

Research Article

Language and Literacy Together: Supporting Grammatical Development in Dual Language Learners With Risk for Language and Learning Difficulties

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Purpose: Early Interventions in Reading (Vaughn et al., 2006), the only literacy intervention with demonstrated effectiveness for U.S. dual language learners, was enhanced to support the development of oral language (vocabulary, grammar, and narrative) and literacy, which we refer to as “Language and Literacy Together.” The primary focus of this study is to understand the extent to which grammatical skills of bilinguals with risk for language and/or reading difficulties improve in the Language and Literacy Together intervention.

Method: Fifteen first-grade dual language learners with risk for language and/or reading difficulties participated in an enhanced version of Early Interventions in Reading in Spanish. Children completed pre- and postintervention evaluations in Spanish and English, including grammatical testing from the Bilingual English Spanish Oral Screener (Peña et al., 2008) and narrative evaluation Test of Narrative Language story prompts (Gillam & Pearson, 2004; Gillam

et al., n.d.). Data from six comparison participants with typical language skills who completed pre- and posttesting demonstrate the stability of the measures.

Results: The intervention group made gains in English and Spanish as evidenced by significant increases in their cloze and sentence repetition accuracy on the Bilingual English Spanish Oral Screener Morphosyntax subtest. They increased productivity on their narratives in Spanish and English as indexed by mean length of utterance in words but did not make gains in their overall grammaticality.

Conclusions: Structured intervention that includes an emphasis on grammatical elements in the context of a broader intervention can lead to change in the production of morphosyntax evident in both elicited constructions and narrative productivity as measured by mean length of utterance in words. Additional work is needed to determine if and how cross-linguistic transfer might be achieved for these learners.

The language and literacy challenges of dual language learners (DLLs) in the United States are well documented (Committee on Fostering School Success for English Learners: Toward New Directions in Policy,

Practice, and Research et al., 2017). A growing percentage of children entering school are DLLs, currently 16% (McFarland et al., 2018), whereas 7%–10% of children are expected to demonstrate risk for language impairment at school entry (Tomblin et al., 1997). Even without identified language or learning difficulties, DLLs often read below grade level and have poor academic outcomes, including failure to graduate from high school relative to their monolingual peers (Committee on Fostering School Success for English Learners: Toward New Directions in Policy, Practice, and Research et al., 2017). One key influence on academic outcomes for DLLs with and without risk for language impairment is the difference in their knowledge of each language associated with divided language experience (Bedore & Peña, 2008). Bilinguals learn the grammatical forms and vocabulary associated with the communicative interactions they have in each of their languages. Their performance may be lower in each language relative to their monolingual

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peers, but their combined language skills are within the same range of their age- and language exposure-matched peers (Peña, Bedore, et al., 2018). To support better language and literacy outcomes for DLLs growing up with two languages, the study of interventions may be informative in understanding the challenges children face acquiring language and literacy simultaneously. This knowledge would serve to improve instruction as a means of decreasing risk.

Divided Input and Dual Language Acquisition

For DLLs, language performance is closely associated with their experience hearing and using their languages (Bedore et al., 2016, 2012; Hammer et al., 2012; Hoff et al., 2012). In the U.S. context, regular exposure to the second language for DLLs begins at school entry (Bedore et al., 2012; Hammer et al., 2012). For prekindergarten-age students, current experience accounts for more of the variance in knowledge of words and grammar than their cumulative experience (Bedore et al., 2012). By first grade, cumulative experience starts to affect performance relative to current experience (Bedore et al., 2016). A practical consequence of divided input is that children may have less depth and breadth of vocabulary and less automatic and accurate production of grammatical elements than their peers who are monolingual (e.g., Davison et al., 2011). This is likely the result of reduced practice in each language as well as divided exposure to the words and constructions used in the contexts in which each language is used. For example, children may learn food and clothing terms at home in their home language (e.g., Spanish) and size and shape terms in academic contexts in school in their school language (e.g., English). They may learn subjunctive forms through reading rather than daily conversations.

From the time that DLLs start to use and combine words, within-language correlations between words and grammar are robust, ranging from .5 when children are starting to combine words to .6–.8 by early school age (Conboy & Thal, 2006; Kohnert et al., 2010; Simon-Cerejido & Gutiérrez-Clellen, 2009). These associations highlight the importance of building on early foundations just as monolingual learners build from vocabulary to grammar (Plunkett & Marchman, 1991).

Cross-language transfer, defined as the ways meaning or structures of one language impact the acquisition of the other, has been systematically studied in bilinguals at the earliest phases of language acquisition onward. Transfer can be positive or negative to the extent to which knowledge of one language supports or interferes with the acquisition of the other. Positive transfer is most often the focus of developmental and intervention studies. Transfer is usually quantified by the degree of association between languages in any given domain or by degree of change on measures given at two or more time points. Cross-language associations between measures of single word vocabulary (e.g., MacArthur-Bates Communicative Development Inventories scores) start low (e.g., .2; Marchman et al., 2004), reflecting differences in proficiency with the two languages. The

associations may increase to the moderate-to-high range for measures of word knowledge and narrative macrostructure for children who regularly hear and use each of their languages in the early school years (Lucero, 2015; Uccelli & Pérez, 2007).

In contrast, cross-language transfer of grammar seems more limited in scope. For example, knowledge of a specific form in one language, such as past tense, can accelerate the acquisition of analogous forms in the other language speeding acquisition (Gawlitzeck-Maiwald & Tracy, 1996) or interfere causing children to misuse forms such as overusing past participle based on similar constructions across languages (Schlyter, 1996). Another way to consider the challenge of transfer is to consider the role of ability rather than the transfer of knowledge. Castilla et al. (2009) documented Spanish knowledge at the beginning of kindergarten and English knowledge 9 months later. In this study, strong Spanish knowledge, especially performance on the Spanish cloze task, was a good predictor of year-end knowledge of English semantics and morphosyntax. A gap in our understanding of patterns of association is that both languages have not been tested over time.

Language Intervention to Support Two Languages

Tied to questions around language learning based on divided input and cross-language transfer, the majority of bilingual intervention studies address the language of intervention. The interventions studied tend to focus broadly on foundational language skills (e.g., vocabulary, narrative, phonological awareness). Comparisons of Spanish-only, English-only, and bilingual intervention show that gains are primarily made in the language of intervention (Ebert et al., 2014; Restrepo et al., 2010, 2013; Simon-Cerejido & Gutiérrez-Clellen, 2014). For example, children can demonstrate gains in their home language (usually Spanish) or the language of schooling (i.e., English), but gains in both are far more likely when intervention includes both languages. Domains tested have included vocabulary and areas that build on foundational knowledge such as narrative, phonological awareness, or processing speed. A limitation in this body of studies is that progress is not always monitored in both languages, so it is difficult to fully document all change.

Intervention Supporting Change in Morphosyntactic Knowledge

Several studies have documented morphosyntactic knowledge as an outcome of a general intervention. Simon-Cerejido et al. (2013) documented patterns of language change in bilingual children who received bilingual versus English-only intervention. Children made more gains in sentence repetition (tapping morphosyntactic knowledge) under the bilingual intervention. These same children tended to continue to make gains on English measures of grammatical knowledge in narratives if they started with relatively higher English vocabulary scores. In a follow-up study,

Simon-Cerejido and Mendez (2018) found that vocabulary knowledge in both languages best predicted increases in sentence repetition scores (indexing grammatical knowledge) over the course of an academic year. Children who started with higher vocabulary scores were more likely to make gains than their peers with lower vocabulary scores. These findings suggest that to make changes in both languages is challenging but that knowledge of vocabulary supported children's development.

