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A Longitudinal Study of Language Use During Early Mother–Child Interactions in Spanish-Speaking Families Experiencing Low Income

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ABSTRACT

Purpose: This longitudinal study assessed continuity and stability of productive language (vocabulary and grammar) and discourse features (turn-taking; asking and responding to questions) during mother–child play.
Method: Parent–child language use in 119 Spanish-speaking, Mexican immigrant mothers and their children at two ages (M = 2.5 and 3.6 years) was evaluated from transcriptions of interactions.
Results: Child productive language significantly increased over the year, whereas mothers showed commensurate increases in vocabulary diversity but very little change in grammatical complexity. Mother–child discourse was characterized by discontinuity: Mothers decreased their turn length and asked fewer questions while children increased on both measures. Rates of responding to questions remained high for both mothers and children even as children increased and mothers decreased over time. Mothers and children showed significant rank-order stability in productive language and measures of discourse. Mothers' rate of asking questions and children's responses to questions during the first interaction predicted children's receptive vocabulary a year later.
Conclusions: As children become more sophisticated communicators, language input remains important, with discourse features growing in relevance. Children's early opportunities to respond to parents' questions in the context of play benefit their language skills. This work extends the evidence base from monolingual English-speaking families and is interpreted in the context of prior research on parenting practices in U.S. families of Mexican origin.

Current theories of language development highlight the transition from toddlerhood to the early preschool years as pivotal for semantic and syntactic development and children's acquisition of conversational discourse skills (Clark, 2018; Nelson, 2009). As children's language competence increases, they become better equipped in using linguistic cues and nonverbal information to gain insight into the complex structure of conversations and thus become more sophisticated communication partners (Casillas & Frank, 2017). Although most existing research draws from predominantly monolingual English learners, substantial evidence shows that across the third and fourth years of life, typically developing children from various linguistic backgrounds experience rapid language development marked by expanding productive vocabularies and increasingly complex grammar in the context of familiar routines and activities (Hoff et al., 2018; Pace et al., 2015).

Children's early conversations with caregivers provide a universal context for using and learning language, but

Correspondence to Amy Pace: amypace@uw.edu. This study drew dyads from the same archive as two other published studies (Adamson et al., 2021, and Tamis-LeMonda et al., 2020). Although the samples overlap and some of the procedural details and descriptions of participants are similar, we asked different questions and used different constructs in the work reported here. ***Disclosure:*** *The authors have declared that no competing financial or nonfinancial interests existed at the time of publication.*

relatively little work has focused on the development of language and discourse in combination. Furthermore, considering both partners in the dyad is key. Young children across different language and cultural backgrounds vary substantially in their language learning trajectories in line with the quality and quantity of language input they receive at home (Paradis & Jia, 2017; Weisleder & Fernald, 2013). Comparatively less is known about the features of conversational discourse that may contribute to children's language development and how dyadic interaction changes over time as mothers and children negotiate shifting roles during conversations.

This longitudinal study focused on Mexican immigrant mothers and young children from primarily Spanish-speaking families from low-income households in the United States. Using video records of semistructured play-based interactions, we investigated developmental changes in aspects of maternal and child language production and conversational discourse when children were 2.5 and 3.6 years, and we related earlier language measures when children were 2.5 years to children's Spanish receptive vocabulary a year later. Although each family is unique, mother–child interactions are shaped by culturally embedded values and beliefs about parenting (Halgunseth, 2019). For families of Mexican descent in the United States, these may include strong emotional ties between members of the family unit (*familismo*; Calzada et al., 2013), respectful interactions with adults (*respeto*; Calzada et al., 2010), and the notion that children should be well-mannered (*bien educado*; Bridges et al., 2012). Within this sociocultural context, we examined language use during dyadic interactions as a window into how children learn vocabulary and grammatical rules and how they negotiate verbal exchanges with their mothers by listening and contributing to the conversation. Focusing on proximal interactions over time in this sample may help identify within-group variation in mother and child language use that is important for children's Spanish language trajectories (Cycyk & Hammer, 2020).

Productive Language During Mother–Child Play

Play contexts elicit lexically and syntactically rich language input from parents and provide opportunities for children to practice emerging expressive language skills (Song et al., 2012; Tamis-LeMonda et al., 2012). Beyond measures of productive language, play offers ample opportunity to observe conversational discourse skills as mothers and children negotiate participation and turn-taking during interactions (Fletcher et al., 2020). Investigating language experiences during mother–child play at home and in community contexts has become well established as a culturally valid approach with ethnically diverse Spanish-speaking dyads (e.g., Adamson et al., 2021; Boyce et al., 2013; Fasoli, 2014; Fletcher et al., 2020). Although much of the research on language interactions during play has been conducted with middle- or high-income samples, play is ubiquitous and has also been studied in low-income groups (Cabrera et al., 2017; Fletcher et al., 2020; Thibodeau-Nielsen et al., 2020). Socioeconomic variables such as education or income are often associated with maternal language input and child language development across cultural groups (Hoff, 2013); however, this study seeks to examine variability that may exist within families who are experiencing low income.

