

Running Head: APP-BASED TRAINING PROGRAM

A SPANISH VOCABULARY APP-BASED TRAINING PROGRAM FOR PARENTS OF
DUAL LANGUAGE LEARNERS AT RISK FOR ACADEMIC FAILURE

By

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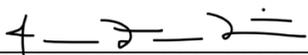
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By

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Table of Contents

List of Figures v

List of Diagrams vi

Chapter I..... 1

 Literature Review..... 1

 Introduction..... 1

 Vocabulary Gap 2

 Vocabulary Enrichment Programs 3

 Dialogic Readings..... 5

 Importance of L1 Vocabulary Knowledge in DLLs 6

 Parent Training..... 8

Chapter II 10

 Purpose..... 10

 Research Questions..... 11

Chapter III..... 11

 Methodology 11

 Participants..... 11

 Materials 13

 Training Application Development 13

 Strategies Selected for Application..... 14

 Procedures..... 15

 Data Analysis 17

APP-BASED TRAINING PROGRAM

Chapter IV.....	18
Results.....	18
Visual Analysis of Parents' Performance	23
Across Conditions.....	23
Tau-U Analysis	25
Chapter V	26
Discussion.....	26
Limitations and Future Research	29
Clinical Implications and Conclusion.....	30
Appendix.....	vii
References.....	xix
Abstract.....	xxv

List of Figures

Figure 1.	Probe Sessions for Participant 1	19
Figure 2.	Probe Sessions for Participant 2	21
Figure 3.	Probe Sessions for Participant 3	22

List of Diagrams

Diagram 1. Implementation of Teach-Model-Coach-Review 13

Chapter I

Literature Review

Introduction

The US Census Bureau estimates that as of 2019, people who are Hispanic or Latino make up 18.3% of the entire US population (U.S. Census Bureau, n.d.). It was also estimated that 13.5% of the US population speaks Spanish at home (Census, 2019). In 2015, the Census Bureau released a report that estimated that in 2060, the Hispanic population will grow to 28.6% of the US population, likely increasing the percentage of overall Spanish speakers (Colby & Ortman, 2017). Included in this population are children who grow up in bilingual environments (e.g., speaking one language at home and another in school). Children who come from low income families, are dual language learners (DLL), are learning their first language (L1) as they are still developing their second language (L2) and/or are identified with a language delay or impairment have been identified as children who are at risk of academic failure (Barac, Bialystok, Castro & Sanchez, 2014). As the Spanish-speaking population continues to grow, it is important that educators and health professionals acquire the tools necessary to work effectively with children who are at risk for academic difficulties or language disorders.

Vocabulary development has been found to promote children's language and literacy skills to succeed in school (Adlof, 2019). In fact, investigations have also found a relation between vocabulary and literacy skills for Latino DLLs (August, Carlo, Dressler, & Snow, 2005; Snow, Dickinson & Tabors, 2002; Lesaux, Kieffer, Faller, & Kelley, 2010; Storch & Whitehurst, 2002). Moreover, early vocabulary skills can serve as predictors for phonological, semantic, syntactic development (Chiat, 2000; Lee, 2011; Marchman & Fernald, 2008). Lee (2011) followed the development of language and literacy skills (such as phonological awareness and reading

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comprehension) in 2-year-olds until they were 11 years old, and their total vocabulary size (nouns, verbs, and adjectives known) was found to be a better predictor for their language and literacy outcomes than their lexical composition at age 2. It is important to emphasize that L1 instruction has been found to play an important role in language and literacy development in not just L1, but also L2 of DLLs (López and Greenfield, 2004; Proctor, August, Carlo, & Snow, 2006).

Spanish (L1) vocabulary is essential for the communication and language development of thousands of Latino Spanish speaking families in US. In light of the growth of the Latino population in the United States, the shortage of bilingual SLPs who serve children who need instruction in their L1 and L2 has created a national problem. Most SLPs in the United States are monolingual English-speakers who are not able to deliver their services (e.g., educate parents and provide home follow up and training) in Spanish. The 2019 demographic profile of American Speech-Language-Hearing Association (ASHA) members revealed that only approximately 4% of all SLPs met the ASHA definition of a Spanish-language service provider (American Speech-Hearing Association, 2019). This research aims to examine the effectiveness of a Spanish training computer tool that can be used by speech-language pathologist or instructors to teach vocabulary strategies to Spanish speaking parents so that they can support their children's L1 at home.

Vocabulary Gap

A vocabulary gap has been found in DLLs when compared to their monolingual peers characterized by a disparity in English and Spanish vocabulary that could impact the success of DLLs in the classroom (Mancilla-Martinez & Lesaux, 2011; Páez, Tabors, & Lopez, 2007). For example, Páez Tabors, and Lopez (2007) compared vocabulary acquisition of 319 English-Spanish bilingual preschoolers in Massachusetts and Maryland with that of 144 monolingual Spanish-speaking preschoolers in Puerto Rico using standardized subtests (Woodcock Language

APP-BASED TRAINING PROGRAM

Proficiency Battery) and a phonological awareness task (developed by researchers). Bilingual children were educated in classrooms where English was the main language of instruction. The children's language skills were assessed at the beginning and end of the academic year in Spanish and English. Bilingual children received Spanish and English versions of the same standardized language test while monolingual Spanish speakers were assessed only in Spanish. DLLs performed two standard deviations below the national mean in English vocabulary. When the mean Spanish vocabulary of bilingual children was compared to the mean of monolingual Spanish speaking children, DLLs performed below the monolingual Spanish speaking children at both the beginning and end of the academic year. This vocabulary gap has led to an increase in research to address the gap in DLLs who are at risk.

One explanation for this vocabulary gap is that DLLs typically distribute their vocabulary across two or more languages depending on exposure to and use of each language (Oller, Pearson, & Cabo-Lewis, 2007). Because vocabulary is distributed across two languages, vocabulary growth in one language may occur more slowly (Hammer et al., 2014). This may result in a smaller vocabularies in each language (Conboy & Thal, 2006); however researchers have suggested that vocabulary size of DLLs may be comparable to monolinguals when vocabulary in both languages is taken into account (e.g., Lundén & Silvé, 2011). Unfortunately, research indicates that the English vocabulary gap persists even after years of English-only education (Mancilla-Martinez & Lesaux, 2010). Limited vocabulary knowledge in the child's L1 or L2, when L2 is the conventional language in the classroom, can have a detrimental effect on the child's communication needs, ultimately leading to academic failure.

Vocabulary Enrichment Programs

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Many vocabulary enrichment programs have been developed with the aim of closing the vocabulary gap and supporting children at risk of academic failure (e.g, Neuman & Dwyer, 2011; Sharif, Rieber, Ozuah, & Reiber, 2002; Wasik, 2010). Examples include the vocabulary intervention program, World of Words (WOW), developed to improve children's word knowledge and category development (Neuman & Dwyer, 2011) as well as Exceptional Coaching for Early Language and Literacy (ExCELL), a professional development training program created for teachers (Wasik, 2010). ExCELL consists of training teachers to use evidence-based language strategies in the classroom that help promote language and vocabulary development in young children (Wasik, Hindman, & Jusczyk, 2009; Wasik, 2010). Wasik (2010) investigated the effect of ExCELL on children's vocabulary and found that children who were taught by teachers that had received ExCELL training, increased their vocabulary as evidenced by the Peabody Picture Vocabulary Test and a monitoring process measure developed by authors to assess specific curriculum vocabulary (Wasik, Hindman, & Jusczyk, 2009).

Studies have shown that vocabulary programs implemented by parents can support vocabulary development in DLLs (Sharif, Rieber, Ozuah & Reiber, 2002). Sharif, Rieber, Ozuah & Reiber (2002) studied the effects of Reach Out and Read (ROR), a pediatric-based literacy intervention program, on Spanish and English speaking families. The study included 200 children and their parents, where half of the families were exposed to ROR. In the study, pediatricians who were ROR-trained counseled parents (in the intervention group) about how to make changes at home to promote literacy (Sharif, 2002). This included discussion about the importance of reading, the effects of family time, and the benefits of using dialogic reading strategies as well as interactive behavior during reading time (Klass, Dreyer, & Mendelsohn, 2009; Sharif, 2002). Children (between the ages of 2 to 5.9; mean age of 3.8 years) exposed to ROR increased their scores on

APP-BASED TRAINING PROGRAM

standardized receptive language tests however did not show significant differences in their standardized expressive language scores (Sharif et al, 2002). Although in the Sharif et al. (2002) study, expressive language results were not significant, several other investigations have demonstrated how dialogic reading strategies can result in vocabulary growth (e.g., Hargave & Sénéchal, 2000; Simsek & Erdogan, 2015; Whitehurst, 1992; Whitehurst, Arnold, Epstein, Angell, Smith, & Fischel, 1994; Zevenbergen & Whitehurst, 2003).

