

## Research Article

# The Home Literacy Environment and the English Narrative Development of Spanish–English Bilingual Children

Dana Bitetti<sup>a</sup> and Carol Scheffner Hammer<sup>b</sup>

**Purpose:** The purpose of this study was to examine the impact of the home literacy environment (HLE) on the English narrative development of Spanish–English bilingual children from low-income backgrounds.

**Method:** Longitudinal data were collected on 81 bilingual children from preschool through 1st grade. English narrative skills were assessed in the fall and spring of each year. Microstructure measures included mean length of utterance in morphemes and number of different words. The Narrative Scoring Scheme (Heilmann, Miller, Nockerts, & Dunaway, 2010) measured macrostructure. Each fall, the children's mothers reported the frequency of literacy activities and number of children's books in the home. Growth curve modeling was used to describe the

children's narrative development and the impact of the HLE over time.

**Results:** Significant growth occurred for all narrative measures. The HLE did not affect microstructure growth. The frequency with which mothers read to their children had a positive impact on the growth of the children's total Narrative Scoring Scheme scores. Other aspects of the HLE, such as the frequency with which the mothers told stories, did not affect macrostructure development.

**Conclusions:** These results provide information about the development of English narrative abilities and demonstrate the importance of frequent book reading for the overall narrative quality of children from Spanish-speaking homes who are learning English.

Latino children constitute the fastest growing segment of the U.S. population and account for approximately 23% of the total child population (National Council of La Raza, 2013). As a result, the number of Spanish–English bilingual children in U.S. schools is increasing significantly. Bilingual children are enrolled in more than 70% of Head Start classrooms (Hulsey et al., 2011), and children from Spanish-speaking homes make up about 85% of this bilingual population (Mathematica Policy Research Institute, 2013). Children from Spanish-speaking homes who are learning English are often at risk for reduced literacy outcomes due to their limited English abilities (August & Shanahan, 2006; Garcia & Miller, 2008; Snow, Burns, & Griffin, 1998). In English-instruction schools, bilingual children may be expected to

perform similarly to their monolingual peers in English literacy skills such as reading comprehension and narrative writing; therefore, in these settings, bilingual children will need strong English oral language (August & Shanahan, 2006). For these reasons, it is critical to understand oral language development in bilingual children and the factors that support development in order to foster positive literacy outcomes.

The ability to produce narratives is an important component of oral language that relates to literacy and academic outcomes in both monolingual and bilingual populations (e.g., Griffin, Hemphill, Camp, & Wolf, 2004; Miller et al., 2006). At present, bilingual children's development of English narrative skills during the preschool- and early school-age years is not well understood. Most studies on narrative development are based on monolingual children from middle- to upper middle-class populations, and the studies that have described Spanish–English bilingual children's narratives have yet to examine potential factors that contribute to the narrative development over time. Such factors include the home literacy environment (HLE), which has been found to contribute to other components of English oral language and emergent literacy skills in monolingual and bilingual populations (e.g., Burgess, Hecht, & Lonigan, 2002; Farver, Xu, Eppe, & Lonigan,

<sup>a</sup>Temple University, Philadelphia, PA

<sup>b</sup>Teachers College, Columbia University, New York, NY

Correspondence to Dana Bitetti, who is now with the Department of Communication Sciences and Disorders at La Salle University, Philadelphia, PA: Bitetti@lasalle.edu

Editor: Rhea Paul

Associate Editor: Luigi Girolametto

Received February 12, 2015

Revision received September 4, 2015

Accepted April 18, 2016

DOI: 10.1044/2016\_JSLHR-L-15-0064

**Disclosure:** The authors have declared that no competing interests existed at the time of publication.

2006; Gonzalez & Uhing, 2008). It stands to reason that the story-based activities and materials that children are exposed to at home may also contribute to their narrative development. However, little research has focused on the relationship between the HLE and the English narrative abilities of Spanish–English bilingual children. Understanding aspects of the children’s home environment that lead to more successful narrative outcomes will allow clinicians and other educational professionals to build on these strengths. Therefore, this study provides a longitudinal examination of the impact of the HLE on bilingual children’s narrative development from their first year of Head Start through the end of first grade.

### ***Importance of Narrative Abilities***

Narrative production is one critical component of oral language because it aids in bridging the gap between children’s oral and written language (Westby, 1991). As children practice telling stories, they develop their use of decontextualized language (i.e., talk about abstract ideas or events and objects not immediately present), which is both characteristic of written text and valued in the classroom (Curenton, Craig, & Flanigan, 2008; Dickinson & Snow, 1987). As a consequence, it is commonly agreed that oral narrative production plays an important role in fostering young children’s literacy skills, such as reading comprehension, narrative writing, and reading fluency, as well as their overall academic outcomes (e.g., Bishop & Edmundson, 1987; Feagans & Appelbaum, 1986; Griffin et al., 2004; Justice, Bowles, Pence, & Gosse, 2010; Pankratz, Plante, Vance, & Insalaco, 2007; E. Reese, Suggate, Long, & Schaughency, 2010; Speece, Roth, Cooper, & De La Paz, 1999; Tabors, Snow, & Dickinson, 2001). For example, Griffin et al. (2004) found that children’s use of evaluative information and elements of story grammar in their stories at 5 years of age were a unique predictor of reading comprehension and narrative writing skills, respectively, at 8 years of age. Furthermore, there are long-term outcomes of early narrative production, as kindergarten narratives were positively associated with seventh-grade reading comprehension (Dickinson & Tabors, 2001).

Although most of the research documenting the relationship between narrative production and literacy has examined monolingual children, a growing body of research focusing on bilingual populations also demonstrates this relationship (Gutiérrez-Clellen, 1998; Hipfner-Boucher, Lam, & Chen, 2014; Miller et al., 2006). Miller et al. (2006) found that the English narrative production skills of Spanish–English bilingual children in kindergarten through third grade were strongly associated with the children’s current English reading comprehension abilities even after controlling for grade level. Likewise, current narrative morphosyntactic quality uniquely contributed to the reading comprehension of English-speaking first graders who were learning French (Hipfner-Boucher et al., 2014). As a result of the contribution of early and concurrent narrative production to essential literacy skills during the school-age years, bilingual

children’s ability to tell English narratives likely will influence their school success. Two aspects of narrative often linked with literacy and academic achievement are described below.

### ***Narrative Assessment in Young Children: Microstructure and Macrostructure***

In order to become successful storytellers, children must demonstrate competence using diverse vocabulary related to their story and grammatical structures of increasing complexity. Children must also demonstrate competence with their overall narrative organization. Therefore, oral narratives are analyzed on two levels: microstructure and macrostructure (Hughes, McGillivray, & Schmidek, 1997; Liles, Duffy, Merritt, & Purcell, 1995). *Microstructure* refers to children’s production of linguistic form and content, which are analyzed at the utterance level (Heilmann, Miller, Nockerts, & Dunaway, 2010). Microstructure analyses often include traditional measures of children’s grammatical abilities, such as mean length of utterance (MLU), as well as measures of children’s productive vocabulary and lexical diversity, such as number of different words (NDW; Klee, 1992; Miller, 1981). *Macrostructure* refers to the more global features of narrative that exist beyond the utterance level, which allow the narrator to express stories as a connected whole (Heilmann, Miller, Nockerts, et al., 2010; Hughes et al., 1997). Traditional measures of macrostructure usually describe the presence of story grammar and episode structure (Labov, 1972; Liles et al., 1995; Mandler & Johnson, 1977; Stein & Glenn, 1979). However, macrostructure measures may also encompass features such as overall coherence and the presence of mental states that describe characters’ intentions and goal-directed behavior (e.g., Gagarina et al., 2015). For the purposes of the present study, the definition of macrostructure has been broadened beyond traditional story grammar to include characters’ mental states.

Previous cross-sectional and longitudinal studies on the English narratives of Spanish–English bilingual children have demonstrated that both microstructure and macrostructure improve as children progress from preschool to the early school-age years (e.g., Muñoz, Gillam, Peña, & Gulley-Faehnle, 2003; Rojas & Iglesias, 2013; Squires et al., 2014; Uccelli & Páez, 2007). However, the factors that may support narrative development have not been widely investigated. One factor may be the exposure to and telling of stories that take place in children’s homes.