Of theoretical interest was how mothers' productive language input changes over time in early childhood and relates to children's verbal development at each age and across the year. Specifically, as children's language competency grows, do mothers adapt and modify their own language input? We focused on vocabulary diversity and grammatical complexity, which are two widely studied measures of mother and child productive language. Language sampling research with Spanish-speaking dyads, although limited, suggests that mothers are generally sensitive to children's changing language skills and tend to adjust the amount and type of input in ways that scaffold develops (Casla et al., 2021; Luo et al., 2020). Mothers in Spain, for instance, were shown to spontaneously produce expanded repetitions of toddlers' speech, and the rate of adult repetitions during interactions at 21 months predicted vocabulary level at 30 months (Casla et al., 2021). In one sample of immigrant mothers of Mexican and Dominican origin in the United States, mothers' language input was associated with children's language use from age 2 to 4 years, but dyads showed distinct dual language trajectories from age 4 to 5 years (Luo et al., 2020).

Other work has described heterogeneous profiles of immigrant mothers' use of Spanish with young children across functional categories (e.g., referential language and vocalization prompts; Kuchirko et al., 2019). Mothers' use of regulatory language that directs children's actions and behavior and didactic speech that instructs children or supports learning (e.g., labeling), for example, have been described during play in Spanish-speaking families from diverse ethnic backgrounds (Cycyk & Hammer, 2020; Kuchirko et al., 2019; Núñez & Tejero Hughes, 2021). Taken together, this body of literature highlights the need for further exploration of patterns of linguistic interaction. Here, we investigated whether measures of mother and child language production—vocabulary diversity and grammatical complexity—covaried systematically at two time points in the same dyads.

Recent work involving children from varied language backgrounds has also highlighted the need to understand bidirectional influences of language use in mother–child interactions (Choi et al., 2020; Rowe & Weisleder, 2020). For instance, children's language production may contribute to their own language development via the input it elicits. Findings from a recent study

of U.S. mothers born in the Dominican Republic or Mexico have suggested that children play an active role in shaping their own language exposure; child-level factors, such as children's language experiences in preschool, elicited change in mothers' language use during book sharing between 2 and 5 years of age (Luo et al., 2020). Thus, it is likely that child language skill at 2.5 years may influence how mothers alter language production over time. Additional research is needed to build on this emerging evidence and to examine change and variation in maternal language input and child language use during dyadic interaction.

Conversational Discourse During Mother–Child Play

Beyond conventional measures of language production (e.g., grammar and vocabulary), children's early conversational discourse skills represent a relatively underexplored dimension of communication that may be associated with later language development (Leech et al., 2018; Martoccio et al., 2014; Tamis-LeMonda et al., 2014; Wynn et al., 2019). During early childhood, communication exchanges with parents and caregivers serve as a conduit for language learning; language and discourse skills are, in turn, guided and shaped by the reciprocal nature of early interactions (Adamson et al., 2014; Kuchirko et al., 2019). Prior research with an overlapping sample established that culturally informed measures of *respeto* (i.e., child affiliative obedience and parental calm authority) captured unique features of both language and discourse during mother–child interactions at 2.5 years (Tamis-LeMonda et al., 2020). Despite evidence that language production and discourse emerge in tandem, they are rarely considered together in longitudinal investigations and few studies have considered both dimensions with predominantly Spanish-speaking children and mothers.

Our investigation focused on three key aspects of conversational discourse (i.e., taking turns and asking and responding to questions) and how these features change over time. Growing evidence from monolingual English learners suggests that conversational turns (i.e., back-and-forth communicative exchanges between speakers) relate to several measures of children's language development and communicative competence (Casillas et al., 2016; Clark, 2014; Ferjan Ramírez et al., 2020; Romeo et al., 2018). Turn-taking is central to effective communication and relies on both verbal and nonverbal pragmatic communication skills (Levinson, 2016). As toddlers become more competent conversationalists, they simultaneously learn how to navigate the give-and-take of language interactions with caregivers. Research in linguistics suggests that successful conversations between adults involve some degree of matching such that the words of interlocutors covary with one another (Niederhoffer & Pennebaker, 2002). Similarly, adult–child conversations during the toddler and preschool years are characterized not only by growth in the number of parent and child turns sustained within an interaction (Casillas & Frank, 2017) but also by the shifting contribution of each communication partner toward greater balance over time (Adamson et al., 2014).