Dialogic Reading

Previous studies have found that reading to children can lead to growth in the following areas: vocabulary, oral language skills, phonemic awareness, and print knowledge (Blewitt, Rump, Shealy & Cook, 2009; Sum & Berthelsen, 2014). A reading technique that has shown to positively impact children's vocabulary is dialogic reading (e.g., Simsek & Erdogan, 2015; Whitehurst, Arnold, Epstein, Angell, Smith, & Fischel, 1994). Dialogic reading consists of strategies used to elicit participation from young children while reading a story (Reese et al., 2010). Dialogic reading strategies are taught to caregivers using the acronym, CROWD (Blom-Hoffman, O'Neil-Pirozzi, & Cutting, 2006; Whitehurst, 1992; Zevenbergen & Whitehurst, 2003). The CROWD strategies are (1) completion, (2) recall, (3) open-ended questions, (4) wh-questions, and (5) distancing (Blom-Hoffman et. al., 2003). Using these strategies entails caregivers to prompt the child to complete sentences, recall details from the story, link story details to their own experiences, and answer wh-questions as well as open-ended questions (Blom-Hoffman, O'Neil-Pirozzi, Cutting, 2006; see Table 1 for English and Spanish question examples). The ultimate goal with dialogic reading is for there to be an eventual shift in roles in which the child becomes the storyteller and the adult becomes the listener (Tsybina & Eriks-Brophy, 2010).

APP-BASED TRAINING PROGRAM

Compared to traditional book-reading, dialogic reading has shown to lead to vocabulary gains and higher scores on expressive language tests (Hargave & Sénéchal, 2000; Simsek & Erdogan, 2015). Tsybina and Eriks-Brophy (2010) studied the effect of 30 sessions of 15-minute using dialogic reading strategies conducted in English and Spanish on bilingual preschool-aged children with low vocabulary skills. DLLs that received vocabulary using dialogic reading group were able to learn more English and Spanish target words than the children in the control group (Tsybina & Eriks-Brophy, 2010). A post-study interview given to parents that participated in this study revealed that parents found the dialogic reading techniques “easy to learn, functional and culturally appropriate” (Tsybina & Eriks-Brophy, 2010, p. 552). Dialogic reading has shown to be successfully taught to parents (Reese, Sparks, & Leyva, 2010), and given that parents are often the first source of language exposure to their children, this relationship between parent-implement language strategies and children’s early language development is important to investigate.

Importance of L1 Vocabulary Knowledge in DLLs

Providing rich vocabulary opportunities in both the first language (L1) and the second language (L2) is crucial for overall language (Spanish and English) development of DLLs (Proctor, August, Carlo, & Snow, 2006). For instance, a study analyzed the impact of a 30-minute Spanish (L1) instruction program a day on Spanish speaking children attending an English-only preschool (Restrepo, Castilla, Schwanenflugel, Neuharth-Pritchett, Hamilton & Arboleda, 2010). Children who were placed in the Spanish instruction group showed significant gains in Spanish sentence length and complexity when compared to their Spanish speaking peers in the English-only classroom (Restrepo et al., 2010). Children who did not receive Spanish instruction showed limited growth in Spanish (Restrepo et al., 2010). Other research that has examined the impact of Spanish

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instructional programs on Spanish speaking preschoolers have shown growth in their Spanish oral vocabulary and letter word recognition (e.g., Durán, Roseth & Hoffman, 2010)

Support of L1 not only can contribute to promoting the knowledge of the language and stronger cultural identify but also has been linked with positively impacting L2 development. López and Greenfield (2004), found that when Spanish speaking children in a Head Start program were given phonological skills training in Spanish while receiving language skills instruction in English, they were able to transfer L1 phonological awareness skills to L2.

Vocabulary knowledge in L1 (Spanish), is positively associated with reading comprehension and fluency in L2 (English; Proctor, et al., 2006). Proctor and colleagues (2006) measured English and Spanish alphabetic knowledge of 135 Spanish-English bilingual fourth graders using computer-administered tests of pseudo-word recognition. When controlling for factors, such as language of instruction, English decoding, and English oral language proficiency, Spanish (L1) vocabulary was a significant factor that impacted English (L2) reading comprehension and fluency. These results suggest that literacy skills may be transferred to both languages, suggesting that DLL might transfer certain skills across languages (Proctor et al., 2006).

In addition to the benefits of L1 may have on L2 acquisition, DLLs who preserve their L1 maintain better emotional links through communication with the family members that speak L1. It has been reported that parents cannot effectively communicate with their children if they do not share a common language (Anderson, 1999a; Anderson, 1999b). When children lose their native language, parents may find it difficult to communicate making it difficult to convey values, experiences, beliefs, and advice (Fillmore, 1991). Over time this can have a negative effect on the family leading to dysfunction in the absence of intimacy and the ability to transmit and share beliefs and values (Fillmore, 1991).

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The literature suggests that bilingualism confers significant benefits that range from cognitive and educational advantages to socioeconomic and socio-emotional advantages (Adesope, Lavin, Thompson, & Ungerleider, 2010; Bialystok, Majumder, & Martin, 2003; Carlson & Meltzoff, 2008; Grin, Sfreddo, & Vaillancourt, 2010; Prior & MacWhinney, 2010; Zelasko & Atunéz, 2000). Understanding these benefits further supports the need to maintain L1 and create instructional supports that integrate L1 and L2.

Parent Training

Studies have shown that parent-implemented intervention can result in language growth and development of literacy skills in children that range between 21 months to 71 months of age (Reese, Sparks, & Leyva, 2010; Whitehurst, Falco, Lonigan, Fischel, DeBaryshe, Valdez-Menchaca, & Caulfield, 1988). Although it is known that parent-implemented dialogic reading can benefit children at risk (including late language emergence), it is imperative to see how parents use these training strategies to help their children. The quantity of parent language input alone does not affect children's language development, but also the quality of the input (Roberts & Kaiser, 2011). For some families, parent-implemented intervention is the only means to language treatment due to lack of access to speech-language therapy. Thus, it is essential to analyze the effect of training parents and the parents' use of such intervention strategies. The current study will analyze the use of strategies after parents complete training via video modules on an iPad application.

Previous studies have shown positive results from video training programs. Parent-based video home training showed to be a successful method for implementing parent-based intervention with parents whose children (2;02 to 3;01 years) had late language emergence in the Netherlands (Van Balkom, Verhoeven, van Weerdenburg, & Stoep, 2010). In Van Balkom and colleagues (2010),

APP-BASED TRAINING PROGRAM

an analysis of the children's speech samples revealed that the children in the Parent-based Home Video Training group yielded higher scores in post-tests and follow-up tests in discourse coherence, Mean Length of Utterance (MLU), grammaticality as well as language comprehension, when compared to children who received Direct Child Intervention (Van Balkom, Verhoeven, Van Weerdenburg, & Stoep, 2010). Studies in Dialogic reading training via videotape and have found that it was an effective medium to implement training (e.g., Blom-Hoffman, O'Neil-Pirozzi, Volpe, Cutting, & Bissinger, 2007; Whitehurst et al., 1998). Videos modeling the dialogic strategies allows for a better understanding of the target behaviors (Zevenbergen & Whitehurst, 2003).

The video training modules used in the current study will incorporate an instructional model that has previously shown to successfully teach strategies to adults: the Teach-Model-Coach-Review approach (Kaiser & Roberts, 2013). Specifically, this approach has led to changes in the caregivers' use of language support strategies during an intervention study (Roberts, Kaiser, Wolfe, Bryant, & Spidalieri, 2014). In Kaiser and Roberts study (2013) the Teach-Model-Coach-Review approach was shown to help parents implement the strategies not only within a clinical setting, but also generalized into a home setting. The effectiveness of this instructional approach was also assessed with Spanish speaking mothers of children with language impairment (Peredo, Zelaya & Kaiser, 2018). The mothers who received training on enhanced milieu teaching (EMT) using the instructional approach were between ages 31 to 40 years old, came from low SES homes, and reported the highest level of education to be middle school level (Peredo, Zelaya & Kaiser, 2018). Mothers were able to implement of EMT strategies with their young children and even demonstrated carry-on and generalization of learned strategies (Peredo, Zelaya & Kaiser, 2018). Moreover, bilingual service providers involved in the study indicated that the teach-model-coach-

APP-BASED TRAINING PROGRAM

review instructional approach was culturally appropriate for Hispanic adult learners (Peredo, Zelaya & Kaiser, 2018).