### ***Home Literacy Environment***

There is consensus that the HLE is a key factor that affects oral language skills such as vocabulary in both monolingual (e.g., Burgess et al., 2002; Sénéchal & LeFevre, 2002) and Spanish–English bilingual (e.g., Farver et al., 2006; Gonzalez & Uhing, 2008) populations during the preschool- and early school-age years. The HLE consists of the literacy activities that occur in the home between children and their caregivers and the amount of literacy

materials available in the home. These home experiences may make positive contributions to the overall growth of narrative abilities of bilingual children, as it is theorized that the ability to produce narratives develops as children engage in activities with their caregivers and are exposed to stories through books and literacy materials (Bruner, 1991; Curen-ton, 2010; Purcell-Gates, 1988). In order to investigate the impact of the home environment on narrative abilities, researchers have conceptualized the HLE as activities that expose children to stories, including shared book reading, maternal storytelling, children's participation in storytelling with their caregivers, and exposure to books in the home (Doiron & Shapiro, 1988; Kalia, 2007; Leseman, Scheele, Mayo, & Messer, 2007). The few studies that have focused on the HLE and its relationship to both concurrent and later narrative abilities have focused mainly on monolingual populations and are summarized below.

Shared book reading between mothers and their children exposes children to the various types of story structure, rich vocabulary, and grammatical forms found in children's books (Bus, van IJzendoorn, & Pellegrini, 1995; Crain-Thoreson, Dahlin, & Powell, 2001; Heath, 1982; Van Dongen & Westby, 1986). In a cross-sectional study, frequent book reading was related to the English narrative skills of middle-class monolingual preschoolers (Doiron & Shapiro, 1988). Similar results have been found in a cross-sectional study on Dutch children from varying income levels who had better narrative skills when mothers read to them more frequently (Leseman et al., 2007).

Children may also be exposed to rich narrative experiences when their mothers tell stories to them (Harkins, Koch, & Michel, 1994; E. Reese, Leyva, Sparks, & Grolnick, 2010; Sparks & Reese, 2012), and children improve their narratives as they interact with caregivers who offer support by asking for clarity or prompting for parts of a story (e.g., Peterson & McCabe, 1994; E. Reese, Haden, & Fivush, 1993; Van Dongen & Westby, 1986). Therefore, the frequency with which mothers tell stories to children and children engage in their own storytelling may contribute to children's narrative abilities. However, only one study was identified that examined the frequency of storytelling in relationship to children's narrative language. Leseman et al. (2007) found that the frequency with which mothers talked about personal experiences contributed to their children's narrative production in combination with shared book reading.

The availability of books in the home may influence children's narrative development. Children who possess a substantial number of books could potentially be exposed to a wider variety of microstructure and macrostructure elements found in children's literature. Monolingual preschool children with higher home literacy scores, including the amount of printed material in the home, told more complex narratives (Doiron & Shapiro, 1988).

To date, no studies have directly examined the influence of the HLE on the narrative development of children from Spanish-speaking homes who are learning English. However, similar aspects of the HLE, such as book-reading frequency and possession of literacy materials, demonstrated

a relationship with the English receptive and expressive vocabulary and oral language measures of preschool- and school-age children in cross-sectional studies (Duursma et al., 2007; Farver et al., 2006; Farver, Xu, Lonigan, & Eppe, 2013; Quiroz, Snow, & Zhao, 2010). For example, the number of English literacy materials in the home was positively associated with English receptive language abilities (Farver et al., 2013). It is reasonable to assume that similar aspects of the HLE should be investigated for their potential impact on narrative abilities. In particular, lexical diversity should be investigated because of the demonstrated relationship between the HLE and English vocabulary (Farver et al., 2006; Quiroz et al., 2010). Furthermore, the studies described in this section demonstrate that the HLE and children's outcomes are related at one point in time, but it is difficult to conclude whether the HLE has an impact on narrative development.

### *Purpose of the Study*

Longitudinal studies, such as the present one, are needed in order to understand the HLE's role in narrative development over time. In order to study children's narrative development, measures of microstructure and macrostructure are needed that are sensitive to changes to children's growth over time. The microstructure measures used in the present study, MLU and NDW, have proven to be sensitive to exploring narrative development in bilingual children (e.g., Gutiérrez-Clellen, Simon-Cerejido, & Sweet, 2012; Rojas & Iglesias, 2013). The macrostructure measure that was used—the Narrative Scoring Scheme (NSS)—was developed by Heilmann, Miller, Nockerts, et al. (2010) and was designed to be sensitive to the development of narrative macrostructure abilities for children ranging from preschool through fourth grade. When four macrostructure measures were compared, the NSS was found to be a more sensitive measure for documenting the narrative abilities of 5- to 7-year-old English-speaking children (Heilmann, Miller, & Nockerts, 2010). In addition, the NSS includes both traditional story grammar elements (e.g., introduction, conflict resolution, and conclusion) and additional features that demonstrate high-level narrative competence (e.g., character development, inclusion of characters' mental states that move the plot forward, and overall cohesion). These additional features are scored holistically by examining their use throughout the entire narrative; therefore, they go beyond the specific text-level content. The NSS has proven to be a satisfactory measure of macrostructure and overall narrative quality in several recent studies using diverse groups of children, including those who were learning English (Bajaj, 2007; Finestack, Palmer, & Abbeduto, 2012; King, Dockrell, & Stuart, 2014; Miller et al., 2006; Rollins, 2014; Terry, Mills, Bingham, Mansour, & Marencin, 2013; Zhang, Anderson, & Nguyen-Jahiel, 2013). Therefore, it was chosen for this study.

Given the importance of narrative production for later literacy and classroom success for children who are learning English, it is imperative to gain a better understanding of

the factors that support the English narrative development of Spanish–English bilingual children from low-income backgrounds during early childhood. At present, this study is the first to consider the influence of home literacy experiences on the development of narrative abilities for bilingual children from Spanish-speaking homes enrolled in English-instruction schools. The aim of this study was to determine the relationship between the HLE and children’s English microstructure and macrostructure development over 4 years, from 2 years of preschool through the end of first grade. It was hypothesized that the frequency of home literacy activities and the number of children’s books in the home would contribute to the development of children’s narrative abilities through the end of first grade (e.g., Doiron & Shapiro, 1988; Kalia, 2007; Leseman et al., 2007).

## Method

### Participants

Participants included 81 Spanish–English bilingual children and their mothers recruited from Head Start programs in urban areas of central Pennsylvania in order to take part in a larger longitudinal study of bilingual preschoolers’ language and literacy. Children were eligible to attend Head Start for at least 2 years and were enrolled in the study in the fall of their first year in Head Start. Children also scored within normal limits on both a hearing screening and the Denver Developmental Screening Test–Second Edition (Frankenburg & Dodds, 1992) administered by the Head Start staff. In addition, teachers and parents reported no concerns about the children’s development.

At the beginning of the study, the children averaged 45.23 months of age ( $SD = 3.98$  months), with a range of 39 to 54 months. A total of 26 boys and 55 girls participated. All children were spoken to in Spanish from birth by their mothers and/or another family member. At the beginning of the study, all children were spoken to in Spanish by members of their households. In addition, 49.3% of the mothers reported speaking all Spanish to more Spanish than English to their child, and 50.7% spoke equal amounts of Spanish and English to their child. The mothers also reported that 34.2% of the children spoke all Spanish to more Spanish than English to them; approximately 28.8% of the children spoke equal amounts of Spanish and English to their mothers, and the remainder spoke more English than Spanish to all English to their mothers. Additional information about changes in home language exposure and usage from preschool through first grade can be found in Hammer, Lawrence, Rodriguez, Davison, and Miccio (2011), who found that families increased their use of English over time.

At the beginning of Head Start, children scored an average of 67.61 ( $SD = 16.31$ ) on the Peabody Picture Vocabulary Test–Third Edition (PPVT-III; Dunn & Dunn, 1997) and 82.50 ( $SD = 7.96$ ) on the Test de Vocabulario en Imágenes Peabody (TVIP; Dunn, Padilla, Lugo, & Dunn, 1986). All children attended preschools and elementary schools where English was the primary language of

instruction. Child demographics at the beginning of the study are reported in Table 1 along with their standard scores on the PPVT-III and TVIP.