Children's development of turn-taking skills may also reflect cultural variation in communication practices (Stivers et al., 2009). Parents from different cultural communities vary in the types of scaffolding that they provide to children during conversations (Schieffelin & Ochs, 1986) and the number of conversational turns during language interaction with toddlers (Ganek et al., 2018). In one prior study, preschool children from low-income Spanish-speaking families in the United States experienced fewer conversational turns per hour than children from middle-income English-speaking families, although there was significant variability within each group (Wood et al., 2016). Critically, limitations in study design made it impossible to determine whether these differences were due to socioeconomic, cultural, or linguistic factors. This finding suggests that mother–child turn-taking varies substantially among Mexican immigrant families experiencing low income, and it is likely that these variations have important implications for language acquisition. Given the dearth of existing evidence, this study takes a within-group longitudinal approach to evaluate variation in turn-taking during mother–child interactions.

Questions are another feature of conversational discourse that serve as a mechanism for children's language development. When adults pose questions during conversational exchanges, young children have the opportunity to engage in language learning by building comprehension and practicing new forms of production (Rowe et al., 2017; Yu et al., 2019). Many studies with English speakers have focused on the type and complexity of parents' questions to children (Rowe et al., 2017; Yu et al., 2019; Zambrana et al., 2020), and a great deal is known about the importance of maternal responsivity in child language development (Landry et al., 2006; Tamis-LeMonda et al., 2014). Questioning behaviors during parent–child interactions may also vary to different degrees across cultural and ethnic groups (Callanan et al., 2020). In a study of discourse during book-sharing at age 4 in mother–child dyads across multiple ethnic groups, mothers' questions were shown to be finely tuned to their child's level of participation (Luo & Tamis-LeMonda, 2017). A small-scale study of five Mexican immigrant mothers and their 4-year-olds found that mothers who produced more clarification or explanation questions were more likely to have children with stronger language skills (Palacios et al., 2015). Fewer studies have investigated developmental change in the way children ask and respond to questions during this period, although a recent review posits that children's questioning behavior shapes interactions with caregivers and may be

important for their language development (Ronfard et al., 2018). For instance, during book-sharing interactions with Mexican immigrant mothers, children's elaborative requests at age 3 years related to mothers' embellished responses a year later (Escobar et al., 2017).

Given previous research on questioning behaviors, we expected that children in our sample would demonstrate growth in their rate of asking and responding to questions during play. Mothers, however, could demonstrate one of several patterns. One possibility was that mothers would show a commensurate increase in the number of questions they ask their child (Luo et al., 2020; Sénéchal et al., 1995). An alternative possibility was that as children asked more, mothers would continue to respond at high rates but not increase in the number of questions they posed as they made space within the exchange for the child's contribution. This possibility is supported by recent evidence documenting changes in the cognitive complexity, but not quantity, of mothers' questions over time (Ronfard et al., 2018).

Predicting Spanish Receptive Vocabulary From Language Production and Discourse

Language comprehension in children's primary home language during the toddler and preschool years strongly predicts dual language trajectories (Davison et al., 2011; Hammer et al., 2008; Jackson et al., 2014). Thus, understanding the home language experiences that contribute to children's Spanish oral receptive skills is critical for supporting bilingual development (Luo et al., 2020; Quiroz et al., 2010). Less is known about how mother–child discourse features predict children's vocabulary development, although there are several avenues by which conversations containing multiple speaker turns might influence language comprehension. When mothers pose questions, they engage children's linguistic skills by encouraging children to organize their thoughts and formulate an appropriate response (Yu et al., 2019); questions also serve to keep the conversation going by providing children an opportunity to take their turn. Children's questions reflect discovery and information seeking; mothers have the opportunity to respond contingently with semantically relevant information to reinforce children's language learning and social participation.