The few published interventions for bilingual children focusing specifically on grammar do so by targeting morphological awareness as a support for literacy. Apel (2014) notes that morphological awareness includes knowledge of oral and written morphemes and the ways these alter the meaning and grammatical classes of words. He also highlights that morphological awareness involves knowledge of words and the kinds of grammatical forms (i.e., inflectional or derivational) they can be combined with. Several meta-analyses demonstrate that, when morphological awareness is the focus of literacy intervention, both monolingual and bilingual children make gains on literacy measures such as word decoding and recognition and vocabulary (Goodwin & Ahn, 2010, 2013; Reed, 2008). For Chinese–English bilinguals, morphological awareness training resulted in a cross-language change in their recognition of compound forms (Pasquarella et al., 2011). A challenge for young DLLs is that they lack depth and breadth in foundational vocabulary and grammar knowledge, so it is difficult to make the connections between the lexicon and grammar required for morphological awareness while they are still developing foundation skills.

Given the complexities children face in connecting their knowledge across the two languages, we must consider how to structure intervention to help children make these connections. Best practices and effective techniques for grammar-focused interventions can be extended to DLLs. Intervention should be structured to support production of grammatical elements in meaningful contexts (Fey et al., 2003). It should target the recoverability of meaning by focusing on forms such as tense marking (Gutiérrez-Clellen & Hofstetter, 1994), articles and pronouns for deictic reference (Bedore, 2018), and elaborated in noun phrases. Input can highlight these forms including use of declarative teaching procedures, focused stimulation through story scripts (Fey et al., 1997), and auditory bombardment (Kamhi, 2014; Leonard et al., 2019). In the morphological awareness domain, effective practices include overt attention to teaching children the meanings of words and grammatical forms, drawing attention to segmentation, and helping children learn about the words and forms that go together (Apel & Diehm, 2014; Goodwin et al., 2012).

Summary and Questions

Grammar (especially morphosyntax) is particularly difficult for children with developmental language disorder, and this is the case for DLLs with developmental language disorder. The research on development and intervention point to vocabulary and meaning-based relationships as

supporting within-language changes in grammar and cross-language connections. There is a greater likelihood of transfer of words than forms and associations within language between vocabulary and grammar. Effective interventions that focus on meaning, structuring input, distributed practice, and overt attention to form can support grammatical learning. Because these approaches focus on learning, these same principles are those that could foster cross-language transfer in the grammatical domain. With this in mind, we evaluated the feasibility of using a literacy-based intervention to target grammatical difficulties in bilingual children with risk for language and reading difficulties. We were interested in potential changes in the target language (Spanish) and possible cross-language transfer to English. Additionally, we were interested in within- and across-language associations between pre- and posttest measures. We were guided by the following research questions:

1. Are there pretest-to-posttest changes in Spanish and English on a grammatical task (including cloze and sentence repetition tasks) for treatment and comparison groups?
 - 1.1. What are the patterns of change for Spanish (the language of treatment)?
 - 1.2. What are the patterns of change for English (the nontreatment language)?
2. Are there pretest-to-posttest changes in Spanish and English on distal measures of language productivity (i.e., mean length of utterance [MLU], total number of words [TNW], and the percentage of grammatical utterances [referred to hereafter as “grammaticality”]) and classroom language performance for children who participated in Spanish treatment?
3. What are the within-language and between-languages associations with morphosyntax at pre- and posttest with measures of semantics and productivity (MLU, TNW, and grammaticality) for children who participated in the intervention?

Method

Participants

The study was approved by the institutional review board at The University of Texas at Austin. Participants in the study included Spanish–English bilingual first-grade children selected from a larger pool of 63 students from several elementary schools in central Texas. Fifteen (six girls, nine boys) children between the ages of 6;4 and 7;7 (years; months; average age 6;11) who were at risk for language and/or literacy impairment were invited to participate in the intervention study. An additional six children (all boys) between the ages of 6;5 and 7;1 (average age 6;10) were invited to participate as a no-intervention comparison group. Children's status as bilingual was determined through the use of parent and teacher questionnaires, which computed profiles of daily exposure and use of English and Spanish.

All children were exposed to or used each language at least 20% of the time.

Mother and father educational level was rated using the Hollingshead rating scale (Hollingshead, 1975) where a score of 1 is less than seventh grade and a score of 7 corresponds to graduate or professional training. For this sample, average mother educational level was 2.4 (corresponding to junior high and partial high school), and father educational level was an average of 1.85 (corresponding to less than seventh grade to junior high school level).

At baseline, we screened children using the Bilingual English Spanish Oral Screener (BESOS; Peña et al., 2008). We calculated children's best language score between English and Spanish in each domain. Children were included in the intervention arm of the study if their BESOS scores were at or below the 25th percentile in semantics or morphosyntax in their better language or if their score on the letter-word identification on the Woodcock-Muñoz Language Survey-Revised (Woodcock et al., 2005) in their better language was at or below the 25th percentile (see Table 1). On average, intervention group children scored below the mean on semantics ($M = 81.16$) and morphosyntax ($M = 83.96$), but above the normal range on letter-word identification ($M = 123.80$) in their best language. As a group, children tended to score higher in Spanish on all measures. Some children scored higher in English, specifically two in morphosyntax, three in semantics, and none in letter-word identification. Comparison group participants scored within normal limits on both semantics and morphosyntax in both languages and above the normal range on letter-word identification. Their best language score averages were 111.41 (semantics), 114.92 (morphosyntax), and 144.67 (letter-word identification). Similar to the intervention group, children tended to score better in Spanish on all measures at pretest. One child scored higher in English on both morphosyntax and semantics, but not letter-word identification. All children in the intervention group were receiving their academic core reading instruction in Spanish. Two children in the comparison group received language arts instruction in English and four in Spanish.

Teachers and parents were asked to provide ratings of children's vocabulary, comprehension, articulation, sentence length, and grammar in English and Spanish using the Inventory to Assess Language Knowledge (ITALK; Peña, Bedore, et al., 2018). On average, the teacher concern rating was 3.23 (on a scale from 1 to 5) for English and a 4.11 for Spanish for the intervention group. The better language score (comparing English and Spanish child by child) was 4.11. These scores are generally in the "risk" range (< 4.2). For the comparison group, teacher ratings were 4.6 for English and 4.52 for Spanish, with an average of 4.73 for the better language score.

Parent concern ratings were generally consistent with teacher ratings. For children in the intervention group, average concern for English was 2.47 (on a scale from 1 to 5) and 4.32 for Spanish. The average better language score was 4.34. For the comparison group, the average English concern rating was 3.00, and the average Spanish concern rating was 4.70. The average better language average was 4.70.

Based on information obtained from the Bilingual Input-Output Survey (BIOS; Peña, Bedore, et al., 2018), children's school language exposure (a combination of input and output) in the intervention group on average was balanced in Spanish and English. Teachers reported that children used and had exposure to English 51.15% of the time and Spanish 48.85% of the time at school. Exposure to English at school ranged from 32.14% of the time to 60% of the time. Children in the comparison group had more exposure to English at school on average, 75.00% with 25.00% exposure to Spanish. Note that two of these children had 100% exposure to English at school. The other four children had balanced exposure to English and Spanish consistent with the intervention group.

For the intervention group's home language exposure (input and output), parents reported that children had 30.53% exposure to English and 69.47% exposure to Spanish at home. The comparison group had similar home exposure, with 38.73% exposure to English and 61.44% exposure to Spanish. As noted above, children in both groups performed higher on Spanish measures compared to English measures.