All of the mothers were of Puerto Rican descent and spoke the Puerto Rican dialect of Spanish. A majority of the mothers were born in Puerto Rico (68%), whereas the remaining mothers were born in the mainland United States. The mothers averaged 26 years of age at the beginning of the study ( $SD = 5.21$ ), with a range of 19 to 48 years, and averaged 11.51 ( $SD = 1.78$ ) years of education. Fifteen of the mothers had some education beyond high school, such as a certificate from a trade school or some college. Half of the mothers worked outside of the home at the beginning of the study. A majority (89%) of the mothers reported that their ability to speak Spanish was very good to good. The remainder of the mothers reported that their ability to speak Spanish was moderate to limited. Half of the mothers reported that their ability to speak English was very good to good, and the other half of mothers reported that their ability to speak English was moderate to limited. Maternal demographics are presented in Table 1.

### Procedures

#### Narrative Elicitation

A narrative generation task was completed as part of a larger language and literacy assessment battery that occurred in the fall and spring of each school year from the beginning of preschool through the end of first grade (i.e., 4 years of school, resulting in eight measurement points). Children were tested in their Head Start programs and later in their elementary schools in a quiet area designated for testing. Data collectors, trained by a certified speech-language pathologist, elicited the children’s narratives using wordless picture books by Mercer Mayer. Each fall, all children were asked to narrate *Frog Goes to Dinner* (Mayer, 1974). Each spring, all children were asked to

**Table 1.** Child and maternal characteristics at Head Start entry.

| Variable                       | <i>M (SD)</i> | Minimum–maximum | %    |
|--------------------------------|---------------|-----------------|------|
| Children                       |               |                 |      |
| Age (months)                   | 45.23 (3.98)  | 39–54           |      |
| PPVT-III                       | 67.61 (16.31) | 40–108          |      |
| TVIP                           | 82.50 (7.96)  | 69–110          |      |
| Exposed to English from birth  |               |                 | 49.4 |
| Mothers                        |               |                 |      |
| Age (years)                    | 26.23 (5.21)  | 19–48           |      |
| Born in mainland United States |               |                 | 32.1 |
| Education (years)              | 11.51 (1.78)  | 6–16            |      |
| Employed outside of home       |               |                 | 49.4 |

*Note.* PPVT-III = Peabody Picture Vocabulary Test–Third Edition; TVIP = Test de Vocabulario en Imágenes Peabody.



narrate *One Frog Too Many* (Mayer, 1975). Two different books were used in order to avoid a practice effect. Both stories contain two settings (the boy's house and another location), the same main characters, the same number of pages, and one central problem that occurs in the beginning of the story and prompts the characters' subsequent actions. Only open-ended questions (e.g., "What happened next?") and repetitions of the children's previous utterance were permitted as data collector prompts. If the child started the story in Spanish, the examiners prompted them to tell the story in English. The narrative samples were video recorded for later transcription and analysis.

### Home Literacy Questionnaire

In the fall of each school year, home visits were conducted by trained bilingual data collectors who were members of the mothers' communities. The data collectors resided in the same neighborhoods as the mothers and children and were fluent speakers of the Puerto Rican dialect of Spanish. During the home visits, the data collectors interviewed the mothers using the Home Literacy Activities Questionnaire (Hammer, Miccio, & Wagstaff, 2003) in the language of the mother's choice. The questionnaire was translated into the Puerto Rican dialect of Spanish by two bilingual individuals following the double translation procedure of Marín and Marín (1991). Because of varying levels of maternal literacy, the data collectors read each question aloud and recorded the mothers' responses on the questionnaire. The data collectors explained to the mothers that they were going to ask questions about activities they might do at home with their children and that it was not expected that they would engage in all of the activities.

The questionnaire involved multiple parts that asked about the frequency of literacy activities in the home as well as the amount of literacy materials present in the home. Four questions were selected from the larger questionnaire. The selection of these four items was based on previous research in which these activities were found to contribute to children's narrative skill development (e.g., Doiron & Shapiro, 1988; Leseman et al., 2007). Three questions elicited information about the frequency with which children were exposed to and produced stories: "How often do you tell your child a make-believe story?" "How often do you read to your child?" and "How often does your child tell you a made-up story?" Seven response choices for frequency were provided: *5 to 7 days per week, 2 to 4 days per week, 1 day per week, 2 to 3 times per month, 1 time per month, several times per year, and rarely or never*. There was also a question related to the presence of literacy materials in the home: "How many books does your child have of his/her own?" Response choices for the number of children's books were also provided: *0, 1 to 5, 6 to 10, 11 to 20, 21 to 30, 31 to 40, 41 to 50, 51 to 100, and more than 100*.

Overall, the mothers were asked to indicate which language(s) they used when speaking with their child. The home literacy questionnaire did not explicitly ask in what language each activity took place. Five response options were provided: *all Spanish, more Spanish than English, equal*

*amounts of Spanish and English, more English than Spanish, and all English*.

## Analyses

### Narrative Transcription

Narrative recordings were transcribed and coded using the conventions of the Systematic Analysis of Language Transcripts (SALT) software (Miller & Iglesias, 2008). Transcribers were undergraduate and graduate students of communication sciences and disorders who were trained and supervised by certified speech-language pathologists. In order to determine reliability between the student transcribers, a random 25% of all transcripts were retranscribed by a second student and coded for SALT conventions. Interrater reliability was 94%.

### Microstructure

Microstructure measures were calculated using SALT's rectangular file function. This application pulls together a set of transcripts and generates specified measures. In order to be included in the analyses, the child had to produce at least three complete and intelligible utterances in English, and measures were calculated only on the transcript's complete and intelligible utterances in English. MLU in morphemes (MLU-m) was used as the measure of grammatical complexity. It was calculated by dividing the total number of morphemes by the total number of utterances within each transcript in order to determine the average number of morphemes per utterance. Although MLU in words is often used in research on children learning Spanish and English (e.g., Gutiérrez-Clellen, Restrepo, Bedore, Peña, & Anderson, 2000; Miller et al., 2006; Muñoz et al., 2003), MLU-m was used in the present study because the participants are not being compared with other groups of children, nor are their MLUs being compared across their two languages. NDW was used as the measure of lexical diversity. NDW was calculated by counting the number of different words (i.e., word roots without inflections) in each transcript.

### Macrostructure

Transcripts were coded for narrative macrostructure using the NSS (Heilmann, Miller, Nockerts, et al., 2010) by four graduate and undergraduate students in communication sciences and disorders trained by a certified speech-language pathologist using the scoring rubric provided by SALT software. The NSS is an index of narrative quality and is a developmentally sensitive measure for the targeted age group (Heilmann, Miller, & Nockerts, 2010). The NSS comprises seven components of narrative, including three story grammar elements: introduction (setting information and introduction of main characters), conflict resolution (between-characters conflicts and their respective resolutions), and conclusion (story ends with concluding statements); two literate language elements: mental states (characters' thoughts and emotions that advance the plot) and character development (describes and distinguishes main and supporting characters throughout the story); and two elements of

cohesion: referencing (provides antecedents to pronouns) and cohesion (events follow a logical sequence with appropriate transitions). Further information about each component and specific scoring guidelines can be found in Heilmann, Miller, Nockerts, et al. (2010).

For each transcript, the seven narrative macrostructure components were scored on a scale from 0 to 5. As outlined in the NSS procedures by Heilmann, Miller, Nockerts, et al. (2010), a transcript received a score of all zeros if the child told the wrong story, omitted a large portion of the story not due to examiner or recording error, used only gestures or noises, or only repeated the examiner's utterances. It should be noted that if a child used mostly Spanish in their narrative, he or she was given credit for what they did produce in English. The seven scores were then summed to create the total NSS score, which can range from 0 to 35. The low range for total NSS score is between 0 and 10, the middle range is between 11 and 25, and the high range is between 26 and 35 (SALT Software, 2012). For the present study, internal consistency for the NSS ranged from good to high ( $\alpha = .77-.92$ ) over the eight time points, with the exception of fall of kindergarten, where internal consistency was at the acceptable level ( $\alpha = .63$ ). Furthermore, the NSS was correlated with microstructure measures (Heilmann, Miller, Nockerts, et al., 2010; Terry et al., 2013), predicted a reading comprehension measure (Miller et al., 2006), and distinguished between narratives of children with disordered language and narratives of age-matched peers (Finestack et al., 2012; King et al., 2014).