In conclusion, dialogic reading strategies have shown to be a good approach for Spanish speaking parents to use with their children to support vocabulary development. Although one of the roles of the SLP is to provide home based activities or exercises to maximize intervention, and provide parent training (American Speech-Hearing Association, 2010), the percentage of Spanish speaking SLPs is so low that it may create a barrier to work with families who only speak Spanish. This may lead to parents having limited information on how to support language skills in Spanish at home. The use of an evidence-based computer training program could provide the much-needed bridge between the SLPs and parents. With this tool, SLPs will be able to give parents the opportunity to support L1 at home, even when the SLP is not familiar with L1. The current study will use app-based training modules to teach dialogic reading strategies as well as provide in-person feedback to correct or clarify the strategies used by the parents. This interactive app allows for training to be time and cost effective in addition to ensuring a standardized method of training.

Chapter II

Purpose

The purpose of this study is to examine the functional relation between a parent training and use of vocabulary strategies aimed to promote Spanish vocabulary in children at risk of academic failure. In the current study, parents will be trained on the following dialogic reading strategies: completion, distancing, questioning; in Spanish: *completar*, *conectar*, *preguntar* with the use of an app-based training. These strategies were selected based on the three strategies in CROWD (completion, distancing, and questions [open-ended and wh-questions]) that are most

APP-BASED TRAINING PROGRAM

distinctive from each other in order to clearly distinguish strategies during reading sessions and facilitate the coding of transcripts.

Research Questions

The following questions have guided this study, and will be addressed using a single subject design:

1. Is there a functional relation between the Spanish vocabulary parent training and the use of distancing by parents during story time with their children at risk for academic failure?
2. Is there a functional relation between the Spanish vocabulary parent training and the use of completion by parents during story time with their children at risk for academic failure?
3. Is there a functional relation between the Spanish vocabulary parent training and the use of questioning by parents during story time with their children at risk for academic failure?

Chapter III

Methodology

Participants

Three Spanish-speaking parents were recruited from a bilingual (Spanish and English) early intervention program for children with language delay (i.e., late language emergence) or language disorders, and interested parents from Fort Worth, Texas. All parents had at least one child at-risk for academic failure (i.e., DLLs, low socioeconomic status, and/or identified with a language delay or language impairment). Children did not have any other diagnosed disability or developmental delay reported by the parents.

APP-BASED TRAINING PROGRAM

Two mothers (participants 1 [P1] and 2 [P2]) were recruited in the *Ranitas en el Campo* intervention program and one mother (participant 3 [P3]) was recruited by word-of-mouth. All participants reported speaking primarily Spanish at home, had children between the ages of 3 and 5 years old at risk for academic failure, and had not previously participated in a parent training about reading strategies. Additionally, mothers reported that they themselves did not present with a speech or language impairment. The children of the participants did not have a previous diagnosis of a neurological impairment, a hearing impairment, or an intellectual disability.

Inclusion criteria were evaluated via a questionnaire and confirmed with the parents verbally (Appendix A). Table 2 displays the information gathered from the questionnaire based on the mothers' country of origin, level of education, total family income in 2019, and languages spoken at home. At the time the current study took place, all of the participants' children were receiving speech-language services for language disorders.

The current study's procedures were approved by the Institutional/Departmental Review Board at Texas Christian University. Incentives to participate in the study consisted of seven storybooks and compensation of \$5.00 per audio recording of home reading session. Children of P1 and P2 had been attending speech-language services in Spanish with a SLP graduate student one hour a week for approximately three weeks. Child of P3 had been receiving speech-language services for three times a week for two years.

After participants' qualifications were confirmed, mothers were consented to participate in the 8-week study. All mothers completed a parent questionnaire to obtain information on their child's language exposure, language proficiency as well as possible family history of language difficulty (See Appendix A for more information). Researchers were fluent in both English and Spanish, and communicated with the parents in the language they preferred.

APP-BASED TRAINING PROGRAM

Materials

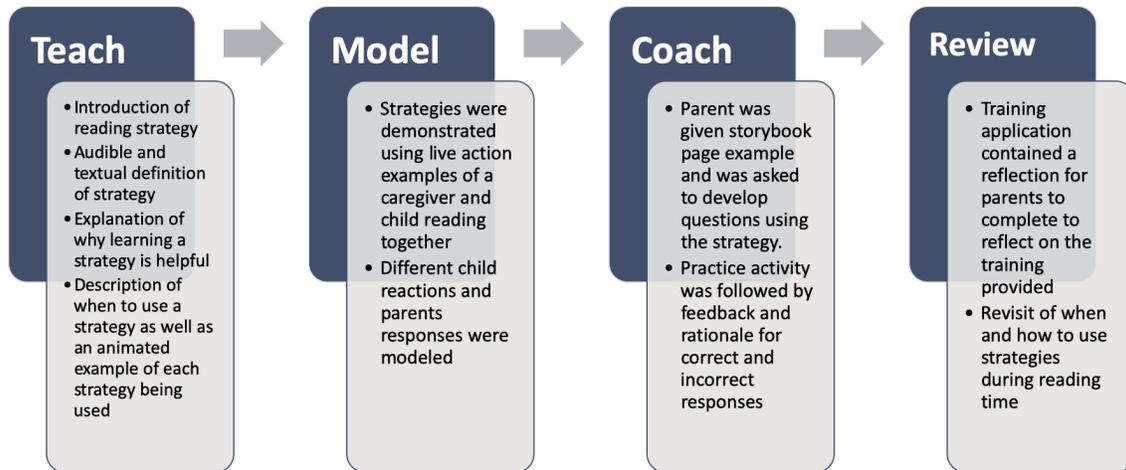
Training took place in a waiting area and conference room at a school for P1 and P2. Both the waiting area and conference room contained adult chairs for the parents. P3 received the training at her house. The training program was administered on an iPad Pro (12.9 inch, 2nd Generation) with via noise isolation headphones (Sennheiser HD280PRO). Parents were given a voice recorder (Micro-Speak Plus Talking Digital Voice Recorder), their assigned storybook and a bookmark with a summary information on how to use their most recently assigned reading strategy learned.

Training Application Development

Before recruitment for participants began, the investigators developed an iPad training application using the components of the Teach-Model-Coach-Review instructional approach derived from Participatory Adult Learning Strategies (Dunst & Trivette, 2009; Peredo, Zelaya & Kaiser, 2018; Roberts, Kaiser, Wolfe, Bryant & Spidalieri, 2014). Diagram 1 describes how the application used the four components of the Teach-Model-Coach-Review to teach the participants the dialogic reading strategies. Images from the app can be found on Appendix B. Training was provided solely in Spanish.

Diagram 1. Implementation of Teach-Model-Coach-Review

APP-BASED TRAINING PROGRAM



For the purpose of the study, the iPad training application included three separate apps named for the strategy they focused on: *Completar* (*Completion*), *Preguntar* (*Open-Ended Questions/Wh-questions*), and *Conectar* (*Distancing*). The reason the app was to allow for counterbalancing of strategy presentation. For example, if a mother was being trained on *Preguntar*, she would only have the option to view the app for *Preguntar* and would not be able view the training for the other strategy until it was her time to do so.

Strategies Selected for Application

Conectar refers to the *distancing* strategy (Zevenbergen & Whitehurst, 2003) in which parents ask questions that require the child to connect aspects of the story to their own lives. For example, a parent may ask, “In the story, the mouse went to the park, do you remember when we went to the park last week? Tell me about that.” *Completar*, which is the *completion* strategy, stands for “finishing the sentence,” in which the child will be asked to complete the sentence the mother sets up. For example, “The mouse in the story went to the _.” Child would answer “park.” *Preguntas Interrogativas* refers to open-ended questions or wh-questions such as, “Why did the mouse go to the park?” or “How do you think the mouse felt?” All questions must be answered with more

APP-BASED TRAINING PROGRAM

information than just a simple “yes” or “no.” Spanish keywords for identifying *Preguntar* strategy were *quién* [who], *qué* [what], *cuál* [which], *cuándo*[when], *dónde*[where], *por qué*[why], and *cómo*[how]). These strategies were selected for their level of heterogeneity to diminish uncertainty when coding. Additionally, the authors hypothesized that teaching parents one strategy would not influence the parents’ learning of another one of these strategies.

Procedures

The current study’s research questions was addressed within the context of a multiple baseline single case design across behaviors.

Baseline. All mothers were given the same book during baseline (*Caldo, Caldo, Caldo*). They were instructed to read the book a total of four times during the week, with their first reading taking place at the intervention site. They would complete their three remaining reading sessions at home. Mothers were told to read as they normally would. All sessions were recorded with the audio recorder. Once the initial baseline information was collected, mothers began to receive training on one of the three reading strategies via an iPad. Training and all instructions were provided to the mothers in Spanish. The current study used a varying number of baseline sessions between specific strategies. For instance, the baseline for the strategy Questioning (*Preguntar*), for P1, P2, and P3 was 20, 11, and 4 respectively.