Notably, information is sparse on the development of language and discourse during this period for young United States–born children who initially are primarily Spanish speaking. This study focused on Spanish-speaking dyads for several reasons. First, although Spanish-speaking mothers in the United States tend to increase their English input to children over time (Hoff et al., 2014), many mothers continue to use Spanish language throughout early childhood (Branum-Martin et al., 2014; Luo et al., 2020). Second, in families where Spanish is the native language, Spanish-dominant input supports home language maintenance, and rich experiences in the child's heritage language provide a strong foundation for acquisition of a second language (Hoff et al., 2020; Mancilla-Martinez & Lesaux, 2017; Marchman et al., 2020; Pace et al., 2021). Moreover, variation in early language experiences in the primary home language relates to children's school readiness and longer term academic and social success (Cha & Goldenberg, 2015; Jang & Brutt-Griffler, 2019; Kremin et al., 2019; Moní et al., 2018; Rojas et al., 2019). Finally, despite well-documented benefits of bilingualism, second-generation toddlers from immigrant families experiencing low income remain at risk for heritage language attrition (Armon-Lotem & Meir, 2018; Collins & Toppelberg, 2021; Hiebert & Rojas, 2021). Thus, there is a great need to examine how mothers' and children's language production and conversational discourse change and relate to one another within and across time and to understand how these dimensions contribute to children's home language development.

Study Purpose and Research Questions

The primary aim of this study was to investigate the development of mother and child language production and conversational discourse during play in Spanish-speaking dyads experiencing low income. The study's longitudinal design allowed for examination of group level continuity, individual stability, and correspondence of dyadic patterns of interaction at two points in time. We asked three research questions.

1. Do measures of mother and child Spanish language production relate to one another during interactions at 2.5 and 3.6 and do changes in mother or child language use relate to one another over this period? As a group, we expected children's mean level of Spanish vocabulary and grammar production to increase with age, reflecting developmental discontinuity. Individually, we expected children to show stability in their relative rank over time such that children with larger productive vocabularies relative to others at 2.5 would also display larger vocabularies at 3.6. We likewise expected mothers as a group to increase in their vocabulary diversity and grammatical complexity input to children over time along with individual rank-order stability and substantial within-group variability. We hypothesized that measures of mothers' productive language would relate to measures of child language production within each time point and across time.
2. Do measures of mother and child conversational discourse relate to one another during interactions at 2.5 and 3.6 and do changes in mother or child conversational discourse relate to one another over this period? As with language production, we expected to see developmental discontinuity and individual rank-order stability in children's conversational discourse skills.

Specifically, we hypothesized that children would grow in their rate of asking questions and also show increased reciprocity in responding to mothers' questions during play from 2.5 to 3.6 years. We also expected mothers to show rank-order stability but to demonstrate the opposite pattern (i.e., a decrease or no change) on measures of conversational discourse. Mother–child discourse trajectories were expected to show high correspondence over time.

3. Do measures of mother–child language production and conversational discourse during interactions when children were 2.5 years old predict children's receptive Spanish vocabulary approximately 1 year later? We predicted that initial measures of children's language use and maternal language input (vocabulary and grammar) and conversational discourse skills of mothers and children (the degree of turn-taking and the rate of asking and responding to questions during interactions) would predict children's receptive vocabulary 1 year later.

Method

Participants

Participants were mothers and children originally recruited between November 2009 and February 2011 across the Dallas–Fort Worth metroplex as part of a currently ongoing longitudinal project exploring disparities in self-regulation and school readiness among Mexican–American and African American children from low-income households (Caughy et al., 2013). Children were approximately 2.5 years old at enrollment, and all families met an income status eligibility of below 200% of the federal poverty level. The income-to-needs ratio was less than 0.50 for 3%, between 0.50 and 0.99 for 62%, between 1.00 and 1.49 for 28%, and 1.50 or greater for 7% of the participants in this study.

Inclusionary criteria for this study included mothers being of Mexican origin and foreign born and identifying themselves and children as predominantly Spanish speaking. In addition, dyads needed to have been video recorded during a mother–child interaction when the children were approximately 2.5 and 3.6 years old. Of the 134 mother–child dyads who met these criteria, eight were excluded because 25% or more of the verbal interaction was in English (6% of the otherwise eligible sample), six were excluded because the recorded interaction lasted less than 10 min, and one was excluded due to reporting an incorrect date of birth at initial enrollment. All children were reported to be typically developing by their primary caregiver.

A total of 119 primarily Spanish-speaking mother–child dyads constituted the final sample (54 girls and 65 boys). Children averaged 2.5 years at Visit 1 and 3.6 years at Visit 2 (*SD*s = 0.05 and 0.17, ranges = 2.18–2.60 and 3.23–3.95 years, respectively). At Visit 1, 30 (25.2%) mothers reported less than 8 years of schooling, 35 (29.4%) reported 9–12 years of schooling but without a high school diploma, 35 (29.4%) reported a high school diploma or general educational development certificate, and 19 (15.9%) reported further education after high school. A majority of participants reported two-parent households (92%). The average number of people living in participants' homes (including the mother and child) was 5.37 (*SD* = 1.58, range: 3–12), and the average number of other children (not including the participating child) was reported to be 1.76 (*SD* = 1.08, range: 0–5).