Twenty percent of the transcripts were randomly selected at each time point to ensure interrater reliability for NSS coding. The first author, experienced with the NSS scoring system, recoded each of these transcripts. Krippendorff's alpha was used as the reliability coefficient because it takes into consideration the degree of difference between coders and is suitable for use when there are two or more coders. The Krippendorff's alpha using ordinal scaling was .85, suggesting good agreement between the original coder and the first author (Freelon, 2013; Krippendorff, 1980).

### Home Literacy Environment

Four HLE variables were created from the home literacy questionnaire: (a) *story exposure* was how often mothers told make-believe stories to their child, (b) *story production* was the children's frequency of make-believe storytelling, (c) *book reading* was the frequency with which mothers read to their children, and (d) *children's books* was the number of children's books owned. Response choices for frequency of activities were coded on a 7-point scale ranging from 1 (*rarely or never*) to 7 (*5-7 days per week*). Response choices for the number of children's books were coded on a 9-point scale ranging from 0 (*none*) to 8 (*more than 100*). In order to control for home language exposure, the question that asked mothers to indicate which language(s) they used when speaking with their child was coded on a 5-point scale ranging from 1 (*all Spanish*) to 5 (*all English*).

## Results

Children's average total microstructure and macrostructure scores increased from the beginning of preschool to the end of first grade. The average total NDW, MLU-m, and NSS scores for each time point are presented in Table 2. However, the frequency of home literacy activities did not change over time. On average, mothers told stories to their children a little more than once per month, and children told their own stories about once per week. Mothers read books to their children slightly more than once per week on average. The average number of children's books owned demonstrated an increase from 11 to 20 books at the beginning of preschool to 31 to 40 books in first grade. Descriptive statistics for each HLE variable are presented in Table 3.

### Growth Curve Modeling

All analyses were conducted using the SPSS statistics program for Mac (Version 23.0; IBM Corporation, Armonk, NY). All narrative measures and each HLE predictor variable were screened for missing data using Little's test for missing completely at random at each time point. Results of Little's test for missing completely at random revealed that chi-square values were not significant at each time point, which indicates that the data can be assumed to be missing completely at random. Therefore, all participants' data were used in the following analyses.

Growth curve modeling following the guidelines in Singer and Willett (2003) was used to describe the children's English microstructure and macrostructure development from preschool through first grade and the impact of the HLE. The benefit of using growth curve modeling is that maximum likelihood estimation easily accommodates missing data so all possible data can be utilized in the analyses (Burchinal, Nelson, & Poe, 2006).

In order to determine the impact of the HLE variables on the children's narrative scores, modeling occurred in three stages. In the first stage, three separate unconditional means models—one for each narrative outcome measure (NDW, MLU-m, and NSS)—were completed to provide a starting point to determine whether the subsequent growth

**Table 2.** Average (standard deviation) narrative scores by time point.

| Year                     | NDW           | MLU-m       | NSS          |
|--------------------------|---------------|-------------|--------------|
| Head Start year 1 fall   | 40.36 (18.02) | 4.39 (1.02) | 8.75 (3.57)  |
| Head Start year 1 spring | 49.46 (19.94) | 4.81 (1.17) | 9.97 (2.89)  |
| Head Start year 2 fall   | 56.99 (18.94) | 5.24 (1.11) | 10.65 (2.59) |
| Head Start year 2 spring | 61.31 (15.71) | 5.70 (1.04) | 12.46 (3.15) |
| Kindergarten fall        | 68.70 (17.85) | 6.51 (1.11) | 12.75 (2.60) |
| Kindergarten spring      | 73.90 (20.15) | 6.78 (1.03) | 13.63 (3.10) |
| First grade fall         | 73.03 (23.22) | 7.51 (1.29) | 15.25 (3.82) |
| First grade spring       | 85.13 (25.88) | 7.54 (1.16) | 15.94 (3.48) |

Note. NDW = number of different words; MLU-m = mean length of utterance in morphemes; NSS = Narrative Scoring Scheme.

**Table 3.** Frequency of home literacy activities and number of children's books.

| Year              | Story exposure | Story production | Book reading | Children's books |
|-------------------|----------------|------------------|--------------|------------------|
| Head Start year 1 | 3.30 (2.27)    | 4.64 (2.33)      | 5.75 (1.39)  | 3.42 (1.72)      |
| Head Start year 2 | 3.39 (2.11)    | 4.49 (2.33)      | 5.90 (1.30)  | 4.22 (1.91)      |
| Kindergarten      | 3.18 (2.20)    | 5.27 (2.04)      | 5.66 (1.43)  | 4.43 (2.03)      |
| First grade       | 3.28 (2.14)    | 4.96 (2.19)      | 5.84 (1.20)  | 5.21 (2.21)      |

Note. The table displays means, with standard deviations in parentheses.

models provided a better fit. The unconditional means model determined the mean score of each measure across all children at all time points. In the second stage, three separate unconditional growth models were completed. This model differed from the previous model because the effect of time was added. This model determined the intercept (average initial status in the fall of the first preschool year) and average growth rate for the three narrative measures. At this stage, it was determined whether a fixed or random slope provided a better fit as determined by the lowest deviance ( $-2 \log$  likelihood). The difference in deviance was tested against a chi-square critical value to determine whether the change in deviance was significant (Singer & Willett, 2003). Visual inspection of the means plots and scatterplots for the three narrative outcomes determined whether further testing of curvilinear or discontinuous trajectories might be warranted. The inspection revealed that MLU-m might be best fitted with a quadratic term for time. However, a quadratic term was nonsignificant when entered into the unconditional growth model.

In the third stage, the HLE variables (story exposure, story production, book reading, and children's books) were entered as predictors into three separate conditional growth models to determine the effect of the HLE on the growth in children's NDW, MLU-m, and NSS scores (Singer & Willett, 2003). All HLE predictor variables were centered on their grand means to improve statistical interpretation; therefore, the intercept is interpreted as the expected total score at the beginning of preschool for a child who experienced HLE activities with average frequency for the sample. First, the model examined the impact of the HLE on narrative scores upon the children's entry into preschool. Second, the model examined whether the HLE predicted growth of the children's narrative scores. Schwarz's Bayesian information criterion determined whether the conditional model provided a better fit than the unconditional growth model.

### *Microstructure Growth and the Impact of the HLE*

The results of the unconditional growth models for both MLU-m and NDW indicated that the best-fitting model for microstructure measures was a linear trajectory with a random slope. At the beginning of preschool, the model estimated that the children's mean total NDW score

was 43.20 words,  $t(77.09) = 26.59, p < .001$ . The children's NDW had a significant positive slope of 5.74,  $t(65.37) = 14.75, p < .001$ , meaning that the total number of words grew 5.74 words on average with each time point. Therefore, it is estimated that, on average, children increased their total NDW to 83.38 words by the end of first grade. At the beginning of preschool, the model estimated that children's mean total MLU-m score was 4.32 words per utterance,  $t(75.16) = 39.41, p < .001$ . The children's MLU-m had a significant positive slope of 0.49,  $t(58.05) = 21.71, p < .001$ , meaning that the number of morphemes per utterance grew by 0.49 morpheme on average with each time point. Therefore, it is estimated that, on average, children increased their MLU-m to 7.75 morphemes per utterance by the end of first grade.

Although the conditional growth models for both NDW and MLU-m revealed a significantly better fit than the unconditional growth model, there were no significant effects of the HLE variables upon children's entry into preschool, nor were there significant effects of the HLE on overall growth of either NDW or MLU-m. Because no significant effects of the HLE were found for either microstructure measure, no further modeling with control variables was completed.