Table 1. Pretest score means Spanish, English, and best language.

Group	Variable	Semantics		Morphosyntax		Letter-word identification	
		English	Spanish	English	Spanish	English	Spanish
Treatment group	Standard scores	68.60	80.89	54.49	83.11	83.33	124.80
	<i>SD</i>	8.25	12.06	15.49	16.09	16.11	20.83
	Number of students below 25th percentile	15	12	15	10	10	1
	Best language standard scores	81.16	83.96	123.80			
	Number of students below the 25th percentile in both languages	12		10		1	
Comparison group	Standard scores	93.60	108.45	101.62	106.81	116.33	142.22
	<i>SD</i>	12.20	16.15	8.18	27.69	14.28	21.01
	Number of students below 25th percentile	0	0	0	0	1	0
	Best language standard scores	111.41		114.92		144.67	
	Number of students below the 25th percentile in both languages	0		0		0	

Measures

ITALK. This questionnaire is used in an interview format with parents and teachers to document children's performance in each language in the domains of articulation, comprehension, sentence length, grammar, and vocabulary (Peña, Gutierrez-Clellen, et al., 2018). According to the manual, an average score at or below 4.2 on a 5-point scale indicates possible risk.

BIOS. The BIOS is used to document school and home use and exposure to Spanish and English. Questions focus on a typical day (and weekend in the case of the home questionnaire) and document hour-by-hour activities, the language of interaction, and language of (child) response (Peña, Gutierrez-Clellen, et al., 2018). The results are extrapolated to estimate input and output in each language for a typical week at school and home.

BESOS. The BESOS first grade is a language screener designed to identify risk for developmental language disorder in Spanish-English bilinguals. The morphosyntax subtests contain 18 items each, including eight cloze and 10 sentence repetition items. In Spanish, targets include direct object clitics, relative clause, subjunctive, imperfect, and adjective agreement. In English, targets include third singular, prepositional phrases, passives, negatives, and question inversion. English semantics has 14 items, and Spanish contains 16 items. Item types include similarities and differences, functions, definitions, analogies, and categorization. Preliminary analysis using a composite of the higher score in semantics (Spanish vs. English) and the higher score in morphosyntax has a sensitivity of 93% and specificity of 92% using a cut score of -1 *SD* below the mean.

Test of Narrative Language. The Spanish Test of Narrative Language (TNL) parallels the English TNL that includes researcher-created story prompts using initial, analogous models and questions (Gillam & Pearson, 2004; Gillam et al., n.d.). Just like in the English TNL, there are three Story Comprehension and Oral Narration tasks. In the first section, the child listens to a story about going to the grocery store, then responds to comprehension questions, and is asked to retell the story. In the second section, the child is presented with a story sequence about a flat tire, is asked comprehension questions, and is then presented with a picture sequence about a dog that runs away for them to tell a story. In the last section, the child is read a story about a pirate while provided a one-picture prompt, is asked comprehension questions, and then is asked to tell a story about an ogre given a one-picture prompt. We used story prompts from the TNL in English and in Spanish to elicit oral narratives. We transcribed each of the stories (as described below) to examine child productivity and grammaticality in each language.

Teacher's observation of children's oral language skills. From 1 to 2 weeks postintervention, teachers were asked to fill out a questionnaire circling their observation of the child's classroom oral language skills since the intervention given three choices (worse, same, and better). The second part of this questionnaire was for the teacher to

write a comment or comments to support their answer choice based on classroom observations.

Proximal outcome measures in this study were considered as opportunities for production akin to practice during the intervention sessions such as production in a patterned response cloze and sentence repetition task. Distal outcome measures were related to children's generalization of learning in a real-life context such as the application of grammatical knowledge and productivity (MLU and TNW) during discourse as well as teacher observations of children's oral language skills in the classroom.

Language and Literacy Together Intervention

The intervention, Language and Literacy Together (LLT), was developed as a comprehensive intervention designed to build oral language components into a Spanish literacy curriculum, *Intervenciones Tempranas de la Lectura* or Early Interventions in Reading (Science Research Associates, 2012), which is an intervention program with demonstrated effectiveness for U.S. DLLs (Vaughn et al., 2006). The goal of LLT was to target both oral language skills and literacy for bilingual children at risk for developmental language disorder and reading difficulties (Peña et al., 2017). As the intervention title indicates, literacy instruction was combined with language intervention to promote linguistic growth, including morphosyntactic production, as well as boost reading skills. Children received the intervention in Spanish, which corresponded to the language of their core reading instruction, to maximize academic success. The intervention lesson plans were based on thematic units aligned to first-grade curricular themes based on the Texas Essential Knowledge and Skills state curriculum and included the themes of family, feelings, and communication; environments and habitats; and animal and plant life cycles and flight (see Table 2). Each unit was developed contextually, centering on both an expository and narrative text matching the thematic unit above or at the second-grade reading level so that children would have exposure to higher level vocabulary and content. The narrative and expository texts provided for a highly contextualized intervention that utilized the stories to build meaning for the intervention targets while exposing children to the structure of both narrative and expository genres. By using themes, we controlled the amount of new or unfamiliar material that children were required to process in any given activity. By interconnecting the practice of language and literacy targets throughout and across intervention sessions, children engaged in distributed practice of the target behaviors.

The goal of the literacy components of LLT was to improve fluency in decoding and comprehension of written text and developing phonological awareness. The oral language components of LLT focused on building vocabulary, story grammar, comprehension, and the grammatical competence of children who were at risk for language and reading difficulties using a contextualized intervention approach.

Table 2. Themes, books, and Spanish grammatical targets.

Unit themes	Lesson	Book	Book type	Grammatical targets
Family, feelings, and communication	1–2	<i>Gorilas/Gorillas</i> (Freed, n.d.)	Expository	<ul style="list-style-type: none"> subject- and object-specific nouns (noun phrases) agreement of adjectives in subject noun phrases
	3–5	<i>Mi Propio Cuartito/My Very Own Room</i> (Perez, 2000)	Narrative	<ul style="list-style-type: none"> adjective + noun agreement with 2 adjectives
Environments and habitats	6–7	<i>Animales del Océano/Ocean Animals</i> (Freed, 2002)	Expository	<ul style="list-style-type: none"> prepositions agreement of adjectives in noun phrases
	8–10	<i>El Pinguino Taky/Taky the Penguin</i> (H. Lester & Munsinger, 2001)	Narrative	<ul style="list-style-type: none"> preterite and imperfect prepositions
Animal life cycles	11–12	<i>Ciclo Vital de los Insectos/Insect Life Cycle</i> (Jensen, 2002)	Expository	<ul style="list-style-type: none"> adjective + noun agreement with 2 adjectives adjective + noun phrases with gender agreement
	13–15	<i>Mariposas en la Calle Carmen/Butterflies on Carmen Street</i> (Brown, 2007)	Narrative	<ul style="list-style-type: none"> present verb tense <i>-ar</i>, <i>-ir</i>, and <i>-er</i> endings
Flight	16–17	<i>Todo sobre Papalotes/All About Kites</i> (Austin, 2003)	Expository	<ul style="list-style-type: none"> prepositions using elaborated noun phrases
	18–19	<i>El Papalote de Lupita/Lupita's Papalote</i> (Ruiz-Flores, 2001)	Narrative	<ul style="list-style-type: none"> prepositions preterite and imperfect
Plants and harvest	20–21	<i>¿Qué nos dan las plantas?/What comes from plants?</i> (K. Lester, n.d.)	Expository	<ul style="list-style-type: none"> present verb tense <i>-ar</i>, <i>-ir</i>, and <i>-er</i> verb endings
	22–24	<i>Carlos y la Planta de Calabaza/Carlos and the Squash Plant</i> (Stevens, 1995)	Narrative	<ul style="list-style-type: none"> prepositions preterite and imperfect elaborated noun phrases

Oral language instruction included systematic components present in a typical language intervention lesson plan (see Table 3), which included previewing and making predictions about the text, activities focusing on vocabulary targets as well as morphosyntactic targets, opportunities to integrate these into oral retells, comprehension or picture description tasks, as well as activities targeting narrative or informational text structure. Vocabulary targets included Tier 1 and 2 nouns, verbs, and adjectives of which one third were cognates in English and Spanish. Semantic activities consisted of identifying three to six vocabulary words and providing semantic and morphosyntactic cues to recover meaning, along with repeated exposure to the words to build strong semantic representation by contextual cues and visual aids. During the narrative component, the focus was on reading passages from the text to build comprehension and knowledge of story grammar or informational text structure and also provide context for vocabulary and grammatical focus.