Procedures

Mother–child dyads were video recorded at home during semistructured play interactions at Visits 1 and 2. Interactions were adapted from the procedure used in the NICHD Study of Early Care and Youth Development at these ages (NICHD Early Child Care Research Network, 1999). Visit 1 used three bags: Bag 1 contained *Good Dog, Carl* by Alexandra Day (1996), a wordless picture storybook; Bag 2 contained the Early Learning Centre "First Kitchen," a toy stove with spatula, skillet, oven, toaster, and salt and pepper shakers; and Bag 3 contained the Fisher Price "Discovery Cottage," a playhouse with two figures and a car. Visit 2 used two bags: Bag 1 contained the game "Pizza Guy," for which the finger of a plastic chef can be used to balance a plastic pizza and includes a variety of toppings; Bag 2 contained a laminated picture of a bug made from Duplo blocks to guide the construction of the bug with the small number of blocks provided. Items were selected to be developmentally appropriate and fun for each age. All semistructured play interactions lasted over 10 min, with the interaction at Visit 1 on average being longer (*M* = 14.7 min; *SD* = 0.8) than at Visit 2 (*M* = 12.5 min; *SD* = 0.7). Mothers were instructed to have the child begin with Bag 1 and to share the content of the bags in order. Mothers were told they could divide the time between the bags however they liked. If mothers asked whether they should play with the child, they were informed that the choice was up to them, and they could do whatever felt most comfortable during the activity.

Transcription

Video records of mother–child interactions were orthographically transcribed and coded using The Systematic Analysis of Language Transcripts (SALT 18) software (Miller & Iglesias, 2017) by a team of trained Spanish–English bilingual transcribers who possessed native to near-native oral and literate proficiency in Spanish and English. Transcription accounted for Spanish-influenced English as recommended for bilingual language sample analysis (Rojas & Iglesias, 2019), including the percentage of code switching (words

produced in the non–target language, English), coded at the word level. To determine interrater reliability of word-for-word transcription and coding accuracy, 25% of transcripts were randomly selected. Word-for-word transcription and coding agreement across transcribers demonstrated high agreement (98% and 94%, respectively), calculated by dividing the total number of agreements by the sum of the total number of agreements and disagreements.

Language and Discourse Measures

We calculated two measures of language production and three measures of conversational discourse for children and their mothers from SALT data at both time points, and we administered a standardized test of children's receptive vocabulary at the second visit.

Mother–Child Language Production Measures

Mean length of utterance in words (MLUw) and number of different words (NDW) served as the measures of mothers' and children's language production. MLUw is the ratio of words produced by each speaker to their number of complete and intelligible utterances. It is a gross yet developmentally sensitive measure of morphosyntax for Spanish–English bilingual children (Rojas & Iglesias, 2013) frequently used in cross-linguistic and bilingual research because it accommodates a range of languages irrespective of their degree of morphological inflection (e.g., Gutiérrez-Clellen et al., 2000). As a ratio measure, it does not need to be corrected for different observation times for Visits 1 and 2.

NDW is the sum of all uninflected word roots produced by each speaker. It indicates lexical diversity, which is developmentally sensitive for Spanish–English bilingual children (Rojas & Iglesias, 2013). As a count measure, it can be affected by observation time. Often, NDW is tallied for a fixed period (e.g., the first 10 min), which requires no adjustment when observation times vary. To adjust for our varying observation times, we fitted a regression model to our data ($Y\prime = a + bX$). The model provided predicted scores ($Y\prime$) for each of the observed times (X). To compute adjusted scores—estimates for NDW if the observation time had been 10 min—we subtracted predicted scores from raw scores and then added these deviations to the predicted score for 10 min. Similar to an analysis of covariance, this adjusts for varying observation times. An alternative could be to divide NDW by observation time, but such a rate computation is inappropriate for a variable like NDW whose underlying probabilities vary with duration (unlike number of questions, for example, for which a rate computation is appropriate).

Mother–Child Conversational Discourse Measures

Mean turn length (MTL) in utterances, rate of questions, and rate of responding to questions in mothers and children served as measures of conversational discourse. MTL in utterances measures turn-taking at the utterance level (Fagan et al., 2016) and indexes speaking turns as the mean number of consecutive utterances (nonverbal, complete, incomplete, or unintelligible) produced by mothers and children. Consequently, higher values of MTL in utterances suggest less turn-taking. This measure may matter more to mothers, who decrease opportunities for back-and-forth turn-taking when they string many utterances together. When applied to young children, we would expect lower values and therefore less effect on turn-taking. As a ratio measure, MTL in utterances does not need to be corrected for the different observation times for Visits 1 and 2.