### *Macrostructure Growth and the Impact of the HLE*

The results of the unconditional growth model indicated that the best-fitting growth model for the children's total NSS scores was a linear trajectory with a random slope. At the beginning of preschool, the model estimated that the children's mean NSS score was 8.83,  $t(77.50) = 29.69, p < .001$ , which is in the low range of the instrument (SALT Software, 2012). The children's NSS score had a significant positive slope of 1.02,  $t(66.12) = 13.37, p < .001$ , meaning that the total score grew 1.02 points on average with each time point. Therefore, it is estimated that, on average, children increased their total score to 15.97 points out of a possible 35 points by the end of first grade, which is in the middle range of the NSS (SALT Software, 2012).

The conditional growth model, which added the HLE variables as predictors of the growth in children's total NSS score, revealed a significantly better fit than the unconditional growth model. First, the model examined the impact of the HLE on NSS scores at the beginning of preschool. There were no significant effects of the HLE variables (story exposure, story production, book reading, and children's books) at this time point.

Next, the model examined whether the HLE predicted growth of the children's total NSS scores. There was a significant effect of book reading from preschool through the end of first grade of 0.20,  $t(185.23) = 3.24, p = .001$ . Therefore, it is estimated that the NSS score increased by 0.20 point with each time point for every 1 Likert-point increase in maternal reading frequency. It is estimated that by the end of first grade, children who were read to every day would have a total NSS score of approximately 18 points; however, children read to rarely would have a score of

approximately 13 points. There were no significant effects of story exposure, story production, or the number of children's books on the growth of the total NSS score over time.

In order to determine that the significant result of book reading on children's NSS scores was not in part due to higher levels of children's English proficiency (i.e., PPVT-III scores), language exposure and usage at home, and higher levels of maternal education, an additional conditional model predicting growth of the NSS was completed with the four control variables included. This model also accounted for potential changes in PPVT-III scores and home language exposure and usage over the 4-year period. The significance of book reading on the growth of the NSS did not vary with the inclusion of the control variables. Home language exposure ( $p = .888$ ), home language usage ( $p = .506$ ), and maternal education ( $p = .121$ ) did not have a significant impact on the NSS. Children's scores on the PPVT-III did have a significant impact on NSS growth ( $p < .001$ ), indicating that children's English proficiency was related to their English macrostructure. Table 4 presents the parameter estimates for the final conditional growth models with the control variables excluded in order to report the most parsimonious models.

## Discussion

This longitudinal study examined the growth of English narrative microstructure and macrostructure of Spanish–English bilingual children over 4 years (i.e., first year in preschool until the end of first grade) and examined the impact of the HLE on the children's overall microstructure and macrostructure growth. It was hypothesized that the frequency of book reading and storytelling activities and the number of children's books in the home would contribute

to the children's growth in microstructure and macrostructure scores to the end of first grade. The results were partially consistent with the hypothesis. Book reading was found to support children's macrostructure as measured by the NSS. The findings show that reading a book a little more than one time per week or more allows children to internalize the more global features of narrative for use in their own stories (Van Dongen & Westby, 1986). By the end of first grade, NSS scores were higher for children who were read to with greater frequency than for children who were read to rarely. This finding held across varying levels of maternal education, children's English proficiency, and children's language exposure and usage in the home. The results of this study add to existing evidence that demonstrates the importance of book reading in young children's development of narrative quality (Doiron & Shapiro; 1988; Leseman et al., 2007) and extends this finding to Spanish–English bilingual children from low-income backgrounds living in the United States.

This study also demonstrates the positive impact of frequent book reading over time. By the end of first grade, there was an approximate 5-point discrepancy on total macrostructure scores between children who were read to every day and children who were read to rarely. Due to the use of raw scores for NSS scoring, this discrepancy should be interpreted with some caution, especially as these 5 points may be spread across the seven components. Nevertheless, it is important to note that children who were read to every day scored on average around 18 points on the NSS, which is closer to average NSS scores found among monolingual English-speaking first graders (Bajaj, 2007; Heilmann, Miller, & Nockerts, 2010; Heilmann, Miller, Nockerts, et al., 2010). For example, the students in Heilmann and colleagues' original NSS studies had an

**Table 4.** Results of the final conditional growth models.

| Variable                           | NDW               | MLU-m          | NSS            |
|------------------------------------|-------------------|----------------|----------------|
| Fixed effects                      |                   |                |                |
| Head Start year 1 fall (intercept) | 44.758** (1.92)   | 4.349** (0.12) | 9.148** (0.31) |
| Story exposure                     | 0.584 (0.81)      | 0.081 (0.05)   | -0.037 (0.14)  |
| Story production                   | -0.246 (0.72)     | -0.007 (0.04)  | 0.107 (0.12)   |
| Book reading                       | -0.321 (1.34)     | 0.0637 (0.08)  | -0.441 (0.23)  |
| Children's books                   | 1.178 (0.91)      | -0.030 (0.05)  | 0.209 (0.15)   |
| Linear slope                       | 5.216** (0.47)    | 0.467** (0.03) | 0.953** (0.06) |
| Story exposure × linear slope      | -0.322 (0.22)     | -0.021 (0.01)  | 0.009 (0.04)   |
| Story production × linear slope    | -0.069 (0.20)     | 0.002 (0.01)   | -0.044 (0.03)  |
| Book reading × linear slope        | 0.306 (0.36)      | 0.010 (0.02)   | 0.199* (0.06)  |
| Children's books × linear slope    | -0.110 (0.21)     | 0.010 (0.01)   | -0.029 (0.04)  |
| Random effects                     |                   |                |                |
| Within person                      | 227.223** (19.20) | 0.629** (0.05) | 6.324** (0.53) |
| Intercept                          | 97.193* (37.52)   | 0.617** (0.17) | 2.467* (1.07)  |
| Goodness of fit                    |                   |                |                |
| Deviance                           | 3,590.88          | 1,146.25       | 2,069.31       |
| Bayesian information criterion     | 3,675.41          | 1,230.79       | 2,152.84       |

*Note.* The table displays parameter estimates, with standard errors in parentheses. NDW = number of different words; MLU-m = mean length of utterance in morphemes; NSS = Narrative Scoring Scheme.

\* $p < .05$ . \*\* $p < .001$ .



average NSS score of 19 ( $SD = 3.0$ ), and the students in Bajaj's study had a mean NSS score of 16.25 ( $SD = 5.64$ ). Furthermore, the descriptive results revealed that, on average, the mothers did not increase the frequency with which they read to their children over the 4-year period. Therefore, children who were read to rarely consistently performed behind their peers who were read to more frequently. If these growth trajectories remain constant, the gap in narrative quality between these groups of children could continue to widen over time, potentially creating a gap in narrative proficiency that is relevant in the later grades, when the demand for oral narration in the classroom is higher.

Book reading did not have a similar significant impact on the growth of the microstructure measures. Book reading may have allowed the children to learn the more global macrostructure features that are common to either language but not English-specific microstructure features. Although no studies have examined the impact of book reading on microstructure growth, this finding is inconsistent with research on monolingual English-speaking families, which has found a positive impact of book reading on the growth of children's oral language abilities such as vocabulary (for review, see Bus et al., 1995). As a result of overall low levels of maternal education and mothers' higher levels of Spanish than English proficiency, the mothers may not have engaged their children in book-related activities such as defining English vocabulary and may not have provided high-quality models of English microstructure forms. Recall that the majority of mothers in the sample had less than a high school diploma, and about half reported that their ability to speak English was moderate to limited. In addition, the lack of impact may be due to the fact that the children were enrolled in preschools and schools that provided instruction in English. Book reading and other language and literacy activities at school may have had a greater influence on the growth of children's English vocabulary and grammatical forms (e.g., Huttenlocher, Vasilyeva, Cymerman, & Levine, 2002).

The maternal storytelling and child storytelling activities as well as the number of children's books in the home did not affect the children's narrative measures. The mothers and their children may not have engaged in storytelling activities with sufficient frequency, and there may not have been enough children's books in the home to influence the children's narrative development. It was reported that, on average, maternal storytelling and child storytelling activities occurred one time per month and less than one time per week, respectively. Comparing the frequency of storytelling with that of more mainstream families is difficult because of the differences in measurement schemes, but Leseman et al. (2007) reported that the mothers in their sample told stories about once per week. The mothers in the current study also reported that their homes typically contained small numbers of children's books. Although the mothers reported that, on average, the number of children's books in the home increased over the 4-year period, a majority of mothers reported that their children owned fewer than 30 books. Previous reports of the number of children's books in the home show far higher levels than the ones

found in the present study (Lonigan, Burgess, & Anthony, 2000; Sénéchal & LeFevre, 2002). For example, Lonigan et al. (2000) reported that preschool-age children from middle- to upper-income backgrounds had approximately 89 books on average. As a result of low socioeconomic status, it may have been difficult for mothers in this study to purchase children's books (L. Reese, Thompson, & Goldenberg, 2008).