Training. Each mother received training on their assigned strategy via the iPad app in-person once a week for the first two weeks of the training period. The participants’ strategy training assignment can be found on Appendix C. After each in-person training, the mother was given laminated bookmarks describing the strategy they were trained on that week. The purpose of the bookmarks was to serve as a quick reminder of the strategy during reading sessions at-home because the iPad, on which the training program was available, was not given to the parents to take

APP-BASED TRAINING PROGRAM

home. Each mother received an audio recorder to record at-home reading sessions as instructed by the principal author. Mothers received Spanish written instructions on how to use the recorder.

In-person sessions followed the same session format: (1) the mothers had 25 minutes to complete the parent training application on the iPad (on average they spent 15 minutes), (2) the mothers had approximately 10 minutes to complete a reading session with their child using the strategy they learned during the training, and finally (3) there were 5-10 minutes used for feedback and questions with an SLP graduate clinician. At the end of every in-person session, the mothers were reminded of how to use their recorder at home, were given the strategy bookmarks, and were instructed to read their assigned storybook using any of the strategies they had learned during the training program. Similar to the baseline period, mothers completed the first of the four reading sessions on-site and were told to read the same book for the rest of the reading sessions completed that week at home. Books selected for the parent training, and for reading sessions at home, were appropriate preschool-aged books for this population. The titles of the storybooks can be found in Appendix D. The mothers were also given the opportunity to ask any questions about the study or strategies.

Coding. All reading sessions held in-person and at-home were transcribed and coded for the use of the reading strategies. The coders for this study were graduate level clinicians specializing in Speech-Language Pathology with a focus on bilingual populations. These codes counted and documented each of the mothers' use of the strategies and served as the probe measurements across the study. The coding manual can be found in Appendix E. Each reading session completed was transcribed and coded by one of five SLP graduate clinicians using the coding manual. A modified version of the manual is available on Appendix E. Coding disagreement percentage was to at least

APP-BASED TRAINING PROGRAM

90% before coding. Disagreements were discussed and all questions answered. SLP graduate clinicians that coded the transcripts were only assigned the same transcript once. Before coding or transcribing, all observers were trained until an agreement of 90% reliability was reached.

Procedural Fidelity. In order to establish proper procedural fidelity in the current study, a protocol was followed each session and a fidelity of 90% was required for a session to be considered completed correctly. Half of the in-person sessions for each participant were randomly selected and assessed by a faculty supervisor familiar with dialogic reading strategies.

The faculty supervisor completed the procedural fidelity checklist available on Appendix F by watching a live session. The procedural fidelity checklist was applied to all intervention sessions, regardless of the reading strategy. The checklist addressed the following: (1) parent training and collection of reading-session recordings, (2) transfer and deleting audio recordings from audio recorders, (3) in-person reading sessions, (4) hand to parent home materials (book, recorder, recorder instructions and bookmark) and remember instructions to follow, (5) answer questions, and (6) end of training remarks. The graduate clinician, or the interventionist received direct feedback on session procedures and feedback was provided after every session until procedural fidelity reached 100%.

Coding Reliability. The PI graduate student randomly selected 20% of all participants' recorded sessions to be re-scored using the coding manual to obtain the percent of coding agreement. Three initially trained coders reviewed the audios and codes. The reliability of transcriptions and coding agreement score was 94%. This agreement score indicated a consensus among coders that was considered suitable for this study.

Data Analysis

APP-BASED TRAINING PROGRAM

The current study's research question was addressed within the context of a multiple baseline single case design across behaviors. This design allowed the researchers to measure the functional relation between an app-based parent training program (independent variable) and the parents' use of the vocabulary strategies (the dependent variable; Horner & Baer, 1978).

All participants' baselines were measured concurrently. Baseline length for each reading strategy differed for each participant to control for possible internal validity threats (such as maturation or history). The minimum amount of time spent in baseline was one week, and maximum time for a single behavior was five weeks.

Changes in use of strategies were determined via visual analysis of the data. Two observers trained in single-subject design decided if there was a change of behavior corresponding to the presentation or absence of the training, and confirmed by calculation of percent non-overlapping data for each strategy and Tau-U calculations. This model has been used in similar research for training adults to use vocabulary strategies (e.g., Lund & Douglas, 2016).

Chapter IV

Results

The purpose of this study is to examine the functional relation between a parent training and use of vocabulary strategies aimed to promote Spanish vocabulary in children at risk of academic failure. Figures 1-3 display the number of strategies used by each participant by condition. The baseline-only period for each mother is represented by the first four data points. The data points indicate the number of strategies used by each participant during the baseline period and after receiving each training session (completion, distancing, questioning). The conditions (specific strategy trainings) were counterbalanced to variate the order of them across

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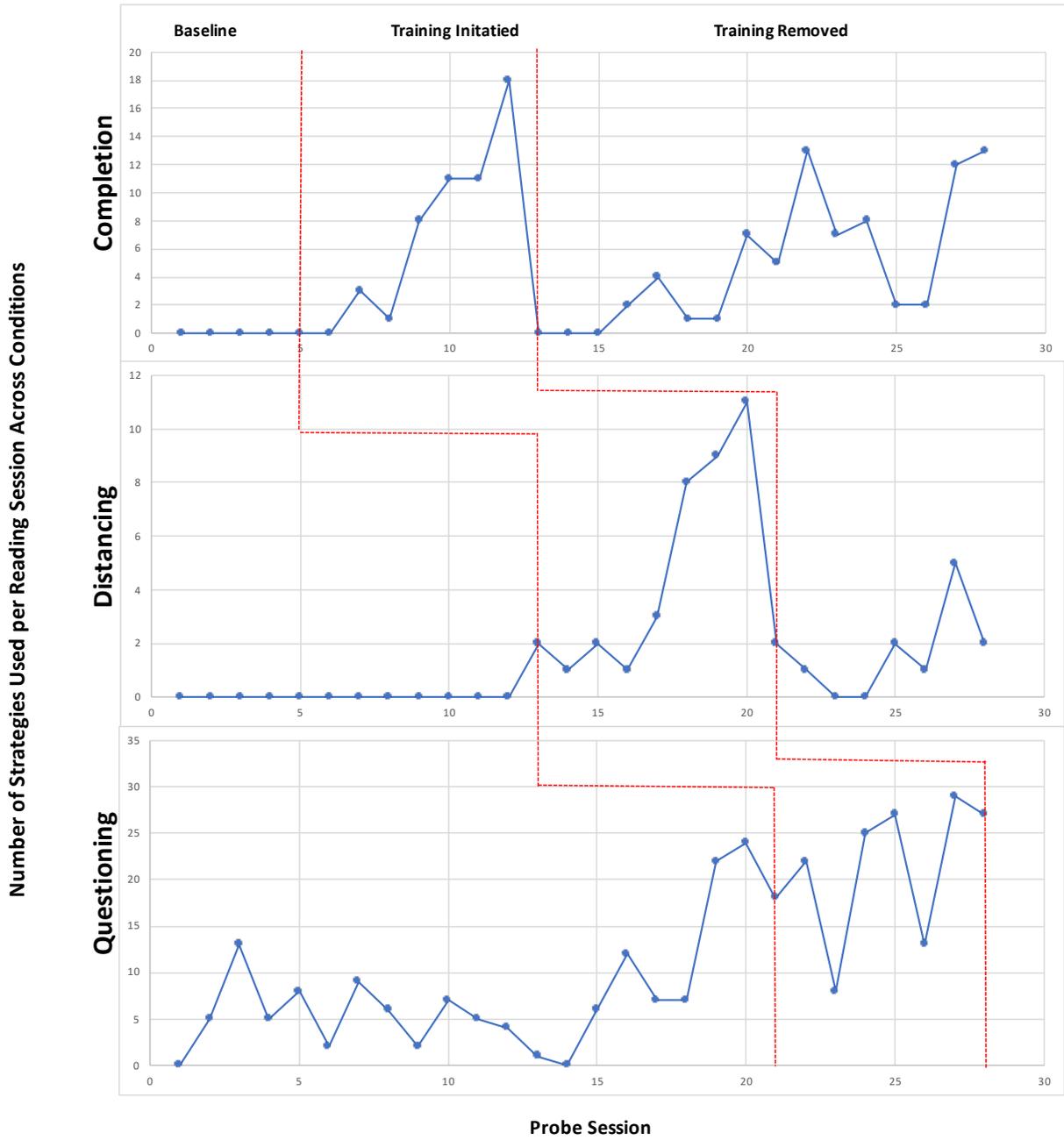
participants and to identify changes of their behaviors during each training period. The gaps in P2's data seen in Figure 2 reflect reading sessions that were not completed.