SALT computes counts for questions and responses. Questions posed by children and their mothers included the speaker's intonation prompts and requests for clarification, including utterances that ended with a question including yes/no, open-ended, or other. Responses to questions included responses to the other speaker's intonation prompts, responses to the other speakers' requests for clarifications (responses to utterances that ended with a question including yes/no responses), and responses to questions that were not requests for clarification or yes/no responses. Question counts can be affected by observation times. Consequently, we report (and analyze) rates per 10 min, which produced reasonable values (well within the 0–99 range). Response counts can be affected by the number of questions. Consequently, we report response percentages (number of child responses divided by mother questions and vice versa).

Children's Spanish Receptive Vocabulary Measure

At Visit 2, each child was administered the *Test de Vocabulario en Imágenes Peabody: Adaptación Hispanoamericana* (TVIP; Dunn et al., 1986). The TVIP is a standardized assessment comprising 125 items designed to evaluate the receptive vocabulary development of Spanish-speaking individuals aged 2.6 to 17.1 years. From a choice of four pictures, children are asked to point to the picture corresponding to a name produced by the Spanish-speaking examiner. TVIP standardized scores were available for 109 of the 119 children. TVIP scores were missing for five children, three children were administered the Peabody Picture Vocabulary Test–Revised (PPVT-R; Dunn & Dunn, 1981), one child was inadvertently administered the PPVT-R and TVIP (protocol violation for this study), and one child had a score of 0 thus no standard score.

Data Analysis

As indicated by box-and-whisker plots (Tukey, 1977), distributions of our measures of language production and conversational discourse were often positively skewed. None were negatively skewed and transformations

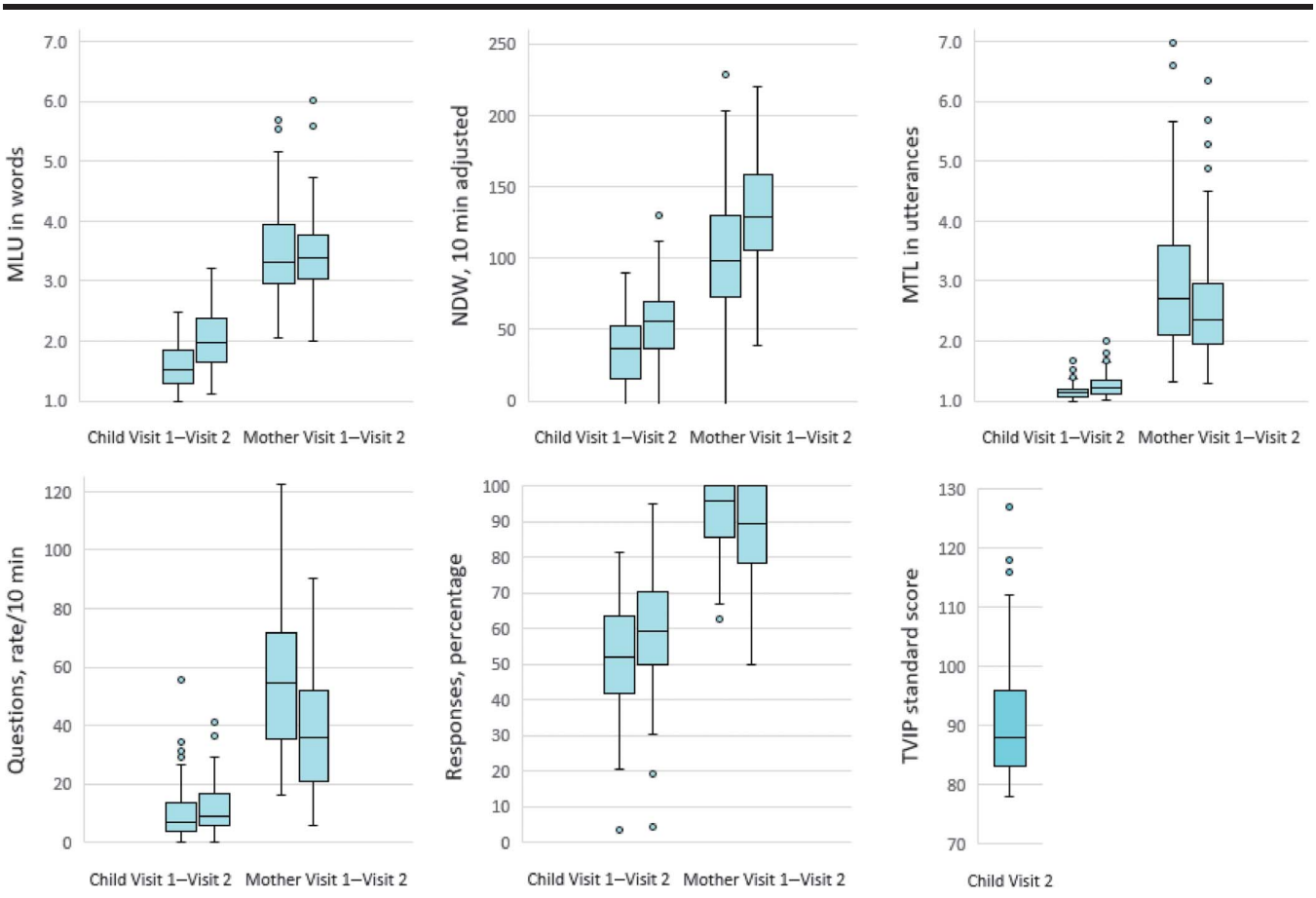
to reduce skew gave essentially similar results; thus, we used standard parametric statistics for analysis (correlations, t tests, analysis of variance, and multiple regression). We characterized effect sizes using Cohen's (1988) categories. He wrote that small, medium, and large effects were indicated by values of .10, .30, and .50 for correlations; values of 0.20, 0.50, and 0.80 for standardized differences between means (detected with t tests and symbolized with d when samples are independent, i.e., d_z when related); values of η2 of .01, .06, and .14 for analysis of variance; and values of .01, .09, and .25 for R^2, respectively. We interpret these values as thresholds for effects of the size specified.

