelling and book reading activities with their children somewhat infrequently, data revealed slight increases in these literacy activities from T1 to T2. Notably, parents reported reading to their child in Spanish more frequently at T2, signaling a positive shift towards increased exposure to book reading and narrative structures. These findings are in line with previous research on the benefits of parental involvement in early childhood interventions (Heidlage et al., 2020; Kaiser & Roberts, 2013), and reaffirms the effectiveness of explicitly teaching Spanish-speaking parents strategies to support their children's language development (Peredo, 2016; Peredo et al., 2018). Building on previous research, this study suggests that children's language development can be supported by educating parents on the value of developing narrative skills in both Spanish and English, and providing parents the tools and strategies they need to actively engage in their child's language development. By offering a dual language intervention, Spanish-speaking parents gained a valuable resource for active involvement in their child's early language development, ultimately contributing to improved educational outcomes for their child.

This study also examined changes in home language experiences, specifically language use and exposure. Parents reported that both language exposure and use were more Spanish-dominant, reflecting the prevalent use of Spanish in the household. While there was a slight increase in children's English language use with parents from T1 to T2, this change was relatively minor. In contrast, children's language use and exposure with other children at home exhibited a more balanced blend of Spanish and English, with a notable increase in English language use over the

course of the intervention. Notably, these results align with extant research indicating that patterns of language use and exposure in the home are dynamic (Mancilla-Martinez & Kieffer, 2010), and underscores the importance of considering the changing nature of DLLs' home language use and exposure over time (Mancilla-Martinez et al., 2019; Mancilla-Martinez & Kieffer, 2010). Although differences between T1 and T2 cannot be attributed directly to the intervention, they suggest that the intervention may have had a broader impact on home literacy and language experiences beyond the strategies explicitly taught in the intervention. In particular, these findings suggest that the intervention may have encouraged increased book reading in Spanish as well as children's increased use of English, particularly with their siblings. Additional research is warranted to further explore the connections between this intervention and at-home family language and literacy experiences.

A unique aspect of this study was the community-based nature of the intervention, which has been underexplored in the existing literature on early language interventions. Parents' feedback emphasized the significance of interactions with other families in the program. Despite attendance fluctuations, the sense of community and connection within the intervention cohort was valued. This community dimension contributed to a sense of mutual support and a dynamic group atmosphere. This aligns with findings from other behavioral interventions that have been implemented in community settings, but extends this community-focused element to early language interventions, where community-based instruction is uncommon (Gesell et al., 2012). Moreover, the observed positive effects on children's social behavior, as parents reported their children became more sociable and self-assured, highlights the vital role of peer interactions to support early language development (Chaparro-Moreno et al., 2019; Friedman-Krauss et al., 2019a; Palermo & Mikulski, 2014). The positive effects on children's social behavior and the

camaraderie among parents underscore potential benefits of including a community element in such interventions. Initiatives aimed at enhancing children's school readiness are most impactful when they focus on empowering families and communities to create development enriching experiences for their young children (Gonzalez & Uhing, 2008); this intervention leveraged a family-focused, community-based implementation strategy to foster this empowerment.

5.3.2 Challenges related the intervention

The most apparent challenge this intervention faced was the consistently low attendance rate. Low attendance limited the program's direct impact on participants, and may have hindered a more robust increase in children's narrative retell, story comprehension, and vocabulary skills. Additionally, although parents appreciated the community aspect of the intervention, this sense of community became less apparent over the course of the intervention as attendance faltered.

The intervention also did not have a notable impact on parents' beliefs about language development, bilingualism, or the role of children's conversation partners. Parents' responses to the language beliefs survey varied widely; this closely aligns with prior research that has revealed notable variability in Spanish-speaking parents' beliefs about how their young children learn and develop one or two languages (Hwang et al., 2022; Mancilla-Martinez & Lesaux, 2014). Furthermore, the language beliefs survey did not reflect any prominent changes in parents' beliefs from T1 to T2. However, it is important to note that at T1, parents' responses on the language beliefs survey were generally aligned with evidence-based practices that support dual language development. Therefore, the lack of significant differences between T1 and T2 may be attributed to the fact that parents already held largely positive beliefs about bilingualism, and maintained these strong beliefs through the intervention. Moreover, parents exhibited mixed responses when they were explicitly asked whether the intervention changed their beliefs about their children's

dual language development. While the majority agreed that the intervention influenced their beliefs, some parents remained unsure or did not perceive significant changes. This suggests that, although the intervention had tangible effects on language development and engagement, it may not have been equally transformative in reshaping parental beliefs, as some parents already held strong convictions about bilingualism.