Grammatical Structures Targeted for Intervention

The grammatical structures targeted in the intervention were chosen because they are considered to be difficult for children with developmental language disorder in Spanish or English. The difficulty of language-specific morphosyntactic forms for children with developmental language disorder has been documented to be related to the saliency of the form in that language (Leonard, 2014). Recall that the intervention was conducted in Spanish, but in development, we considered that these children, as DLLs, would need to

develop both languages to communicate effectively across home and school contexts. Thus, target constructions were generally shared across languages and broadly chosen as difficult for children with developmental language disorder; however, with some typological differences in the way, these are manifested across Spanish and English. For example, elaborated noun phrases would be a shared target construction across languages, but in Spanish, the focus would also need to be on number and gender agreement for nouns and adjectives when producing this construction. The rationale for selecting these targets was that, by increasing children's awareness of and accuracy in producing such structures, children would become more productive as evidenced by longer narratives and/or longer utterances, production of more grammatical forms, and a higher percentage of grammatical utterances.

The procedures for the grammatical part of the intervention are the focus of the current study. The texts provided context for both grammatical comprehension and grammatical production while discussing the text and during narrative retells. One to two grammatical targets were chosen for each of the books in the thematic units (see Table 2). Given the context of combining language and literacy, morphosyntactic targets focused on the recoverability of meaning within narrative contexts. Targets included elements such as the use of tense and complex utterances to structure temporal and causal relationships (Gutiérrez-Clellen & Heinrich-Ramos, 1993), deictic reference (Bedore & Leonard, 2001), and the use of elaboration in noun phrases via the use of prepositions, adjectives, and adjective agreement to provide specific information (Eisenberg et al., 2008).

Table 3. Intervention elements.

Elements	Minutes	Description of activity	Contribution to grammar learning
Introduction	2	Introduce theme and topic of the book, preview vocabulary	Activate learning of vocabulary
Book walk	4	Look at pictures, make predictions, activate prior knowledge	Words and grammatical forms in context
Vocabulary	8	Read select parts of book, find the vocabulary word in context, discuss meaning in relevant passage	Lexical semantic relationships, morphosyntactic and semantic cues and relationship to meaning, derivational morphology
Listening comprehension and narrative production	8	Listening comprehension using KWL charts, to identify what they children know, want to know, and learned about each word or concept presented, expository knowledge, review story grammar components, retell parts of narratives	Words and grammatical forms in context, production practice using connected discourse
Grammar	6	Introduce grammatical targets, use mediated learning for comprehension and production practice with modeling and imitation with parallel forms, focused stimulation, and recasts using book theme for context	Grammatical forms targeted directly through comprehension and production
Review and retell	5	Recap story, opportunities for retelling, review vocabulary targets	Words and grammatical forms in context
Reading	15	Word and short phrase-level reading related to book theme, phonological awareness, and letter–sound correspondence. Use <i>Intervenciones Tempranas de la Lectura</i> Curriculum (Science and Associates, 2012).	Phonological awareness, for awareness of parts of words and sound–letter correspondence for written word recognition
Writing	3	Word and short phrase-level writing related to book theme, phonological awareness, and letter–sound correspondence. Use <i>Intervenciones Tempranas de la Lectura</i> Curriculum (Science and Associates, 2012).	Phonological awareness, for awareness of parts of words and sound–letter correspondence for written word recognition

Elaboration in noun phrases was targeted with a special emphasis on number and gender agreement for articles, nouns, and adjectives. These structures were key to understanding and retelling information from the books and were highlighted while reading. For example, during Unit 2, Environments and Habitats (see the Appendix), children were encouraged to use sentences that were longer and more interesting to include descriptive information. The preposition *para* (for) in Spanish was a grammatical target to discuss what belonged to whom. Pictures related to ocean creatures in the book were included to highlight items that may belong to the characters such as a fish for the shark. Children were given choices to indicate who the pictured items were for to practice using this preposition. Also, children were encouraged to describe different ocean animals, such as *El tiburón tiene dientes filosos* (The shark has sharp teeth), considering that, in Spanish, the child must pay attention to adjective number and gender agreement for the noun phrase *dientes* (plural and masculine).

Supporting Grammatical Competency

Supporting grammatical competency was targeted directly or indirectly throughout each session, given how grammatical targets were integrated into each of the intervention components and activities (see Table 3). The narrative and comprehension activities supported children's comprehension and production of targets. For example, when providing character information, children had opportunities to hear and practice using elaborated noun phrases

while retelling story events, children's focus was to hear and practice preterite and imperfect tense. During the literacy portion, children's attention was on building phonological and morphological awareness, and during the vocabulary portion, children were supported in learning new words and their grammatical functions along with accompanying morphosyntactic knowledge. The grammatical component targeted grammatical structures directly and activities designed to move along a hierarchy of support from imitation to cloze tasks, patterned responses, and then opportunities for spontaneous production in retells. The rationale for selecting as targets key grammatical structures from the books was to help children focus attention on these structures and support their accuracy in production. The intervention was interconnected by reinforcing knowledge of the grammatical structures used in the oral language portion of the intervention and by providing children with opportunities to read sentences with these constructions. Children were provided with practice opportunities to use these words and structures as part of their discussion of story grammar or in making Know, Want to Know, and Learned charts. The primary feedback in these activities was on the information structure. Scaffolding (Schneider & Watkins, 1996) and mediation (L. Miller et al., 2001) were used to support the production of narratives.

Intervention strategies included a metacognitive approach adapted through embedded mediated learning experiences (Lidz, 1997) and explicit instruction. The strategy of using mediated learning helped the child understand the importance of the form and connect importance with

meaningful usage while developing strategies about how to be successful upon subsequent encounters. Explicit instruction included declarative teaching procedures (Finestack & Fey, 2009) to illuminate the meanings of the target structures in context. In this way, children could practice with functional grammatical structures chosen for both comprehension and production of the stories. Across the sessions, we used a variety of language facilitation strategies that have been effective in helping children learn and produce morphosyntactic structures including emphatic stress (Weismer, 1997), reduced rate (Weismer, 1997), recasts (Camarata et al., 1994), and focused stimulation (Fey et al., 1997; Fey & Proctor-Williams, 2000). Children also had opportunities for production practice by imitating models and patterned responses and retelling parts of the stories that included target forms. As a result, the intervention was predicted to increase children's ability to use syntactic information as a reliable cue to both comprehend and produce different kinds of stories.