### *Limitations and Future Directions*

There are several limitations to the current study that should be considered. First, the primary limitation of this study is that the home literacy questionnaire did not ask the mothers directly whether each of the home literacy activities involving themselves and their children took place in English or in Spanish. The current research concerning the HLE of bilingual children has demonstrated that HLE activities may occur in either language but that activities completed in one language usually support skills such as vocabulary within that language (e.g., Farver et al., 2013; Goldenberg, Rueda, & August, 2006). Even though the significant impact of book reading for macrostructure growth remained after controlling for home language exposure, it is important to keep in mind that HLE activities may have occurred in either English or Spanish in the same home. Reading books in English may have a greater impact on English narrative growth than reading books in Spanish. Second, it must be acknowledged that examining narrative abilities in only one language may not portray the full extent of bilingual children's narrative abilities. Third, it is important to keep in mind that there may be variation in the home literacy practices that exist within different Spanish dialect groups (Harwood, Leyendecker, Carlson, Asencio, & Miller, 2002; L. Reese et al., 2008). This study focused on mothers and children of Puerto Rican descent from low-income backgrounds. Therefore, the findings described here should not be generalized to all dialect groups or bilingual populations. Fourth, the home literacy questionnaire did not take into account multiple caregivers living in the home who may have participated in storytelling activities with the children. The questionnaire did probe the frequency of book reading by other family members, but it revealed infrequent book reading by anyone other than the mothers.

In addition, these results indicate that further research is needed in order to understand the factors that make positive contributions to bilingual children's narrative development during preschool and the early school-age years. Most important, future studies should directly measure whether home literacy activities are completed in English and/or Spanish and whether the language of the activity differentially supports children's English microstructure and macrostructure narrative development. Although there is general consensus that macrostructure is a skill that can transfer between languages (e.g., Pearson, 2002; Squires et al., 2014), at present there is a paucity of research that examines whether direct exposure to narratives in one language at home will transfer to children's macrostructure

abilities in the other language. Future studies should also address the frequency of storytelling activities needed to affect growth in narrative abilities. As a group, the mothers and the children in the current study did not engage in frequent storytelling activities. An impact may be found among a group of mothers and children who engage in storytelling activities with higher average frequency. Related to this possibility, research is also needed that takes into account the frequency of storytelling activities of multiple caregivers in the home. Last, future studies could investigate the frequency of HLE activities along with the type of prompts and elaborations offered by mothers during storytelling activities. The quality of the storytelling interactions, such as the ways in which mothers expand their children's ideas, prompt for more information, and use open-ended questions, may promote the narrative development of children who are learning English (e.g., Sparks & Reese, 2012).

### Clinical Implications

The results of this study have implications for clinicians working with young bilingual children and their parents. This study demonstrated that parents reading to their child one time per week or more can have a positive impact on children's English narrative macrostructure development during their early school years. Clinicians likely are already informing parents about the importance of reading books to their children, but clinicians may also want to emphasize to parents who find it difficult to read every day that they should continue to read books with the frequency with which they are able. It is helpful for clinicians to support parents' current book-reading efforts and build on what parents are already doing at home. The early childhood years are a key time for narrative development, given the contribution that early narrative abilities make to later literacy outcomes (e.g., Berman & Slobin, 1994; Shapiro & Hudson, 1991). Therefore, book reading is an activity that clinicians can support among parents from low-income homes and parents who use varying levels of English in the home in order to strengthen children's macrostructure development and subsequent literacy skills.

Although the current study did not find an impact of storytelling frequency on English narrative measures, this does not mean that these activities should not be encouraged. Clinicians should consider providing information to parents about the importance of engaging their children in storytelling interactions, in addition to book reading, in order to promote narrative development.

### Acknowledgments

This research was supported in part by National Institutes of Health National Institute of Child Health and Human Development Grants R01-HD-39496 and U01-HD-060296, awarded to the second author. The authors thank the parents and their children who participated in the project, along with the Head Start and school staff who provided the necessary support for data collection.

### References

- August, D., & Shanahan, T. (Eds.). (2006). *Developing literacy in second-language learners: Report of the National Literacy Panel on Language-Minority Children and Youth* [Executive summary]. Mahwah, NJ: Erlbaum. doi:10.1017/S0272263108080182
- Bajaj, A. (2007). Analysis of oral narratives of children who stutter and their fluent peers: Kindergarten through second grade. *Clinical Linguistics & Phonetics*, 21, 227–245. doi:10.1080/02699200601075896
- Berman, R. A., & Slobin, D. I. (1994). Narrative structure. In R. Berman & D. Slobin (Eds.), *Relating events in narrative: A crosslinguistic developmental study* (pp. 39–84). Hillsdale, NJ: Erlbaum.
- Bishop, D. V. M., & Edmundson, A. (1987). Specific language impairment as a maturational lag: Evidence from longitudinal data on language and motor development. *Developmental Medicine and Child Neurology*, 29, 442–459. doi:10.1111/j.1469-8749.1987.tb02504.x
- Bruner, J. (1991). The narrative construction of reality. *Critical Inquiry*, 18(1), 1–21. doi:10.1086/448619
- Burchinal, M. R., Nelson, L., & Poe, M. (2006). Growth curve analysis: An introduction to various methods for analyzing longitudinal data. *Monographs of the Society for Research in Child Development*, 71, 65–87. doi:10.1111/j.1540-5834.2006.00405.x
- Burgess, S., Hecht, S., & Lonigan, C. (2002). Relations of the home literacy environment (HLE) to the development of reading-related abilities: A one-year longitudinal study. *Reading Research Quarterly*, 37, 408–426. doi:10.1598/RRQ.37.4.4
- Bus, A. G., van IJzendoorn, M. H., & Pellegrini, A. D. (1995). Joint book reading makes for success in learning to read: A meta-analysis on intergenerational transmission of literacy. *Review of Educational Research*, 65(1), 1–21. doi:10.3102/00346543065001001
- Crain-Thoreson, C., Dahlin, M. P., & Powell, T. A. (2001). Parent-child interaction in three conversational contexts: Variations in style and strategy. *New Directions for Child and Adolescent Development*, 92, 23–37. doi:10.1002/cd.13
- Curenton, S. M. (2010). Narratives as learning tools to promote school readiness. *Early Education & Development*, 21, 287–292. doi:10.1080/104092892010485532
- Curenton, S. M., Craig, M. J., & Flanigan, N. (2008). Use of decontextualized talk across story contexts: How oral storytelling and emergent reading can scaffold children's development. *Early Education and Development*, 19, 161–187. doi:10.1080/10409280701839296
- Dickinson, D. K., & Snow, C. E. (1987). Interrelationships among prereading and oral language skills in kindergartners from two social classes. *Early Childhood Research Quarterly*, 2(1), 1–25. doi:10.1016/0885-2006(87)90010-X
- Dickinson, D. K., & Tabors, P. O. (2001). *Beginning literacy with language: Young children learning at home and school*. Baltimore, MD: Brookes.
- Doiron, R., & Shapiro, J. (1988). Home literacy environment and children's sense of story. *Reading Psychology*, 9, 187–202. doi:10.1080/0270271880090302
- Dunn, L. M., & Dunn, L. M. (1997). *Peabody Picture Vocabulary Test—Third Edition*. Circle Pines, MN: American Guidance Services.
- Dunn, L. M., Padilla, E. R., Lugo, D. E., & Dunn, L. M. (1986). *Test de Vocabulario en Imágenes Peabody*. Circle Pines, MN: American Guidance Services.