Following baseline-only time period, training on the first strategy was introduced and eight data points representing eight reading session were collected. After eight reading sessions were completed, another strategy was introduced and another set of eight data points were collected representing the use of all strategies in the intervention. All three strategies were tracked. After the second set of eight data points were collected, the third and last strategy training was administered. After the last strategy training was initiated, the last set of eight data points tracking use of all strategies were obtained. In Figures 1-3 data points along the dotted vertical line are uses of strategies that were utilized during the first reading session that a new strategy was introduced (e.g., *Completar/Completion* was used 0 times by P1 the first session it was introduced but was used 4 times by the 3rd reading session.) A visual analysis following the rules outlined by Kratochwill, Hitchcock, Horner, Levin, Odom, Rindskopf & Shadish (2010) was completed to identify a relation between the independent variable (the training application) and the dependent variable (participant use of strategies).

Figure 1. Probe sessions for P1 during the baseline period, Completion condition, Distancing Condition, and Questioning condition.

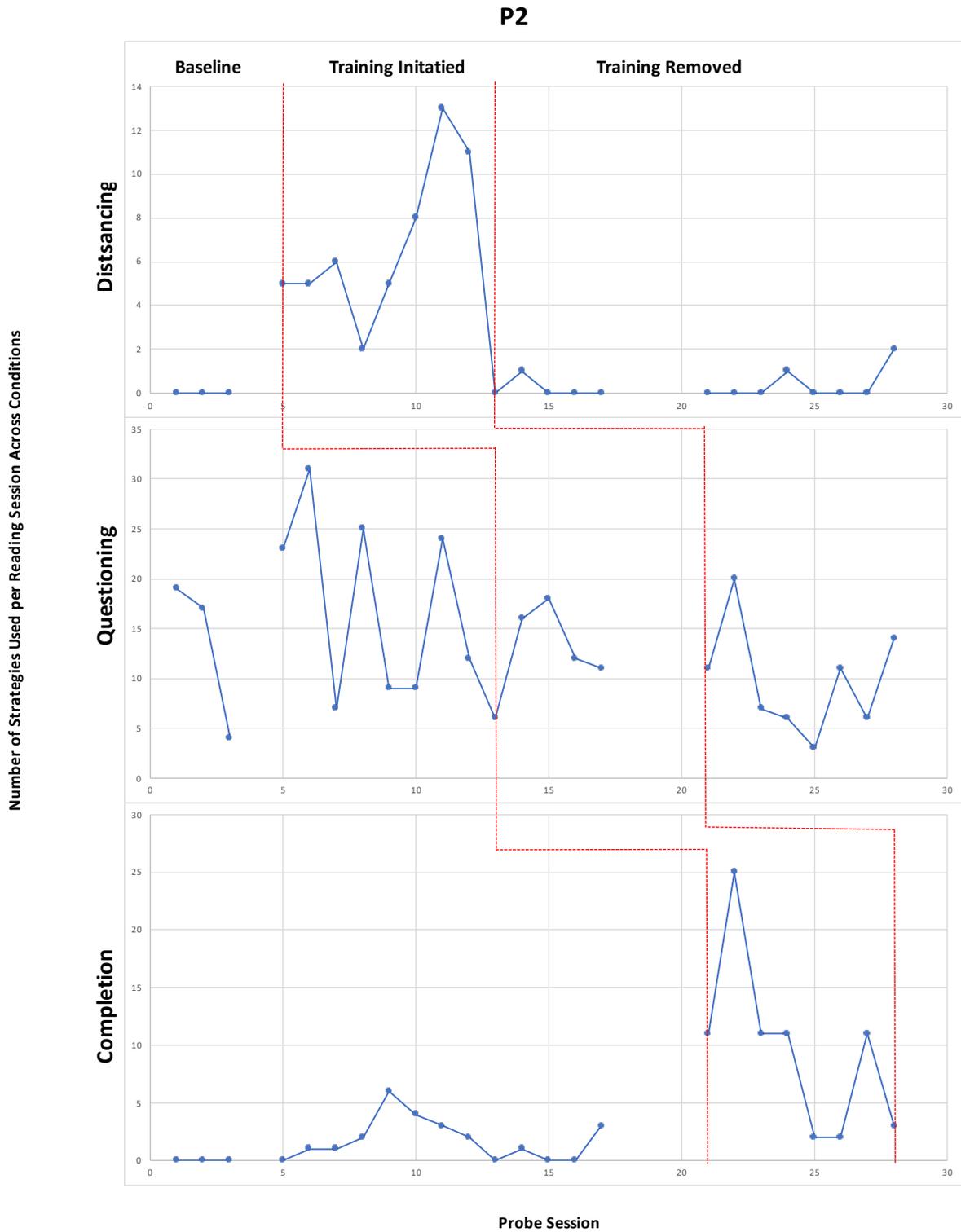
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P1



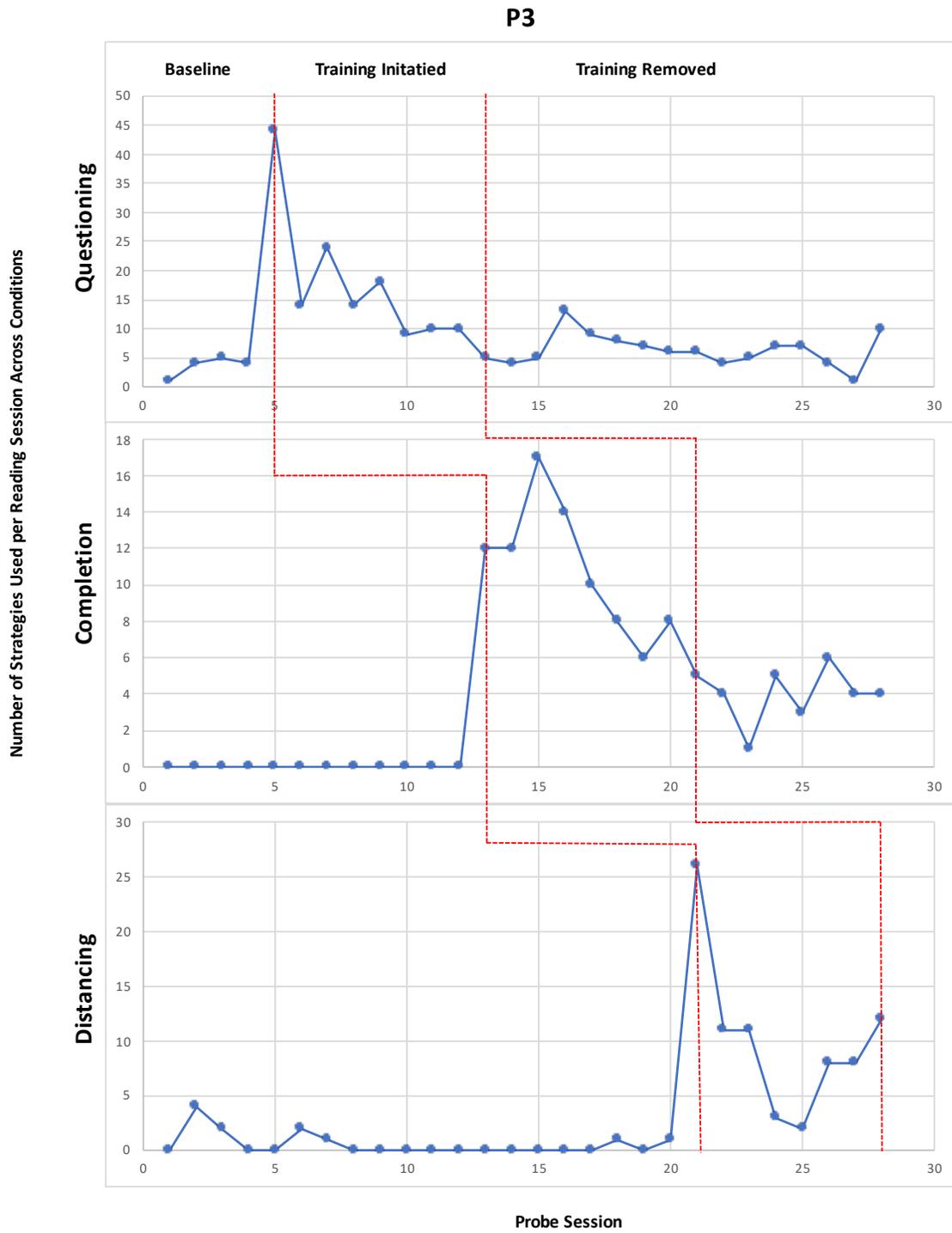
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Figure 2. Probe sessions for P2 during the baseline period, Distancing condition, Questioning Condition, and Completion condition.