Procedure

During the screening phase, the BESOS, ITALK, and BIOS were administered. This took place in the fall semester. Children completed the BESOS at both pre- and posttest. The best language score in each domain was used to determine possible risk for developmental language disorder at pretest. The English and Spanish TNL were administered prior to beginning the intervention phase and within 1 month of its conclusion. Comparison group participants were tested at similar time points. Testing was completed in quiet areas at the children's schools by trained bilingual examiners. All tests were scored by trained bilingual examiners, and data were entered into an Excel spreadsheet. Twenty percent of the data were scored by a second examiner and entered to ensure accuracy.

Treatment consisted of three weekly 50-min sessions in small groups of one to five children for a total of 24 sessions across 8 weeks starting in the later fall. Only one intervention cohort included one child for scheduling reasons, whereas the other cohorts included two to four children, with the largest group consisting of five children. Intervention sessions were scheduled in advance with classroom teachers on a consistent weekly schedule. Teachers were aware of which children received intervention. Each 50-min session included 30–35 min of oral language activities and 10–15 min of literacy activities from the *Intervenciones Tempranas de la Lectura* (Early Interventions in Reading) curriculum (see Table 3). The intervention sessions were held in the children's schools across four bilingual elementary school campuses in locations designated by each campus principal as space typically used for pull-out tutoring and support.

Interventionists

Two bilingual licensed and certified speech-language pathologists delivered the intervention in Spanish. One interventionist, who delivered approximately 20% of the intervention sessions, was a native Spanish speaker from Puerto Rico. The interventionist who delivered 80% of

the interventions learned Spanish as a second language in Texas, has good Spanish proficiency, and has used Spanish in the home with a native speaker about 25% of a typical week for more than 10 years preceding the intervention. While one interventionist met with the children the majority of the time, the other covered several of the sessions with most of the cohorts. The two interventionists helped to develop the scripts and choose the stories. They reviewed the Spanish scripts in advance to standardize the instructions, activities, materials, and the flow of the lessons. During each session, they followed written scripts (see the Appendix) and time allotted for activities for each session to ensure fidelity of treatment. Sessions were videotaped, and 20% of them were watched by trained undergraduate research assistants for verification of adherence to the established script with regard to inclusion of required intervention components, positioning of children, instructional pacing, provision of scaffolding, provision of individual practice opportunities, sustaining participant's attention and eliciting active participation, and use of mediated learning strategies. Fidelity of implementation was 95%.

Coding and Analysis

Stories obtained from the three Oral Narration tasks on the TNL in both English and Spanish were transcribed using Systematic Analysis of Language Transcripts (Miller & Iglesias, 2012). A research assistant listened to audio recordings, transcribed verbatim, and segmented utterances into C-units. Spanish transcripts were also coded for verb roots. A second transcriber verified transcription accuracy, spelling, and utterance segmentation and coded for grammaticality. Twenty percent of transcripts were randomly selected for transcription reliability coding in each language. Transcription reliability was 96% for English and Spanish. Transcription discrepancies were resolved by a third transcriber. Transcripts were also coded for grammaticality based on a pre-established list of errors (e.g., the omission of plural, possessive, or past tense) that excluded common dialectal errors (e.g., preposition errors). For this analysis, each complete and intelligible utterance was classified as grammatical if it had no errors based on the list or ungrammatical if it had one or more errors from the established list. Code-switched utterances were eliminated from this analysis because we were interested in children's knowledge of grammar in each language. Grammaticality is calculated as the ratio of grammatical utterance over the total number of grammatical and ungrammatical utterances. Twenty percent of the samples in each language were recoded by a second independent transcriber. Reliability for grammaticality coding was 97% for English and 95% for Spanish. MLU in words (MLUw), TNW, and percentage of grammaticality were derived using Systematic Analysis of Language Transcripts.

Results

The first set of analyses evaluated pre- and posttest performance. In general, repeated-measures analyses of variance (ANOVAs) compared effects of time (pre- and

posttest) and language of testing (Spanish and English) and focused on proximal and distal measures related to grammar. We applied Cohen's guidelines on interpretation of effect sizes, which suggest that a η_p^2 of .01 is a small effect size, .09 is a medium effect size, and .25 and above represents a large effect size. Finally, bivariate analysis allowed us to examine associations between pretest measures and grammatical pre- and posttest BESOS scores in both languages.

Proximal Measures: Grammatical Task in Spanish and English

In the first analysis, we compared children's pre- and posttest scores on the BESOS Morphosyntax subtest. We conducted a repeated-measures ANOVA with time (pre- and posttest) and language of testing (Spanish and English) as the within-subject factors. We ran the comparison group separately for comparison purposes. Note that the comparison group is very small ($n = 6$). Although the ANOVA is robust to violations of normality, the comparison group is one that did not demonstrate risk for language or literacy difficulties at pretest. Thus, given the size and nature of the comparison group, these results are preliminary at this time. Results of the comparison group data demonstrate a high degree of pre- to posttest stability. There were no effects for time, $F(1, 5) = 0.004, p = .950, \eta_p^2 = .001$, or language, $F(1, 5) = 0.024, p = .883, \eta_p^2 = .005$, and no significant interaction. Average scores were 104.22 at pretest and 104.43 at posttest. Children performed comparably across Spanish ($M = 103.71$) and English ($M = 104.94$).

For the treatment group, there was a main effect for time, $F(1, 14) = 19.629, p = .001, \eta_p^2 = .584$, a large effect; a main effect for language, $F(1, 14) = 43.825, p < .001, \eta_p^2 = .758$, a large effect; and no significant interaction. The average gain for the intervention group was 13.20 standard score points in both languages (pretest $M = 68.99$, posttest $M = 82.19$). Children in the intervention group performed higher in Spanish ($M = 88.96$) than English ($M = 62.22$). Of the 15 children in the intervention group, 12 scored within normal limits on morphosyntax at posttest.

As a follow-up, we evaluated performance on the BESOS by item type (see Table 4) for treatment and comparison groups. Children in the treatment group made the most gains on adjective agreement and subjective forms from pretest to posttest (26.7% and 20.0%, respectively). In English, the most gain was seen on negatives (33.3%), passives (31.1%), and third-person singular (26.7%). These are forms that, in general, the comparison group already had mastered.

Distal Measures: Productivity, Grammaticality, and Teacher Report

We used stories derived from the English and Spanish versions of the TNL to examine more distal effects of the language and literacy intervention as related to productivity indexed by use of longer sentences or production of more

words. Namely, we examined MLUw, TNW, and grammaticality. In addition, we asked teachers to complete a survey regarding their perceptions of the effectiveness of the intervention. These more distal measures could indicate general growth in children's language in response to the intervention.

We derived MLU from a short narrative elicited at pre- and posttest in each language for the treatment group. As before, we conducted a repeated-measures ANOVA with time (pre- and posttest) and language (Spanish and English) as the within-subject factors, with MLU as the dependent variable. There was a significant main effect for language, $F(1, 13) = 7.256, p = .018, \eta_p^2 = .358$, and a significant main effect for time, $F(1, 13) = 4.695, p = .265, \eta_p^2 = .265$. These effect sizes are in the medium-to-large range. There were no significant interactions. On average, children's MLU (in words) was 7.017 in Spanish and 5.436 in English. Average pretest MLU was 5.774, and average posttest MLU was 6.679.