In conclusion, these results shed light on the multifaceted effects of our community-based, dual language intervention aimed at enhancing oral language development of young Spanish-English DLLs. The findings underscore the impact of early interventions on Spanish-speaking families' home literacy and language experiences and the potential for community-based elements in such programs, and the persistence of parental beliefs over the course of the intervention. However, attendance challenges warrant additional investigation into specific factors contributing to attendance rates, which could provide valuable insights for program design and implementation. Therefore, the following section will consider adaptations to this intervention that could increase the feasibility of implementing family-centered, community-based dual language interventions.

CHAPTER 6

Conclusion

6.1 Significance and implications

This dissertation contributes to a growing body of literature that touts the advantages of narrative interventions to support young children's oral language skills (Petersen et al., 2022; Spencer & Petersen, 2020; Weddle et al., 2016; Zucker et al., 2013). Furthermore, this study underscores the positive impact of a dual language approach to intervention, as research has proven that use of L1 is critical not just in supporting DLLs early oral language skills, but also later reading comprehension (Bowers & Vasilyeva, 2011; Cabell et al., 2015; Y. Dong et al., 2005; Whorrall & Cabell, 2016). This work extends Spencer et al.'s (2019, 2020) implementation of a dual language narrative intervention in schools by adapting this intervention for use with families in a community context, based on evidence that supports the important role of home language input on young DLLs' language development (Castro et al., 2011; Dickinson & Tabors, 2002; Lewis et al., 2016). The implementation of this community-based, dual language narrative intervention combined three powerful, evidence-based approaches to oral language development, in order to provide targeted instruction to support the unique linguistic and developmental needs of young Spanish-English DLLs.

The results of this study carry implications for both practical application and policy development. This intervention holds the potential to significantly influence the narrative language skills of Spanish-English DLLs, but also serves as a catalyst for enhancing parental involvement in children's early language experiences, with the ultimate goal of fostering children's later language and literacy skills. In particular, this dual-language intervention provides a valuable

resource for Spanish-speaking parents, empowering them to actively engage in their children's language development. This intervention could be particularly beneficial for parents whose children do not attend formal early education programs, as it equips parents with essential resources and strategies that allow them to play a pivotal role in supporting their children's early language and literacy experiences. The community-based nature of the intervention enhances its accessibility, as sessions take place in local library branches open to all community members. This inclusive approach not only promotes dual language development, but fosters a sense of community involvement amongst families who may not speak English. Consequently, this intervention holds promise not only for enriching language skills in young DLLs, but also for contributing to a more inclusive and supportive educational landscape for preschool-aged children from Spanish-speaking homes.

6.2 Limitations

While this community-based, dual language narrative intervention shows promise for supporting young Spanish-English DLLs' oral language skills, several limitations and practical methodological concerns exist. One notable limitation of this study is related to the intervention dosage. Several children assigned to the treatment group did not receive the full 12-week dosage of the intervention, as many families were unable to attend intervention sessions for a variety of reasons. The impact of the COVID-19 pandemic on attendance is crucial to acknowledge, especially since recruitment commenced in 2021. The pandemic likely influenced attendance, as well as the extent to which families could commit to participate in a research project during a time when the global pandemic was as a significant stressor. Although make-up sessions were offered, staff limitations, time constraints, and participant availability limited the number of make-up sessions that were completed. Furthermore, variations in individual responsiveness to the

intervention based on dosage were not fully captured in this analysis. Future studies should explore different dosages and durations to ascertain the optimal parameters for maximizing the intervention's impact on children's language development.

Another limitation is related to the small sample size; while the larger randomized controlled trial will eventually enroll 300 parent-child dyads, this interim analysis only included 100 parent-child pairs. Although this study was sufficiently powered to detect a moderate effect size, the small sample size may have impacted the statistical power of this analysis, potentially reducing the ability to detect subtle effects of the intervention. Furthermore, since this was an interim analysis, I only explored the effects of the intensive phase of the intervention. Following this 12-week intensive phase period, children receive monthly intervention sessions that provide continued support during the 21-month maintenance phase. Therefore, future studies will be able to examine the extent to which children maintained their retell skills as they entered into kindergarten and first grade, in addition to analyzing any potential impact of the intervention on children's story comprehension and vocabulary.