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Figure 3. Probe sessions for P3 during the baseline period, Completion condition, Distancing Condition, and Questioning condition.



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Visual Analysis of Parents' Performance

Across Conditions

Distancing / Conectar. At baseline, only one of the three participants used this strategy (P3 with a baseline range of 0 to 4). Percentage of non-overlapping data (PND) for participants suggest a moderate effect of intervention for P1 (PND = 87.5%) and P3 (PND = 75%), and debatable effect for P2 (PND = 52%) when the training was provided (Scruggs & Mastropieri, 2013). Overall this strategy was used the least when compared to the other three strategies (a total of 201 times between the three participants across all the reading sessions). The data reveals that participants used this strategy the most during the distancing training condition. For example, before P3 received the direct training on this strategy, she had used the strategy an average of 0.6 times across 20 reading sessions. During the condition that focused on distancing, she averaged using the strategy 10.1 times per reading session. This idea is also supported by the data represented in Figures 1-3, where the peaks that represents the highest use of the strategy per participant, occurs during the training period of distancing. P1 and P2 received the distancing condition during their 2nd and 1st conditions, respectively. After the training for Distancing was removed and another strategy was introduced, data reveals a decrease in the use of this strategy. However, their use is still greater when compared to their usage of the distancing strategy before training. It should be noted that unlike the Questioning and Completion strategy data, Distancing was the only strategy that was not used at least once during the last 8 reading sessions of the study.

Completion / Completar. Figures 1 and 3 show that Completion was not used at baseline by P1 and P3. PND for participants suggest a highly effectiveness for P1 (PND = 100%) and P3 (PND = 100%), and moderate effectiveness for P2 (PND = 82%) when the training was provided (Scruggs & Mastropieri, 2013). Prior to starting the completion condition, all three participants

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demonstrated little to no use of the strategy. P3 did not use this strategy until she initiated training for it, and P2 used it inconsistently, omitting it completely from 44% of the reading sessions she completed before receiving training for completion. P1's data reveals a decrease in the use completion strategy during the condition of distancing. However, increases her use of the strategy in the last phase (while completing the training for another strategy and goes from an average of 1.9 uses (in the last 8 readings) per reading to an average of 7.8. Compared to the other strategies, this strategy was used the second most, with a total of 347 uses throughout the study. Completion was observed to be used the most by two participants during the 8 readings that they completed under the completion condition. P3 decreased their use of the completion strategy when comparing their average from the second condition to the third, however, the data also indicates that after training was implemented for completion, she was able to continue to use this strategy in every reading session completed after the fact. Although there wasn't a gradual increase in trend for every participant, there was an increased and maintained use of the strategy when compared to their baselines when the training program had not been introduced.

Questioning / Preguntar. At baseline, the question strategy was the strategy that all participants used PND for participants suggest a minimal effect for P1 (PND = 50%) and P3 (PND = 70%), and ineffective effect for P2 (PND = 0%) when the training was provided (Scruggs & Mastropieri, 2013). PND shows that P2 did not present with any progress when training was implemented. P1 used Questioning on average 5.75 times per reading at baseline, P2 used and average of 13.33, and P3 used the strategy an average of 3.5. This strategy was also the strategy that was used the most throughout the reading sessions. It was used at least once in every reading session regardless of the condition and participant. It had a total of 893 uses by all three participants. The data also shows that Questioning was used the most during the training condition

APP-BASED TRAINING PROGRAM

that focused on it. Except for P2, who used Questioning the most during the Distancing condition (on average 17.5 times per reading) and only an average of 12.6 times during the Questioning condition. P3 received the questioning condition first and averaged using this strategy 17.9 times per reading session. As other strategies were introduced, her average decreased. However, it remained above baseline. Moreover, P3's average use of this strategy during the questioning training period surpassed that of P1's and P2's before they had received the training, suggesting participants' use of the strategies increases after they initiate training for it. P1 received this condition last but her data reveals that training increased her average from approximately 5 uses per reading to 21 uses per reading for each of the 8 reading sessions. P2 maintains her use of this strategy, however she did not complete 4 of the 8 reading sessions that took place during this questioning condition, so interpretation of her results is limited.

Tau-U Analysis

To supplement the visual analysis, a non-parametric statistical analysis of effect size Tau-U (Parker et al., 2011) was used to determine the percentage of non-overlapping data between baseline and each condition. Raw data were entered to a free online calculator to obtain Tau U effect size (Vannest, Parker, and Gonen, 2011). For Distancing, Tau-U yields a result of 0.82 which is significant at $p < 0.05$, reflecting a medium effect. For Completion, Tau-U yields a result of 0.87, which is significant at $p < 0.05$ reflecting a medium effect. For Questioning, Tau-U yields a result of 0.38, which is significant at $p < 0.05$ reflecting a small effect.

Visual inspection of the graphs (Figure 1, 2, and 3) indicate that participants 1-3 increased their use of strategies after baseline and after training was introduced. Although training on a strategy assigned was accessible for only once a week (for a total of two weeks per strategy), the data

APP-BASED TRAINING PROGRAM

suggests that training impacted the use of the participants use of strategies as well as the variety of strategies used during reading sessions with their child. As new strategies were introduced, there is a reduction in the use of previously learned strategies, but ultimately leads to a more balanced use of the three strategies. Moreover, the percent of non-overlapping data determined by the Tau-U Analysis suggests that there was a change in behaviors after the intervention (parent training program) was implemented. All three participants maintained a use of a previous strategy and increased the type of strategies used per reading.

Chapter V

Discussion

The purpose of this study is to examine the functional relation between a parent training and use of vocabulary strategies aimed to promote Spanish vocabulary in children at risk of academic failure. Data was analyzed within the context of a single subject multiple baseline design. Results indicated that parents' use of strategies (dependent variable) was affected by the training program (independent variable). Parents demonstrated an increased use of the three dialogic reading strategies (completion, distancing, questioning) as well as a more balanced used of strategies after initiating the training. There is limited research on parent-implemented intervention for bilingual, at-risk, dominant Spanish speaking children, and this study aims to help provide more insight on how parents are able to support their children's language development at home. The parent training program was designed based on an evidence-based instructional approach: Teach-Model-Coach-Review. This chapter discusses the implications and the limitations for the current study.

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A visual analysis revealed a functional relation was established between the use of the strategies by the mothers during their readings and their completion of the training program. Data showed that P2 and P3 used strategies completion and distancing respectively, before initiating their official training. This may be explained by their previous experience with children in an educational setting. Both P2 and P3 work or have worked in a school and have likely participated in reading time with children in the classroom. None of the participants had received explicit training for dialogic reading strategies, however, their reading approach may have been influenced from these previous experiences, reflecting some use of strategies before official training.

P1's and P2's data reveal a decreasing use of the distancing strategy after concluding their distancing training (Spanish: *Contectar*) and initiating another strategy training. This may be explained by their reports of the distancing strategy being the most challenging strategy. The difficulty level of this strategy may explain their limited use of this strategy after other strategies were introduced. Out of the three strategies, the distancing strategy demands for more impromptu thinking as it requires the parent to swiftly connect story details to their child's life. With completion and questioning, parents may more easily be able to devise questions based on the page in front of them or use the story text. The fact that distancing involves questioning outside the story may cause parents to use this strategy less. Moreover, the data suggests that the Distancing strategy was the least familiar strategy out of the three when comparing Distancing baseline data. There were less occurrences of its use compared to the other strategies before direct training. The novelty of the strategy may have potentially impacted their frequent use of this strategy. Had the parents had more time or access to the training, their familiarity with this strategy may have increased along with their use during readings.

APP-BASED TRAINING PROGRAM

As previously mentioned questioning was used at baseline for all three participants, however, the kind of questioning was often, if not always, *what* questions (ex. “What is this?” or “What is the girl doing?”). After participants received training for this strategy, the type of questions then included *why*, *who*, *how*, or *when* questions. This change in their use of this strategy suggests that their behavior was affected by the training program, which resulted in them developing their current use of questioning. This change was seen across all three participants and further supports that a functional relation occurred.

The completion strategy was found to be a new strategy for P1 and P3. Transcripts revealed effective execution of this strategy and parents reported that it was easy to use. The foundation of the parent training program followed the Teach-Model-Coach-Review approach, which allowed for parents to see multiple versions of how to apply the strategy and practice doing so. This was particularly effective for completion and questioning as they were each used at least once in every reading session during the last condition after having received all training modules.