Next, we examined TNW that children produced during their narratives in each language. We conducted a repeated-measures ANOVA with time (pre- and posttest) and language (Spanish and English) as the within-subject factors, with TNW as the dependent variable. There was a significant main effect for language, $F(1, 13) = 58.553, p = .018, \eta_p^2 = .818$, a very large effect size. On average, children produced more words in Spanish ($M = 181.179$) than in English ($M = 91.61$). There was no effect for time, $F(1, 13) = 2.341, p = .150, \eta_p^2 = .153$, and no significant interactions. These effect sizes are in the medium-to-large range.

Finally, we examined whether children demonstrated increased grammaticality in short narratives from pretest to posttest. We conducted a repeated-measures ANOVA with time (pre- and posttest) and language (Spanish and English) as the within-subject factors, with percent grammaticality as the dependent variable. There was a very large significant main effect for language, $F(1, 13) = 121.001, p < .001, \eta_p^2 = .903$, but no main effect for time, $F(1, 13) = 0.123, p = .731, \eta_p^2 = .009$. There were no significant interactions. On average, children's grammaticality was 79.2% in Spanish and 23.5% in English.

Teachers were asked to comment on their observations of children's oral language skills after participation in the program (see Table 5). Teachers reported increased skill for 11 of the 15 children. For those indicating improvement, their comments indicated that children were more willing to participate, that children were more confident, and that responses were more focused.

Within-Language and Cross-Language Associations With Pre- and Posttest Measures

We were also interested in whether pretest measures of semantics, morphosyntax, productivity (MLU and TNW), and grammaticality in each language were associated with pre- and posttest BESOS morphosyntax scores. Table 6 displays the correlations within and across languages.

Table 4. Bilingual English Spanish Oral Screener item types: percent correct pretest, posttest, and gain.

Language	Variable	Treatment group (n = 15)			Comparison group (n = 6)		
		Pretest	Posttest	Gain	Pretest	Posttest	Gain
Spanish	Direct object clitics	50.0%	66.7%	16.7%	75.0%	50.0%	-25.0%
	Relative clause	36.7%	43.3%	6.7%	83.3%	75.0%	-8.3%
	Subjunctive	33.3%	53.3%	20.0%	83.3%	83.3%	0.0%
	Imperfect	60.0%	76.7%	16.7%	66.7%	75.0%	8.3%
	Adjective agreement	26.7%	53.3%	26.7%	83.3%	50.0%	-33.3%
	Sentence repetition	55.3%	68.7%	13.3%	81.7%	83.3%	1.7%
English	Third singular	20.0%	46.7%	26.7%	75.0%	50.0%	-25.0%
	Prepositions	6.7%	6.7%	0.0%	83.3%	75.0%	-8.3%
	Passives	17.8%	48.9%	31.1%	83.3%	83.3%	0.0%
	Negatives	0.0%	33.3%	33.3%	66.7%	75.0%	8.3%
	Question inversion	6.7%	16.7%	10.0%	83.3%	50.0%	-33.3%
	Sentence repetition	30.7%	42.7%	12.0%	81.7%	83.3%	1.7%

English morphosyntax pretest scores were only associated with Spanish semantics. At posttest, however, English morphosyntax scores were positively associated with TNW in English, Spanish semantics, and Spanish TNW and BESOS morphosyntax Spanish pretest scores. English BESOS morphosyntax posttest scores were positively associated with TNW in English and Spanish, as well as Spanish BESOS morphosyntax pretest scores.

Spanish morphosyntax at posttest was significantly associated with Spanish semantics and Spanish grammaticality. There were no significant associations with English.

Discussion

The goal of this study was to evaluate the feasibility of an intervention designed to facilitate language and literacy gains through contextualized activities that integrated grammar and vocabulary. For children who received intervention in Spanish in this study, we find the approach to be promising. In the morphosyntactic domain, children made significant gains in their production of grammatical elements as evidenced by increases in grammatical tasks from the BESOS in both Spanish and English. These changes

were significant and represented a moderate effect size. Children in the intervention group also increased in productivity in the narrative task, a more distal measure as evidenced by increased MLUw in the narratives elicited using the TNL prompts in Spanish and English. These effect sizes were medium to large. Children did not make gains in the TNW or the grammaticality of their utterances in either language. An evaluation of the correlations between the BESOS morphosyntax task and measures of language productivity (MLU, TNW, and grammaticality) demonstrated cross-language associations at both pre- and posttest. Within language associations were also noted across both time points.

Change Over Time

Significant main effects reflecting gains on the Spanish BESOS morphosyntax tasks across pre- and posttest suggestive of proximal change in performance related to the intervention, particularly for adjective agreement and imperfect. As listed in Table 4, elaboration of noun phrases and adjective agreement were targeted in every thematic unit, sometimes across multiple lessons for each text suggesting

Table 5. Teacher judgment of intervention-based changes.

Improvement	Comment
same	so quiet, XX hardly volunteers to speak
better	expressive sentences when speaking in class, more willing to participate verbally and relate what is going on. XX did benefit
better	improvements in XX's writing—better written than oral language—more time to organize
better	only slightly better, no striking differences
better	answers are more focused
better	a little better—very quiet so it's hard to tell
better	comp and vocab, answering questions more completely, more confident when speaking
better	no striking differences, only a little better
better	more confident, tries to participate more
same	no big improvements
same	no noticeable improvement
same	XX only speaks in sentences of a few words, barely talks, gestures a lot
better	XX was more confident answering questions
better	comp and vocab, answering questions more completely, more on topic, is quiet but now more confident
better	XX has more vocab, more confident in language, spends more time talking

Table 6. Pre- and posttest means and correlations between Bilingual English Spanish Oral Screener (BESOS) scores and narrative productivity: intervention group.

Language	Variable	English BESOS morphosyntax		Spanish BESOS morphosyntax		M	SD
		Pretest	Posttest	Pretest	Posttest		
English measures	BESOS English morphosyntax	1	.501	.103	.446	54.87	15.49
	BESOS English semantics	.213	.459	-.060	-.013	68.60	8.25
	English MLU	.014	.473	.183	.024	4.72	2.98
	English TNW	.321	.563*	.254	.197	78.80	84.49
	English grammaticality	.188	.265	-.241	-.048	21.37%	28.93
Spanish measures	BESOS Spanish morphosyntax	.103	.235	1	.509	83.11	16.09
	BESOS Spanish semantics	.693**	.572*	.407	.530*	83.11	16.09
	Spanish MLU	.327	.479	-.279	.040	6.62	1.32
	Spanish TNW	.040	.540*	.508	.265	166.27	75.02
	Spanish grammaticality	.475	.267	.316	.704**	76.59%	12.53
	M	54.87	69.57	83.11	94.81		
	SD	15.49	20.08	16.09	14.20		

Note. MLU = mean length of utterance; TNW = total number of words.

*Correlation is significant at the .05 level (two-tailed). **Correlation is significant at the .01 level (two-tailed).

a benefit to consistent and repeated exposure to this target, demonstrating an average of 26.7% increase on items relating to adjective agreement. Smaller average change was observed for imperfect (16.7%). Change over time was also observed for subjunctives, though these were not directly targeted in the intervention. Subjunctive mood may have become salient to the participants because it reflects changes in meaning. It is possible that, as children became more attuned to using grammar to express more precise meaning, they were able to retrieve and use subjunctive forms they had heard. Given these pre/postchanges, we compared the results on the BESOS morphosyntax task with a small no-intervention comparison group. Though this group was small, the BESOS scores for typically developing peers remained stable over time.