- Duursma, E., Romero-Contreras, S., Szuber, A., Proctor, P., Snow, C., August, D., & Calderón, M.** (2007). The role of home literacy and language environment on bilinguals' English and Spanish vocabulary development. *Applied Psycholinguistics, 28*, 171–190. doi:10.1017/S0142716406070093
- Farver, J., Xu, Y., Eppe, S., & Lonigan, C.** (2006). Home environments and young Latino children's school readiness. *Early Childhood Research Quarterly, 21*, 196–212. doi:10.1016/j.ecresq.2006.04.008
- Farver, J. M., Xu, Y., Lonigan, C. J., & Eppe, S.** (2013). The home literacy environment and Latino Head Start children's emergent literacy skills. *Developmental Psychology, 49*, 775–791. doi:10.1037/a0028766
- Feagans, L., & Appelbaum, M. I.** (1986). Validation of language subtypes in learning disabled children. *Journal of Educational Psychology, 78*, 358–364. doi:10.1037/0022-0663.78.5.358
- Finestack, L. H., Palmer, M., & Abbeduto, L.** (2012). Macrostructural narrative language of adolescents and young adults with Down syndrome or fragile X syndrome. *American Journal of Speech-Language Pathology, 21*, 29–46. doi:10.1044/1058-0360(2011/10-0095)
- Frankenburg, W., & Dodds, J.** (1992). *Denver Developmental Screening Test—Second Edition*. Denver, CO: Denver Developmental Publications.
- Freelon, D.** (2013). ReCal OIR: Ordinal, interval, and ratio inter-coder reliability as a web service. *International Journal of Internet Science, 8*(1), 10–16.
- Gagarina, N., Klop, D., Kunnari, S., Tantele, K., Välimaa, T., Balčiūnienė, I., . . . Walters, J.** (2015). Assessment of narrative abilities in bilingual children. In S. Armon-Lotem, J. de Jong, & N. Meir (Eds.), *Methods for assessing multilingual children: Distinguishing bilingualism from language impairment* (pp. 243–276). New York, NY: Multilingual Matters.
- Garcia, E. E., & Miller, L. S.** (2008). Findings and recommendations of the National Task Force on Early Childhood Education for Hispanics. *Child Development Perspectives, 2*, 53–58. doi:10.1111/j.1750-8606.2008.00042.x
- Goldenberg, C., Rueda, R. S., & August, D.** (2006). Sociocultural influences on the literacy attainment of language-minority children and youth. In D. August & T. Shanahan (Eds.), *Developing literacy in second-language learners: Report of the National Literacy Panel on Language-Minority Children and Youth* (pp. 269–318). Mahwah, NJ: Erlbaum.
- Gonzalez, J. E., & Uhing, B. M.** (2008). Home literacy environments and young Hispanic children's English and Spanish oral language: A communal analysis. *Journal of Early Intervention, 30*, 116–139. doi:10.1177/1053815107313858
- Griffin, T. M., Hemphill, L., Camp, L., & Wolf, D. P.** (2004). Oral discourse in the preschool years and later literacy skills. *First Language, 24*, 123–147. doi:10.1177/0142723704042369
- Gutiérrez-Clellen, V. F.** (1998). Syntactic skills of Spanish-speaking children with low school achievement. *Language, Speech, and Hearing Services in Schools, 29*, 207–215. doi:10.1044/0161-1461.2904.207
- Gutiérrez-Clellen, V. F., Restrepo, M. A., Bedore, L., Peña, E., & Anderson, R.** (2000). Language sample analysis in Spanish-speaking children: Methodological considerations. *Language, Speech, and Hearing Services in Schools, 31*, 88–98. doi:10.1044/0161-1461.3101.88
- Gutiérrez-Clellen, V. F., Simon-Cerejido, G., & Sweet, M.** (2012). Predictors of second language acquisition in Latino children with specific language impairment. *American Journal of Speech-Language Pathology, 21*, 64–77. doi:10.1044/1058-0360(2011/10-0090)
- Hammer, C. S., Lawrence, F., Rodriguez, B., Davison, M. D., & Miccio, A. W.** (2011). Changes in language usage of Puerto Rican mothers and their children: Do gender and timing of exposure to English matter? *Applied Psycholinguistics, 32*, 275–297. doi:10.1017/S014271641000041X
- Hammer, C. S., Miccio, A., & Wagstaff, D. A.** (2003). Home literacy experiences and their relationship to bilingual preschoolers' developing English literacy abilities: An initial investigation. *Language, Speech, and Hearing Services in Schools, 34*, 20–31. doi:10.1044/0161-1461(2003/003)
- Harkins, D., Koch, P., & Michel, G.** (1994). Listening to maternal story telling affects narrative skills of 5-year-old children. *The Journal of Genetic Psychology, 155*, 247–257. doi:10.1080/00221325.1994.9914775
- Harwood, R., Leyendecker, B., Carlson, V., Asencio, M., & Miller, A.** (2002). Parenting among Latino families in the U.S. In M. H. Bornstein (Ed.), *Handbook of parenting: Vol. 4. Social conditions and applied parenting* (pp. 21–46). Mahwah, NJ: Erlbaum.
- Heath, S. B.** (1982). What no bedtime story means: Narrative skills at home and school. *Language in Society, 11*, 49–76. doi:10.1017/S0047404500009039
- Heilmann, J., Miller, J. F., & Nockerts, A.** (2010). Sensitivity of narrative organization measures using narrative retells produced by young school-age children. *Language Testing, 27*, 603–626. doi:10.1177/0265532209355669
- Heilmann, J., Miller, J. F., Nockerts, A., & Dunaway, C.** (2010). Properties of the narrative scoring scheme using narrative retells in young school-age children. *American Journal of Speech-Language Pathology, 19*, 154–166. doi:10.1044/1058-0360(2009/08-0024)
- Hipfner-Boucher, K., Lam, K., & Chen, X.** (2014). The contribution of narrative morphosyntactic quality to reading comprehension in French immersion students. *Applied Psycholinguistics, 36*(6), 1–17. doi:10.1017/S0142716414000319
- Hughes, D. L., McGillivray, L., & Schmidek, M.** (1997). *Guide to narrative language: Procedures for assessment*. Eau Claire, WI: Thinking Publications.
- Hulsey, L. K., Aikens, N., Kopack, A., West, J., Moiduddin, E., & Tarullo, L.** (2011). *Head Start children, families, and programs: Present and past data from FACES* [OPRE report 2011-33a]. Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services.
- Huttenlocher, J., Vasilyeva, M., Cymerman, E., & Levine, S.** (2002). Language input and child syntax. *Cognitive Psychology, 45*, 337–374.
- Justice, L. M., Bowles, R., Pence, K., & Gosse, C.** (2010). A scalable tool for assessing children's language abilities within a narrative context: The NAP (Narrative Assessment Protocol). *Early Childhood Research Quarterly, 25*, 218–234.
- Kalia, V.** (2007). Assessing the role of book reading practices in Indian bilingual children's English language and literacy development. *Early Childhood Education Journal, 35*, 149–153. doi:10.1007/s10643-007-0179-2
- King, D., Dockrell, J., & Stuart, M.** (2014). Constructing fictional stories: A study of story narratives by children with autistic spectrum disorder. *Research in Developmental Disabilities, 35*, 2438–2449. doi:10.1016/j.ridd.2014.06.015
- Klee, T.** (1992). Developmental and diagnostic characteristics of quantitative measures of children's language production. *Topics in Language Disorders, 12*(2), 28–41. doi:10.1097/00011363-199202000-00005
- Krippendorff, K.** (1980). *Content analysis: An introduction to its methodology*. Thousand Oaks, CA: Sage.