An additional constraint pertains to the assessment used to measure children's vocabulary acquisition. The intervention sessions targeted vocabulary words that were more abstract and complex than words typically measured with picture vocabulary assessments; for example, the PdC curriculum introduced vocabulary such as "rough," "brave," and "dangerous," rather than only introducing static nouns that can be easily depicted in illustrations. The selection of target vocabulary did not consider the ease of assessment of these words, potentially resulting in an insufficient evaluation of children's true vocabulary growth (Spencer et al., 2020). The use of static images in the PdC vocabulary assessment to portray the dynamic target vocabulary may have reduced children's ability to effectively respond to items on the vocabulary assessments,

consequently impacting their overall vocabulary scores. In light of the limitations associated with these receptive vocabulary measures, it is recommended that future research incorporates improved vocabulary assessment tools to ensure a valid measurement of children's vocabulary growth.

6.3 Directions for future research

6.3.1 Extending the current study

This dissertation holds additional significance as it constitutes an interim analysis within a broader randomized controlled trial. Therefore, it is imperative to carefully consider the valuable insights gleaned at the midpoint of this trial, which can provide pivotal guidance for enhancing the implementation of the intervention for the duration of the trial. As discussed, low attendance rates emerged as the predominant challenge during the intensive phase of this intervention. The two key strategies transpired as critical in bolstering increased attendance rates for families: the modification of the intensive phase and incorporation of increased flexibility for families. Consequently, our team proactively established a new protocol for the intervention that incorporates these strategies to optimize its efficacy in addressing the needs of participating families (see Table 6.1).

The most significant transformation to the intervention protocol was the modification of the intensive phase of the intervention. During the intensive phase, participants found it demanding to maintain weekly attendance for a consecutive three-month period, as evidenced by the pronounced decline in attendance after sessions 6 and 7. In response to this challenge, the intensive phase will be separated into two parts: Intensive Phase I and Intensive Phase II. During Intensive Phase I, participants will convene weekly for six sessions, either in-person at a local library or

virtually. Capitalizing on the consistent attendance observed in sessions one through six, this condensed timeframe aims to sustain active participation.

In the subsequent Intensive Phase II, all sessions transition to a virtual format, and take place monthly instead of weekly. Monthly virtual meetings alleviate the weekly time commitment for families and eliminate the logistical challenge of commuting to and from the library. However, the sessions will still be group meetings, in an effort to retain the community-based aspect of the intervention. Additionally, participants will be given the option to choose between two virtual group sessions offered each month; the same material will be covered at both meetings, but families only need to attend one to receive the required dose. This extended intensive phase period offers families more time and flexibility between sessions, and gives families more than one opportunity to attend a group session. Individual make-up sessions will continue to be offered to accommodate families who are unable to attend either regularly scheduled session.

In tandem with the modification of the intensive phase, additional opportunities to afford families greater flexibility were strategically incorporated into the intervention adaption. Firstly, all intervention sessions now have two options for attendance. We noticed that families often had schedules that fluctuated from week to week, and were not always consistently available on the same night every week. Therefore, during Intensive Phase I the new protocol offers the option to either attend an in-person session at the local library, or a group virtual session. These are offered on different nights to increase accessibility for families who may have variable schedules. Additionally, two virtual sessions are offered during Intensive Phase II, again in an effort to accommodate varying schedules.

The next adjustment to enhance flexibility pertains to the make-up sessions offered to families who could not attend regularly scheduled sessions. In the original protocol,

interventionists individually scheduled hour-long make-up sessions, which often became burdensome for families with limited weekly availability. Therefore, families will now have the option to participate in a shortened make-up session lasting approximately 20 minutes. This abbreviated session features one child story and succinctly covers key information from the parent workshop. While not recorded as a full intervention dose, this option offers families a streamlined opportunity to receive essential intervention information.

A final protocol modification addresses at-home engagement activities. In the original version of the intervention, only participants who attended the intervention sessions received text message reminders to track their use of at-home engagement activities. However, this disadvantaged participants who did not attend each week, as they did not receive an assignment via text message for their at-home activities and were unable to record their completion of these activities. Furthermore, high rates of at-home activity completion indicated that families implemented the intervention strategies with high consistency and frequency at home. Therefore, these reminders have been extended to all families, regardless of attendance. This inclusive approach ensures that all parents have the opportunity to engage in at-home activities that support their children's language development at a time that is convenient for their family.