Children in the intervention group also evidenced within-language change over time on distal measures of Spanish language productivity in narrative, specifically MLUw. Change in MLU reflects the ability to use sentence constructions that are more complete or use more elaborated phrase structure. Having practice with longer and more complete sentences may provide a framework in which children can fill in the grammatical elements as these come under productive control. It is important to note that these changes took place over a relatively small number of intervention sessions (24). Changes over time were not observed for TNW or grammaticality. These findings may reflect stages of proficiency in morphosyntactic production. In addition, changes in grammaticality may require consolidation of the production of specific grammatical elements (such as observed in the BESOS cloze and sentence repetition tasks) and the production of more complete sentences (such as represented by MLU), which may take longer than the administered number of sessions to integrate this knowledge (Justice, 2018).

There were also significant effects in terms of change over time in English. On the BESOS morphosyntax cloze

task, changes were observed in negatives (33.3% gain), passives (31.1% gain), and third-person singular (26.7% gain). In particular, for negatives and passives, attention to meaning may have heightened students' awareness of these forms. In terms of generalization to narratives, there was a significant increase in children's English MLUw over time. While specific grammatical elements are not exactly the same in Spanish and English, the intentionality statements based on the mediated learning strategies emphasized the common functionality of expressing complete and elaborated ideas. There were no significant effects over time for TNW or grammaticality. This lack of change may have been due to children's already limited productivity in English. Recall that their BESOS semantic scores were lower in English than in Spanish at the beginning of the intervention.

Within-Language and Cross-Linguistic Associations

Within-language associations for semantics and morphosyntax are well documented in the literature. As shown in Table 6, we found that posttest English morphosyntax scores significantly correlated with pretest English TNW, and posttest Spanish morphosyntax scores were significantly correlated with BESOS Spanish Semantics pretest scores. Both of these findings suggest that semantic knowledge can bolster change across domains within each language of intervention. This is consistent with findings in the literature that semantic or vocabulary knowledge is a good predictor of the gains to be made in morphosyntax (Simon-Cerejido et al., 2013).

Gains on the BESOS morphosyntax task in English suggest that the nature of intervention increases children's awareness and ability to produce morphosyntactic targets in the context of grammatical prompts. This aligns with the observations by Resendiz et al. (2017) where DLLs with developmental language disorder showed gains in use of

grammatical utterances, but at the same time, they increased use of overgeneralizations. This is significant because there was considerable individual variability at pretest. Although all children had at least some exposure to English, some children were unable to complete TNL narratives at pretest in English. Note that these children were selected for Spanish intervention because their literacy instruction was reported to be in Spanish. Exposure to the frames in which grammatical morphemes were used and the sentence types presumably allowed children to produce more specific grammatical information. This pattern of change is in line with the definition of cross-linguistic transfer at a general level in which attention to grammatical elements might support attention and production in the other language.

Another interesting aspect of the findings was the pattern of cross-language associations between the BESOS and the narrative measures. The fact that there were no significant English pretest associations with Spanish morphosyntax posttest scores suggests an effect of the intervention. Spanish language knowledge at pretest, however (BESOS morphosyntax and TNW), was significantly associated with English morphosyntax scores at posttest. This points to the transferability of general language skill in supporting the production of grammatical forms cross-linguistically, which is suggestive of transfer. It also highlights the challenge and possible limitations of cross-language transfer in intervention. Our observed short-term gains across languages may emerge from general awareness of language structure. It remains to be seen if it is possible to achieve cross-language transfer with more time or if direct instruction, particularly of language-specific elements, is needed to make change in both languages.

Limitations and Future Directions

It is important to note several limitations related to the present findings, which include several participant factors and the measures utilized. The number of participants in the intervention group is small, and the comparison group, while informative, is very small. Measures utilized were more general measures of morphosyntax and language use, rather than measures developed specifically to capture response to the intervention targets.

Consideration of the participants is important. The children demonstrated language risk as evidenced by their very low BESOS morphosyntax scores at the outset. The inability of some children to respond to English narrative elicitation at pretest does not necessarily indicate impairment but may suggest that they were highly unfamiliar with the setting and context of evaluation. This is important because it sheds light on questions such as “how much” intervention and “how broad” an intervention is needed for bilingual children to demonstrate the knowledge they are acquiring in each of their languages. For example, children who require Tier 1 or 2 interventions in a response to intervention model might be highly responsive to the type of structure offered in this intervention (Linan-Thompson et al., 2007). In contrast, children who require higher levels of intervention may

not demonstrate the relatively rapid change observed here. However, given that the employed intervention seemed to offer positive results for children across the full range, more attention will need to be given to the dosage levels required to achieve changes.

The measures used to document change are important to better understand the extent to which children are making changes in the production of morphosyntactic elements. The distal level changes tested using narratives provide a broad view of change. Closer proximal analysis of which specific aspects shift as children make changes in grammaticality can provide insights into the extent to which change is driven by the production of more complete or complex structure. As children make more changes in narrative production, it may be possible to determine the extent to which children’s productions reflect specific targeted structured versus general changes to sentence structure. This will help us determine the extent to which children need explicit instruction on specific grammatical elements.

A contextualized single-language approach to intervention with DLLs at risk for developmental language disorder (DLD), such as LLT, appears to be a promising approach for promoting change in children’s language skills across the targeted and nontargeted language, particularly on progress-monitoring measures closely aligned with intervention targets and increased MLU during short narrative elicitation tasks. To facilitate change in more distal measures of language, including the TNW or grammatical accuracy, bilingual children at risk for DLD may require more individualized and direct instruction on specific constructions they have trouble with. Future studies manipulating dosage, both in the type of tasks employed to teach and elicit scaffolded practice as well as the length and frequency of sessions may provide further guidance in relating to which components of the intervention may facilitate generalizable gains in a short time frame.

There is a lack of evidence concerning intervention with bilingual children at risk for DLD, particularly in the area of grammar, which is a hallmark of the kinds of difficulties children with DLD display. Here, we find that a literacy-based intervention, enhanced to include grammatical targets, is a promising direction for intervention for bilingual children. Furthermore, as indicated by the observed gains in both languages, it is possible to design interventions that potentially support language learning across languages.

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Appendix (p. 1 of 2)

Sample Intervention Script in Spanish for Language Activities

Unit 2 Ocean Animals

Materials: nonfiction book about ocean animals, pictures for grammar activities, whiteboard, and marker.

Introduction of theme and vocabulary preview (2 min)

Este es nuestro tercer cuento que se llama “Animales del océano” y hoy tenemos palabras nuevas de vocabulario. (Introduzca las palabras de vocabulario. Permita que los niños lean las palabras y repita cada palabra. Deje las tarjetas de las palabras encima de la mesa mientras lee el cuento). Palabras de vocabulario: blando, escapar, feroz

This is our third story called “Ocean Animals” and today we have some new vocabulary words (introduce vocabulary words soft, escape and fierce. Let the children read the words, then restate what the vocabulary words are. Leave flash cards on the table so they can see the words until you get to the vocabulary section). Vocabulary words: soft, escape, fierce.

Book walk and narrative or expository comprehension (4 min)

Este cuento es sobre animales del océano. (Haga una tabla de “Ya Sabes”) ¿Qué ya sabes sobre los animales del océano? (Escribe las cosas que los niños nombren y provea claves si es necesario). Bien, ahora vamos a ver las láminas en el cuento (solamente enseñe hasta la página 9). ¿Qué crees que vamos a aprender sobre los animales del océano en este cuento? (Haga una tabla de “Quieres Saber” en una lista de las cosas que los niños nombren y que quieren aprender sobre los animales del océano).

This story is about ocean animals. (Make chart for Know) What do you already know about ocean animals? (make list of things children name, scaffold as necessary). Ok, now let’s look at the pictures (only show pictures up to page 9). What do you think this book will teach us about ocean animals? (Add to chart for Want to Know. Make list of things the children think/want to learn about ocean animals).