After completing a meta-analysis of caregiver training, Fukkink and Lont (2007) concluded that caregiver training programs without a fixed curriculum or sense of structure most often resulted in less-effective program delivery. The current study’s training program followed the standards of the Teach-Model-Coach-Review approach, which provided structure for the training. This resulted in a standardized way to provide training to multiple learners in a way that was effective. Similar to the study conducted by Blom-Hoffman et al (2006), the current study revealed that a computer training program had advantages, such as being easily accessible, consistent in delivery training, and time efficient. The fact that this program can be delivered via tablet or computer, makes it a valuable resource for the community it aims to benefit.

Limitations and Future Research

The first limitation of the current study was that not all participants were consistent in completing their four assigned reading sessions at home every week. Figure 2 demonstrates gaps in the data collection for P2 which reduced the amount of information on how P2 used strategies at home. There was also a limit on the participants included in the study due time restraints. Additionally, each of the three mothers varied in their level of education which limits the conclusions that can be reached for other adults with similar educational history. Future studies may want to analyze the effect of the training program on a larger group of participants with a variety of educational backgrounds.

Another limitation found, is that the current investigation did not track children's language output, so the effects of the way the parents used strategies cannot be provided in this study. Although studies have examined the effectiveness of the dialogic reading strategies (Hargave & Sénéchal, 2000; Tsybina & Eriks-Brophy, 2010, Simsek & Erdogan, 2015), this study only focused on three (excluded recall questions and did not separate wh-questions and open-ended questions), and there is limited research on the impact of using a portion of the CROWD strategies on children's language. Future research should consider creating modules for all the CROWD strategies and investigating the effect on both the caregiver and the child.

Another limitation was that the study did not include a longer maintenance period and follow-up is unknown. Regardless, the data reflects how after one training session, parents started to produce changes in their use of strategies immediately. Roberts et al., (2014) reported difficulty with parents implementing EMT language strategies during book readings and suggested that participants would require more training to learn how to use their strategies. However, the opposite was observed in this study as parents began using the dialogic reading strategies just after the first training session. This may be because our training focused on three strategies specific to reading,

APP-BASED TRAINING PROGRAM

while the Robert et al. (2014) study worked with parents while completing play-based activities with materials that varied each session. The focus on reading for this study may have given parents the specific practice they needed to apply the strategies to their reading sessions with their children.

Similar to Van Balkom et al. study (2010), the parent training program for this study provided parents with tools to enhance the quality of conversation with their children during reading. Future research may want to assess whether parents can potentially apply their learned strategies to other functional routines, such as getting dressed (example with completion, “this is a sock and it goes on your feet, what is this? A...”), or examine how the training program affects teachers’ use of dialogic reading strategies during a larger story time with their students.

Clinical Implications and Conclusion

This training program can be used as a tool that can be given to parents while the SLPs see their children, or can be downloaded to a personal tablet or computer to be seen at home. This training serves as a step in the right direction to help communities in need of resources to support their children at risk for academic difficulty. This program may also serve as a resource to the monolingual SLPs or SLPs that do not speak Spanish. Regardless of the language barrier, this tool will be able to train Spanish-speaking parents. Moreover, the effectiveness of the program on the parents use of strategy further highlights how the foundation on which program are developed matter and can impact the way a learner experiences the training. In the current project, the Teach-Model-Coach-Review approach has shown to be an effective method to carry out caregiver training. This method provided parents with the explicit teaching, practice, and review needed to implement the strategies into the daily activity of reading to children. Although the approach did not guarantee increased and sustained usage of all the strategies (i.e. Distancing strategy), there

APP-BASED TRAINING PROGRAM

was evidence of increased use of strategies per reading after training as well as increased varied strategy use.

In summary, this study provides evidence that parents are able to change their shared-reading strategy use after receiving our training program that incorporates the Teach-Model-Coach-Review approach. The results of this study may serve as the foundation for building more programs for minority communities. Although the results of the study are suggestive of being a promising resource to Spanish-speaking families and non-Spanish speaking SLPs, there is much more work that needs to be done to widen the set of tools that SLPs have to service these families.

Appendix A – Spanish Parent Questionnaire

**Cuestionario:
Promoviendo La Adquisición Del Lenguaje En Estudiantes Del Inglés**

Instrucciones:

El propósito de esta encuesta es el conocer el uso del lenguaje en el hogar. En este cuestionario no hay respuestas correctas o incorrectas a las preguntas. Esta información es confidencial. Por favor no escriba ningún nombre que identifique a Usted o a su hijo/a.

Información de los Padres (Coloca una X en la respuesta)

1. Indique su país de origen.
 - México
 - Guatemala
 - Otro: _____
2. ¿Cuál es el idioma que mayormente se habla en casa?
 - Español
 - Inglés
 - Otro: _____
3. Cuántas personas actualmente viven en su casa?
 - Madre
 - Padre
 - Hermano
 - Hermana
 - Otro : _____
4. En qué idioma su hijo le habla a su madre?
 - Español
 - Inglés
 - Otro: _____
5. Cuánto es el ingreso total combinado de su familia en los pasados 12 meses?
 - Menos de \$9,999
 - \$10,000 – \$19,999
 - \$20,000 - \$49,999
 - \$50,000 - \$99,000
 - Otro : _____
6. ¿Cuál es su nivel educativo?
 - Escuela elemental
 - Escuela intermedia
 - Escuela Superior
 - Estudios universitarios
7. En qué idioma su hijo le habla a su padre?
 - Español
 - Inglés
 - Otro: _____
8. En qué idioma su hijo le habla a sus hermanos/hermanas?
 - Español
 - Inglés
 - Otro: _____
9. En qué idioma su hijo le habla a sus amigos que no son de la escuela?
 - Español
 - Inglés
 - Otro: _____
10. En qué idioma su hijo ve televisión?
 - Español
 - Inglés
 - Otro: _____
11. ¿Es usado otro idioma en adición al idioma primario hablado en la casa?
 - No
 - Si Lenguaje: _____

APP-BASED TRAINING PROGRAM

12. ¿Es usted capaz de viajar de forma independiente a la ubicación de entrenamiento cada semana?

No

Si

13. ¿Alguna vez usted ha presentado síntomas o dificultades asociadas con algún desorden del habla o de lenguaje?

No

Si Explicar: _____

14. ¿Alguna vez usted ha asistido anteriormente a un curso sobre el uso de la lectura para desarrollar el lenguaje de su hijo/a?

No

Si Explicar: _____

Appendix A, cont.

Uso y Proficiencia del Language Expresivo (Adaptado de Retrespo, 1998)

Uso del idioma

15. ¿Cuánto su hijo habla español?
- Nunca usa español
 - Usa un poco de español o lo escucha algunas veces.
 - Usa español la mayoría de las veces.
17. ¿Cuánto su hijo habla inglés?
- Nunca usa inglés.
 - Usa un poco de inglés o lo escucha algunas veces.
 - Usa inglés la mayoría de las veces.
19. ¿Cuánto su hijo habla (_____) otro idioma que se usa en la casa?
- Nunca usa el idioma indicado.
 - Usa el idioma indicado un poco o lo escucha algunas veces.
 - Usa el idioma indicado la mayoría del tiempo.

Proficiencia en el idioma

16. ¿Qué tan bien su hijo habla español?
- No habla español
 - Conoce pocas palabras o frases.
 - Habla español con algunos errores y conoce algunas palabras.
 - Habla español con pocos errores, conoce muchas palabras.
18. ¿Qué tan bien su hijo habla inglés?
- No habla inglés
 - Conoce pocas palabras o frases.
 - Habla inglés con algunos errores y conoce algunas palabras.
 - Habla inglés con pocos errores, conoce muchas palabras.
20. ¿Qué tan bien su hijo habla (_____) otro idioma que se usa en la casa?
- No habla el idioma indicado.
 - Conoce pocas palabras o frases.
 - Habla el idioma con errores, conoce algunas palabras.
 - Habla el Lenguaje con algunos errores, conoce mucha palabras.

Si usted o su niño poseen alguna preocupación o pregunta relacionada con este estudio, usted debería contactar a **Alice Regalado** | Correo electrónico: a.regalado@tcu.edu

APP-BASED TRAINING PROGRAM

Appendix B – Images from the parent training app

D.1 Parent Training Objectives

Objetivos

En este entrenamiento vamos a aprender:

- Tener una conversación sobre el cuento**
Tener una conversación sobre un libro aumenta el vocabulario de los niños.
- Utilizar la estrategia correcta**
Utilizar una estrategia que ayuda a hacer a los niños a pensar sobre vocabulario es muy importante.
- Preparar a su hijo**
Leer y utilizar las estrategias de este entrenamiento le ayudará a su hijo a prepararse mejor para cuando comience la escuela.

Continuar →

5

D.2 Tips to promote language development at home.

¿Cómo ayudar a mi hijo?