Results

Box-and-whisker plots for our assessments of language production and conversational discourse are shown in Figure 1. Such plots reveal raw score distributions more completely than the usual reporting of simple means and standard deviations. As the figure shows, and as would be expected, mothers scored higher at both visits than their children on MLU in words, NDW, and MTL in utterances (with children's MTL essentially at floor indicating that they rarely produced consecutive utterances). Mothers also scored higher than their children on the rate of asking questions and on the percentage of questions to which they responded. As for the TVIP scores, the distribution was positively skewed with a median of 88 and a mean of 92 (SD = 11).

Boys and girls, and mothers of boys and of girls, differed little on language production or discourse measures at either visit. At Visit 1, all effects were near zero or weak, and only one was statistically significant. At Visit 2, all effects were near zero, and none were statistically significant. The one significant effect was for the

Figure 1. Box-and-whisker plots for key variables. N = 119 except 109 for *Test de Vocabulario en Imágenes Peabody: Adaptación Hispanoamericana* (TVIP; Dunn et al., 1986) and N = 115 and 116 for mother response percentage at Visits 1 and 2, respectively. The box includes scores from the 25th to the 75th percentile. The whiskers indicate the lowest and highest scores that are not extreme. Extreme scores, defined as any 1.5 times the interquartile range below the 25th or above the 75th percentile, are indicated with circles (Tukey, 1977). MLU = mean length of utterance; NDW = number of different words; MTL = mean turn length (higher values indicate less turn-taking). Children's mean ages at Visits 1 and 2 were 2.5 and 3.6 years, respectively.



mothers' MTL in utterances at Visit 1; it was weakly lower for mothers of girls than for those of boys; 2.71 vs. 3.13, $d = 0.39$, $p = .037$ per t test.

Mother–Child Language Production

Over 85% of the total words produced by mothers and children were in Spanish at both visits. Code switching at the word level at Visits 1 and 2, respectively, was 3.1% and 4.1% (SD = 4.8% and 9.5%) for children and 1.5% and 1.6% (SD = 2.6% and 5.1%) for mothers. Our first question concerned the stability and continuity of children's and mothers' language production as children's mean age increased from 2.5 to 3.6 years (see Table 1). Rank-order stability was the rule. Correlations across visits were medium to strong for children's language production (r = .38–.57) and strong for mother's language production (r = .52–.69); $p < .001$ for all. Discontinuity was the rule for children but mixed for mothers. Increases in children's language production and mothers' NDW were strong (d_z = 0.83–0.94, $p < .001$ for all), but mothers' MLUw was essentially stable ($d_z = -0.04$, $p = .67$).

Mothers' and children's language production related to one another (see Table 2). Within and across visits, children's MLUw and NDW tended to be greater when mothers' MLUw was greater; effects were small to just barely moderate (r = .13–.31, p = .001–.16). In contrast, children's MLUw barely related to mothers' NDW ($r = -.03$ to .08, p = .40–.73) and children's NDW related weakly but not significantly to mothers' NDW (r = .10–.18, p = .052–.28). Effects were similar whether within visits or across visits.