Vocabulary in context (8 min)

(Lea hasta la página 9 del cuento (si el tiempo lo permite). Las palabras de vocabulario se encuentran en las páginas 8 y 9. Cuando lea una palabra de vocabulario, señale de alguna manera obvia que ya encontró la palabra (diciéndola más alto, pausando, etc). Lea la oración nuevamente en el contexto del cuento. Señale la tarjeta de la palabra que encontró. Provea refuerzos positivos a los niños que encuentren las palabras antes que usted).

(Read up to page 9 if you have time. The vocabulary words are on pages 8 & 9. When you read a vocabulary word, make it obvious that you found one of the words (saying the word loud or pausing etc). Re-read the sentence and say the word again in context. Point out the flashcard for the word you have found. Reinforce children who notice the words before you point them out). Vocabulary words: soft, escape, fierce

(Señale cada palabra de vocabulario una por una. Lea la palabra y pida a los niños que la repitan. Enséñeles el Monstruo del Vocabulario y identifiquen si las palabras son palabras de acción, nombres, lugares o palabras de descripción. Luego de completar cada actividad (vea abajo), asegure proveer una definición completa. Para “blando” (p. 8) hable sobre el cuerpo del pulpo que es blando, el cual no es duro como una mesa. Cuando lo tocas se siente suave y es flexible, lo puedes mover). ¿Qué cosas aquí son blandos? (ejemplos: blandas/blandos: ropa, pelo, alfombra; duras/duros: mesa, silla, lápiz). (Utilice laminas para identificar que artículos son blandos). BLANDO es cuando algo se siente suave y no es duro. FEROS & ESCAPAR: (Para escapar (p.8), hable sobre como el pulpo huye y se va muy rápido cuando hay peligro. Tiene que huir si otro animal lo está persiguiendo. Para feroz (p.9), hable sobre cómo algunos animales son feroces porque están muy molestos y atacan a otros animales. En el libro, vimos a un tiburón muy feroz. Los tiburones atacan a otros animales para comérselos. Utilice fotos de depredadores y sus presas y hable sobre cómo algunos animales feroces atacan y persiguen a otros animales y estos animales tienen que escapar). Esta sería una buena oportunidad para que los niños practiquen usar las palabras en oraciones). Práctica: El ____ feroz persigue a _____. ¡_____ tiene que escapar! Resumen: ESCAPAR es cuando alguien tiene que huir rápidamente. FEROS es cuando alguien o algo está muy molesto y listo para atacar.

Appendix (p. 2 of 2)

Sample Intervention Script in Spanish for Language Activities

(Point out vocabulary words one by one. Read each target word and have the children repeat the word after you. Go back to the Vocabulary Monster and identify whether the words are action words, names, places, or description words. After each activity below is completed, make sure you define each word using a complete sentence. For soft (p. 8) talk about how the octopus has soft body, it is not hard like the table. When you touch it, it feels smooth and it's flexible, you can move it around. Have the kids mention other things in the room that are soft, and others that are hard using examples: soft: clothes, hair, carpet; hard: table, chair, pencil. Use pictures to identify which items are soft). SOFT is when something feels smooth and it is not hard. FIERCE and ESCAPE: (For escape (p.8), talk about how the octopus escapes from danger. He has to get away very, very quickly if another animal is chasing him. For fierce (p.9), talk about how some animals are fierce because they are very angry or aggressive and ready to attack. In the book, it talks about a fierce shark. Use pictures of predators & preys to talk about how some fierce animals sometimes chase other animals who have to escape. This would be a good opportunity for the children to practice using some of the words in sentences). Practice: The fierce _____ chased the _____. The _____ had to escape! Summary: ESCAPE is when something or someone has to run away very quickly. FIERCE is when something or someone is very angry and ready to attack.

Narrative practice and listening comprehension (8 min)

(Regrese a la lista "KWL" y añada cosas que aprendieron en el cuento. Por Aprendi: Pídale a los niños que nombren algunas cosas que aprendieron sobre animales del océano y escríbalos). Preguntas Guía: ¿Qué animales viven en el océano? ¿Qué comen estos animales? ¿Cómo son estos animales? ¿Qué hacen los animales en el océano?

(Go back to the KWL chart and look for things that you learned more about in the book. Learned: Ask the children to name a few things they learned about ocean animals and write them under the "learned" section of the KWL chart). Guiding questions for comprehension:

What kind of animals live in the ocean? What do these animals eat? What do they look like?

What do they do?

Grammar targets in context with comprehension and production practice (6 min)

Podemos usar nuestras palabras especiales *las preposiciones* para saber para quien son las cosas. ¿Porque es importante de saber para quien pertenece algo? Vamos a ver unos dibujos y dígame para quienes son estas cosas. ¿Es para el niño o para el pez? (Respuesta "es para el niño"). ¿La mosca es para el pez o la tortuga? (mosca). ¿El pescadito es para el delfín o el pez? (Pescadito) ¿La ancla es para el bote o el delfín? (ancla) ¿El helado es para la niña o la rana? (helado). Hablemos sobre el uso de frases para hacer interesante nuestros cuentos. Vamos a ver si podemos usar oraciones largas y interesantes. Vamos a usar *preposiciones* y *adjetivos*. Acuérdate que los adjetivos son palabras para describir las cosas. Describe los animales del libro. (Muestre al niño un buen ejemplo y ayudele pensar en mas frases en esta manera). La tortuga nada entre los peces. El delfín nada arriba de la ballena. El delfín habla con otros delfines. La morsa es un animal con colmillos grandes. La morsa está en la nieve. El tiburón martillo es un animal con la cabeza como martillo. Los peces tienen miedo cuando están cerca a un tiburón. El león marino se asolea en la piedra. El pulpo se mueve con 8 brazos. El tiburón es un pez con dientes filosos. La manta raya es un pez con alas grandes. El caballo marino es un pez con la cola enredada. La tortuga camina en la arena. La ballena se mueve con la cola grande.

We can use our special words prepositions to help us know who things are for. Why is it important to know what belongs to others? Let's look at some pictures and see who these things are for. Is the sandwich for the boy or for the fish? (use sandwich picture to elicit "it's for the boy). Is the fly for the frog or for the turtle? (fly). Is the little fish for the dolphin or for the fish? (little fish) Is the anchor for the boat or for the turtle? (anchor). Is the ice cream for the girl or for the frog? (ice cream). We have talked about using phrases to describe things so that they are interesting. Let's see if we can make long interesting sentences using prepositions or adjectives. Remember adjectives are describing words. Let's describe the animals in the books (give examples and have the child generate a similar phrase). The turtle swims with the fish. The dolphin swims over the whale. The dolphin talks to other dolphins. The walrus is an animal with big tusks/teeth. The walrus lays on the snow. The hammer head shark is a fish with a head like a hammer. The fish are afraid when they are by the shark. The sea lion sits on the rock. The octopus moves with 8 arms. The shark is a fish with sharp teeth. The sting ray is a fish with big wings. The seahorse is a fish with a curly tail. The turtle walks on the sand. The whale moves with his tail.

Review and retell the story (5 min)

Ahora, que son las cosas que recuerdas del cuento? Resumen: BLANDO es cuando algo se siente suave y no es duro. ESCAPAR es cuando alguien tiene que huir rápidamente. FERROZ es cuando alguien o algo está muy molesto y listo para atacar. Now, what are the things you remember from the story? Summary: Soft is when something is soft and not hard. Ferocious is when someone or something is angry and ready to attack.