- Labov, W.** (1972). *Language in the inner city: Studies in the Black English vernacular*. Philadelphia, PA: Pennsylvania University Press.
- Leseman, P. P. M., Scheele, A. F., Mayo, A. Y., & Messer, M. H.** (2007). Home literacy as a special language environment to prepare children for school. *Zeitschrift Für Erziehungswissenschaft, 10*, 334–355. doi:10.1007/s11618-007-0040-9
- Liles, B. Z., Duffy, R. J., Merritt, D. D., & Purcell, S. L.** (1995). Measurement of narrative discourse ability in children with language disorders. *Journal of Speech, Language, and Hearing Research, 38*, 415–425. doi:10.1044/jshr.3802.415
- Lonigan, C. J., Burgess, S. R., & Anthony, J. L.** (2000). Development of emergent literacy and early reading skills in preschool children: Evidence from a latent-variable longitudinal study. *Developmental Psychology, 36*, 596–613. doi:10.1037/0012-1649.36.5.596
- Mandler, J. M., & Johnson, N. S.** (1977). Remembrance of things parsed: Story structure and recall. *Cognitive Psychology, 9*, 111–151. doi:10.1016/0010-0285(77)90006-8
- Marin, G., & Marin, B. V.** (1991). *Research with Hispanic populations*. Thousand Oaks, CA: Sage.
- Mathematica Policy Research Institute.** (2013). *Report to Congress on dual language learners in Head Start and Early Head Start programs*. Retrieved from <http://www.acf.hhs.gov/programs/opr/resource/report-to-congress-on-dual-language-learners-in-head-start-and-early-head>
- Mayer, M.** (1974). *Frog goes to dinner*. New York, NY: Puffin.
- Mayer, M.** (1975). *One frog too many*. New York, NY: Puffin.
- Miller, J. F.** (1981). *Assessing language production in children: Experimental procedures* (Vol. 1). Baltimore, MD: University Park Press.
- Miller, J. F., Heilmann, J., Nockerts, A., Iglesias, A., Fabiano, L., & Francis, D. J.** (2006). Oral language and reading in bilingual children. *Learning Disabilities Research and Practice, 21*, 30–43. doi:10.1111/j.1540-5826.2006.00205.x
- Miller, J., & Iglesias, A.** (2008). Systematic Analysis of Language Transcripts (Research Version 2008) [Computer software]. Madison, WI: SALT Software.
- Muñoz, M. L., Gillam, R. B., Peña, E. D., & Gulley-Faehnle, A.** (2003). Measures of language development in fictional narratives of Latino children. *Language, Speech, and Hearing Services in Schools, 34*, 332–342. doi:10.1044/0161-1461(2003)027
- National Council of La Raza.** (2013). *Children and youth*. Retrieved from [http://www.nclr.org/index.php/issues\\_and\\_programs/children\\_and\\_youth](http://www.nclr.org/index.php/issues_and_programs/children_and_youth)
- Pankratz, M. E., Plante, E., Vance, R., & Insalaco, D. M.** (2007). The diagnostic and predictive validity of the Renfrew Bus Story. *Language, Speech, and Hearing Services in Schools, 38*, 390–399. doi:10.1044/0161-1461(2007)040
- Pearson, B. Z.** (2002). Narrative competence among monolingual and bilingual school children in Miami. In D. K. Oller & R. E. Eilers (Eds.), *Language and literacy in bilingual children* (pp. 135–174). Buffalo, NY: Multilingual Matters.
- Peterson, C., & McCabe, A.** (1994). A social interactionist account of developing decontextualized narrative skill. *Developmental Psychology, 30*, 937–948. doi:10.1037/0012-1649.30.6.937
- Purcell-Gates, V.** (1988). Lexical and syntax comprehension of written narrative held by well-read-to kindergartners and second graders. *Research in the Teaching of English, 22*, 128–160.
- Quiroz, B. G., Snow, C. E., & Zhao, J.** (2010). Vocabulary skills of Spanish–English bilinguals: Impact of mother–child language interactions and home language and literacy support. *International Journal of Bilingualism, 14*, 379–399. doi:10.1177/1367006910370919
- Reese, E., Haden, C., & Fivush, R.** (1993). Mother–child conversations about the past: Relationships of style and memory over time. *Cognitive Development, 8*, 403–430. doi:10.1016/S0885-2014(05)80002-4
- Reese, E., Leyva, D., Sparks, A., & Grolnick, W.** (2010). Maternal elaborative reminiscing increases low-income children’s narrative skills relative to dialogic reading. *Early Education & Development, 21*, 318–342. doi:10.1080/104092892010481552
- Reese, E., Suggate, S., Long, J., & Schaughency, E.** (2010). Children’s oral narrative and reading skills in the first 3 years of reading instruction. *Reading and Writing, 23*, 627–644. doi:10.1007/s11145-009-9175-9
- Reese, L., Thompson, S. L., & Goldenberg, C.** (2008). Variability in community characteristics and Spanish-speaking children’s home language and literacy opportunities. *Journal of Multilingual and Multicultural Development, 29*, 271–290. doi:10.1080/01434630802147759
- Rojas, R., & Iglesias, A.** (2013). The language growth of Spanish-speaking English language learners. *Child Development, 84*, 630–646. doi:10.1111/j.1467-8624.2012.01871.x
- Rollins, P. R.** (2014). Narrative skills in young adults with high-functioning autism spectrum disorders. *Communication Disorders Quarterly, 36*, 21–28. doi:10.1177/1525740114520962
- SALT Software.** (2012). *NSS scoring guide*. Retrieved from <http://saltsoftware.com/resources/codeaids/>
- Sénéchal, M., & LeFevre, J.** (2002). Parental involvement in the development of children’s reading skill: A five-year longitudinal study. *Developmental Psychology, 73*, 445–460. doi:10.1111/1467-8624.00417
- Shapiro, L., & Hudson, J.** (1991). Tell me a make-believe story: Coherence and cohesion in young children’s picture-elicited narratives. *Developmental Psychology, 27*, 960–974. doi:10.1037/0012-1649.27.6.960
- Singer, J. D., & Willett, J. B.** (2003). *Applied longitudinal data analysis: Modeling change and event occurrence*. New York, NY: Oxford.
- Snow, C. E., Burns, S., & Griffin, P.** (1998). *Preventing reading difficulties in young children*. Washington, DC: National Academies Press.
- Sparks, A., & Reese, E.** (2012). From reminiscing to reading: Home contributions to children’s developing language and literacy in low-income families. *First Language, 33*, 89–109. doi:10.1177/0142723711433583
- Speece, D. L., Roth, F. P., Cooper, D. H., & De La Paz, S.** (1999). The relevance of oral language skills to early literacy: A multivariate analysis. *Applied Psycholinguistics, 20*, 167–190. doi:10.1017/s01427164999002015
- Squires, K. E., Lugo-Neris, M. J., Peña, E. D., Bedore, L. M., Bohman, T. M., & Gillam, R. B.** (2014). Story retelling by bilingual children with language impairments and typically developing controls. *International Journal of Language & Communication Disorders, 49*, 60–74. doi:10.1111/1460-6984.12044
- Stein, N. L., & Glenn, C. G.** (1979). An analysis of story comprehension in elementary school children. In R. Freedle (Ed.), *Discourse processing: Multidisciplinary perspectives* (pp. 53–120). Norwood, NJ: Ablex.
- Tabors, P. O., Snow, C. E., & Dickinson, D. K.** (2001). Homes and schools together: Supporting language and literacy development. In D. Dickinson & P. Tabors (Eds.), *Beginning literacy with language: Young children learning at home and school* (pp. 313–334). Baltimore, MD: Brookes.



- 
- Terry, N. P., Mills, M., Bingham, G., Mansour, S., & Marencin, N.** (2013). Oral narrative performance of African American pre-kindergartners who speak nonmainstream American English. *Language, Speech, and Hearing Services in Schools, 44*, 291–305. doi:10.1044/0161-1461(2013/12-0037)
- Uccelli, P., & Pérez, M. M.** (2007). Narrative and vocabulary development of bilingual children from kindergarten to first grade: Developmental changes and associations among English and Spanish skills. *Language, Speech, and Hearing Services in Schools, 38*, 225–236. doi:10.1044/0161-1461(2007/024)
- Van Dongen, R., & Westby, C.** (1986). Building narrative mode of thought through children's literature. *Topics in Language Disorders, 7*, 70–83.
- Westby, C.** (1991). Learning to talk, talking to learn: Oral-literate language differences. In C. Simon (Ed.), *Communication skills and classroom success* (pp. 180–218). New York, NY: Macmillan.
- Zhang, J., Anderson, R. C., & Nguyen-Jahiel, K.** (2013). Language-rich discussions for English language learners. *International Journal of Educational Research, 58*, 44–60. doi:10.1016/j.ijer.2012.12.003