- Háblele**
Háblele a su hijo.
- Saque un tiempo**
Saque al menos 15 minutos de su tiempo para leer con su hijo.
- Lea**
Leer con su hijo aumenta su vocabulario y destreza de literacia.
- Disfrute**
Haga de este un momento memorable.
- Repita**
Repita el libro con su hijo al menos 3 veces por semana.
- Motivación**
Motive a su hijo a leer.

Continuar →

7

APP-BASED TRAINING PROGRAM

D.3 Live action video example of caregiver and child using the *Completar* strategy.

Completar

Ejemplo # 3

Al continuar su camino, encontraron unas piedras que bloqueaban su paso. Beto levantó las piedras del camino hasta que pudieron pasar.



Continuar →

20

D.4 Practice activity.

Práctica

Consejos
Mire las láminas.
Lea el trozo de cuento.
Luego trate de utilizar la estrategia aprendida.

Daniel y Rosa abrieron los regalos que recibieron de navidad. A Daniel le dieron un robot y a Rosa un perrito de peluche.



Continuar →

25

D.5 Training reflection questions.

Reflexión

¿Qué tan seguro se siente con haber aprendido esta estrategia hoy?

NO SEGURO	UN POCO SEGURO	BIEN SEGURO
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

¿Qué tan seguro se siente con poder usar esta estrategia en casa?

NO SEGURO	UN POCO SEGURO	BIEN SEGURO
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Continuar →

34

APP-BASED TRAINING PROGRAM

Appendix C – Strategy Training Assignment

Strategy Training Assignment						
Participant	W1	W2	W3	W4	W5	W6
P1	Completar (Completion)	Completar (Completion)	Conectar (Distancing)	Conectar (Distancing)	Preguntar (Questioning)	Preguntar (Questioning)
P2	Conectar (Distancing)	Conectar (Distancing)	Preguntar (Questioning)	Preguntar (Questioning)	Completar (Completion)	Completar (Completion)
P3	Preguntar (Questioning)	Preguntar (Questioning)	Completar (Completion)	Completar (Completion)	Conectar (Distancing)	Conectar (Distancing)

APP-BASED TRAINING PROGRAM

Appendix D – List of Storybooks

<i>Title</i>	<i>Author</i>
Caldo, Caldo, Caldo	Diane Gonzales Bertrand
Nadie Como Tú	Linda Kranz
La Oruga Muy Hambrienta	Eric Carle
La Caperucita Roja	Candice Ransom
El Perro con Sombrero	Derek Taylor Kent
La Gallinita Roja	Carol Ottelenghi
¿Dónde está la Oveja Verde	Mem Fox

Appendix E – Coding Manual

CODING MANUAL

You will be adding the following codes on the assigned transcript:

- [C] for completion strategy
- [Q] for questioning strategy
- [D] for distancing strategy

Completion (*completar*) stands for “finishing the sentence,” in which the child will be asked to complete the sentence the mother sets up. You leave a blank at the end of a sentence and get the child to fill it in. For example, you might say, "I think I'd be a glossy cat. A little plump but not too _____," letting the child fill in the blank with the word fat. Completion prompts provide children with information about the structure of language that is critical to later reading.

Open-end Questions (*preguntar*) refers to open-ended questions, such as, “Why did the mouse go to the park?” or “How do you think the mouse felt?” "Tell me what's happening in this picture." "Can you tell me what happened to the little blue engine in this story?" Look for parents using: *quién, qué, cuál, cuándo, dónde, por qué, o cómo*. Open-ended prompts help children increase their expressive fluency and attend to detail. NOTE that this strategy does not include YES or NO questions (Ex. Esto es verde?)

Distancing (*conectar*) refers to questions that require the child to connect aspects of the story to their own lives or experiences outside the book. For example, while looking at a book with a picture of animals on a farm, you might say something like, "Remember when we went to the animal park last week. Which of these animals did we see there?" Distancing prompts help children form a bridge between books and the real world, as well as helping with verbal fluency, conversational abilities, and narrative skills.

GENERAL RULES:

Do not count repetitions of prompts if asked on the same page (ex: Caregiver says, “¿Qué es eso?” Child doesn’t respond, Caregiver repeats “¿Qué es eso?” – You would count 1 <i>Preguntar</i> -prompt)
Prompts repeated at different times in the book can be counted (ex: PAGE 1 Caregiver says, “¿Qué es eso?” PAGE 6 Caregiver repeats “¿Qué es eso?” – You would count 2 <i>Preguntar</i> -prompts)
Count prompts even if the child doesn’t respond.

APP-BASED TRAINING PROGRAM

<p>Do not count a single prompt as more than one type of prompt (ex: Do not count “¿Te acuerdas qué le paso a tu hermano en el parque?” as both a <i>Pregunta</i>- and a <i>Conectar</i>-prompt. Guidelines for how to count prompts like this are described below.</p>
<p>Only count parent-generated questions.</p>
<p>Count all home-related questions as <i>Conectar</i>-prompts, even if they are yes/no questions.</p>
<p>Double questions (two different questions asked consecutively without waiting for the child to respond) should be counted as two prompts if applicable.</p>

APP-BASED TRAINING PROGRAM

Appendix F – Procedural Fidelity Checklist

Date of Session: _____	
Strategy: _____	
Story Book: _____	
Participant ID: _____	
<i>Parent Training and Collection of Recording</i>	
Clinician welcomes parent and asks for updates, questions, concerns regarding the study.	/ 1
Clinician collect audio recorder from parent.	/ 1
Clinician provides parent with the iPad and identifies the assigned reading strategy.	/ 2
Clinician confirms with parent that they are able to complete first reading session with their child following the training.	/ 1
Clinician provides the parent with 15-20 minutes to complete the assigned training module.	/ 1
<i>Saving Recordings and Clearing Recorders</i>	
Clinician downloaded all audios into a password protected server.	/ 1
Once clinician ensures all audios are downloaded correctly, clinician will clear and delete audios from recorders.	/ 2
<i>In-person Reading Session</i>	
Clinician collects iPad and introduces the parent to the assigned book of the week.	/ 2
Clinician presents parent with the assigned strategy bookmark of the week and reviews what is written on the bookmark with the parent.	/ 2
Clinician equips parent with the recording device and instructs parents to turn on recorder when reading to begin reading session.	/ 2
Clinician provides the parent with 10 to 15 minutes to complete a shared reading with their child.	/ 1
Clinician provides parent with the opportunity to ask questions.	/ 1
<i>Ending Parent Training Session</i>	
Clinician solicits answer to: “What did you think of today’s session?” and documents the answer.	/ 2
Clinician reminds parents about the instructions for at-home shared readings: video recording requirement, can’t do two sessions on the same day, use the strategies discussed in today’s session.	/ 4
<i>Total</i>	<i>/ 23</i>
<i>Total x 100</i>	<i>%</i>

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Table 1 – Examples of Dialogic Reading Strategies

Strategy	English Example	Spanish Example
Completion	When it's cold outside we use a _?	Cuando hace frío afuera, usamos una/un _.
Recall	What is the little girl taking to her grandma?	¿Qué está llevando la niña a su abuela?
Open-Ended Questions	What do you think will happen next?	¿Qué crees que pasará después?
Wh-Questions	What color is the fish?	¿De qué color es el pez?
Distancing	Remember when we went to the park like the little boy, what did we do?	Recuerdas que también nosotros fuimos al parque como el niño ¿qué hicimos ahí?

APP-BASED TRAINING PROGRAM

Table 2 – Participant Information Collected via a Questionnaire

	Age	Age of their child	Country of Origin	Level of Education	Total Family Income in 2019	Languages Spoken at Home
Participant #1	33	41 months	Puerto Rico	College Studies	\$20,000-\$49,000	Spanish
Participant #2	38	41 months	Mexico	High School	\$20,000-\$49,000	Spanish, English
Participant #3	40	45 months	Mexico	Bachelor	\$50,000-\$99,000	Spanish

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ABSTRACT

A SPANISH VOCABULARY APP-BASED TRAINING PROGRAM FOR PARENTS OF
DUAL LANGUAGE LEARNERS AT RISK FOR ACADEMIC FAILURE

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This research examined the effectiveness of an app-based training program for parents to enhance Spanish vocabulary in their children with late language emergence. The program was developed based on *Teach-Model-Coach-Review*, an adult learning instructional approach. Three parents were trained on dialogic reading strategies (completion, distancing, questions), and were asked to read to their children using the strategies to the best of their ability. Training focused on one of the three strategies at a time, and parents were given access to training once a week. Data collection consisted of tracking parents' use of reading strategies during their weekly reading sessions with their children via audio recorders. A visual analysis of the data indicated a functional relation between the training program and the usage of dialogic reading strategies by the participants. Further research is needed to determine if parent training program can result in long-term use of strategies during reading times.