These modifications received recent approval from the Institutional Review Board (IRB), and are poised for implementation in the upcoming cohort of participants enrolled in this randomized controlled trial. Future analysis will assess the outcomes of these enhancements, gauging their impact not only on participant attendance but also on the overall advancement of children's oral language skills and family engagement with the intervention.

Table 6.1 Adaptations to the intervention protocol

Strategic Approach	Original protocol	Reason for adaptation	New protocol
<i>Modified Intensive Phase</i>	Participants attend 12 in-person sessions once a week.	Most participants did not receive full 12-week intervention dosage, and attendance faltered after sessions 6 and 7.	Participants have the option to attend weekly in-person sessions OR virtual sessions for six consecutive weeks.
	Intensive phase takes place over a three-month period.	Participants found it difficult to maintain weekly attendance for a consecutive three-month period, as evidenced by inconsistent attendance rates.	The final six sessions of the intensive phase are administered virtually once per month. Therefore, the intensive phase takes place over a 7.5 month period, offering parents more time and flexibility between sessions.
<i>Increased flexibility for families</i>	Participants have one option to attend the weekly intervention session.	Many families had schedules that fluctuated from week to week, and were not always consistently available on the same night every week.	All intervention sessions now have two options for attendance, which are offered on different nights to increase accessibility for families who may have variable schedules.
	If participants did not attend an intervention session, interventionists scheduled an hour-long make-up session.	Hour-long make-up sessions were burdensome for families who had limited weekly availability.	Families have the option to participate in a shortened make-up session (approximately 20 minutes). This session features one child story and synthesizes information from the parent workshop.
	Only participants who attended the intervention sessions received text message reminders to track their use of at-home engagement activities.	This disadvantaged participants who could not attend sessions. Additionally, high rates of at-home activity completion indicated that families were implementing the intervention strategies with high consistency and frequency at home.	All parents receive weekly reminders and will have the opportunity to report their use of at-home engagement activities. Therefore, even if participants are unable to attend sessions, they will still be able to incorporate the at-home engagement activities.

6.3.2 Potential avenues for future research

While this work adds valuable insights to extant literature on dual-language narrative interventions, there are several aspects that future research should consider. First, future research should investigate how much the children benefitted from instruction in Spanish. Although I didn't specifically isolate the impact of the Spanish curriculum or directly explore cross-language transfer, it is recommended that future researchers conduct a thorough and systematic analysis to determine the added value of incorporating children's L1 in a narrative language intervention. This would provide additional support for the use of dual-language interventions with young DLLs (Baker et al., 2016; Castro et al., 2011; Collier & Thomas, 2017; Mesa & Restrepo, 2019; Spencer et al., 2020). Furthermore, a longitudinal approach could provide additional insight into the impact of children's strong Spanish narrative skills on later English narrative skills. While I hypothesize that these narrative retell skills will transfer, a systematic analysis should be conducted to provide additional evidence that narrative macrostructure skills transfer between languages, even at a young age when children are still developing these narrative skills.

Another critical avenue for future research is the community-based aspect of this intervention; while community-based approaches to intervention are commonly employed in public health research, the use of this strategy in early language interventions, particularly when targeting DLLs, has been notably underexplored (Gesell et al., 2012; McAllister et al., 2003). Despite the limited research on community-based language interventions, this approach holds the potential to enhance family engagement in early learning and language development, and thus warrants additional attention.

6.4 Conclusion

In conclusion, this study offered an initial attempt to examine the effect of a community-based, dual language narrative intervention on the oral language skills of young Spanish-English DLLs. Findings presented robust experimental evidence supporting the efficacy of this intervention in enhancing children's Spanish narrative retell skills. Moreover, children in the intervention group outperformed children in the control group on measures of English retell skills, English story comprehension, English vocabulary, and Spanish vocabulary, although statistical significance was not achieved.

Beyond its influence on children's language skills, the intervention exhibited a positive impact on families' language and literacy practices at home, emphasizing the importance of leveraging a family-focused, community-based approach to foster language development in young DLLs. This study not only contributed valuable insights into the positive outcomes associated with the intervention, but also established a foundation for evidence-based modifications to enhance its accessibility and effectiveness for families. These results provide guidance to researchers in the design of early language interventions, underscoring not only the development of narrative language skills in young DLLs, but also the empowerment of parents to actively contribute to their children's linguistic development.

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