Additionally, mothers' and children's Visit 1–Visit 2 trajectories (changes from Visit 1 to Visit 2) were related for MLUw—children's increases or decreases in MLUw were weakly associated with corresponding changes in mothers' MLUw (r = .24, p = .009)—but children's and mothers' changes in NDW were barely associated (r = .05, p = .61).

Mothers' language production was weakly associated with their educational level. Mean MLUw and NDW scores increased with educational level, but effects were weak to moderate (η^2 = .015, .042, .042, and .13, p = .64, .18, .18, and .001, for MLUw Visits 1 and 2 and NDW Visits 1 and 2, respectively, per one-way analysis of variance). A Tukey post hoc test revealed significant differences only for NDW at Visit 2 (means for no high school diploma differed from more than high school, but neither differed from just high school).

Mother–Child Conversational Discourse

Our second question examined how children's and mothers' conversational discourse skills changed and related over time. For discourse, rank-order stability was the rule, as predicted (see Table 1). Except for mother response percentage, correlations across visits varied from barely medium to strong (r = .29–.61, p = .001 or less). Again, and as predicted, and except for child question rate, discontinuity was the rule. Children's MTL in utterances increased moderately whereas mothers' decreased weakly (d_z = 0.59 vs. −0.31, p = .001 or less for both), children's question rate barely increased whereas mothers' decreased strongly (d_z = 0.14 vs. −0.90, p = .13 and < .001), and children's response percentage increased weakly whereas mothers' decreased weakly (d_z = 0.38 vs. −0.31, p = .001 or less).

Table 1. Mean values, stability, and continuity for measures of language production and conversational discourse.

Variable	Mean		Stability		Continuity	
	Visit 1	Visit 2	*r*	*p*	d_z	*p*
Child language production						
MLU in words	1.57	2.01	.38	< .001	0.91	< .001
NDW (10 min adjusted)	36	54	.57	< .001	0.83	< .001
Mother language production						
MLU in words	3.45	3.42	.52	< .001	−0.04	.67
NDW (10 min adjusted)	100	131	.69	< .001	0.94	< .001
Child discourse						
MTL in utterances	1.16	1.26	.50	< .001	0.59	< .001
Question rate (per 10 min)	9.9	11.4	.29	< .001	0.14	.13
Response percentage	52	59	.31	< .001	0.38	< .001
Mother discourse						
MTL in utterances	2.94	2.56	.33	< .001	−0.31	.001
Question rate (per 10 min)	56	38	.61	< .001	−0.90	< .001
Response percentage	92	87	.14	.14	−0.31	.001

Note. MLU = mean length of utterance; NDW = number of different words; MTL = mean turn length; d_z = standardized mean difference. N = 119 except 115 and 116 for mother response percentage at Visits 1 and 2, respectively. Children's mean ages at Visits 1 and 2 were 2.5 and 3.6 years, respectively.

Table 2. Language variable correlations within and between visits, for Visit 1–Visit 2 changes, and with child TVIP at Visit 2.

Type	Mother variable	Child variable	Mother with child at specified visit			Mother change with child change	Child TVIP with	
			Visit 1–1	Visit 1–2	Visit 2–2		Mother variable	Child variable
Production	MLUw	MLUw	.31**	.18	.27**	.24**	.28**	.10
	MLUw	NDW	.22*	.16	.13			
	NDW	MLUw	.08	.08	−.03			
	NDW	NDW	.18*	.13	.10	.05	.40**	.14
Discourse	MTL	MTL	−.36**	−.28**	−.37**	−.14	.06	−.15
	MTL	QuesR	−.50**	−.24**	−.34**			
	MTL	Resp%	−.84*	−.33**	−.78**			
	QuesR	MTL	−.35**	−.26**	−.53**			
	QuesR	QuesR	−.11	−.27**	−.16	.21*	.35**	−.06
	QuesR	Resp%	.07	−.05	−.09			
	Resp%	MTL	−.48**	−.36*	−.60**			
	Resp%	QuesR	−.21*	−.10	−.17**			
	Resp%	Resp%	−.21**	−.15	−.25**	−.12	.04	~.0

Note. MLUw = mean length of utterance in words; NDW = number of different words (10 min adjusted); MTL = mean turn length in utterances (higher values indicate less turn-taking); QuesR = question rate (per 10 min); Resp% = percentage response to question. N = 119 except 109 for *Test de Vocabulario en Imágenes Peabody: Adaptación Hispanoamericana* (TVIP; Dunn et al., 1986) and 115 for mother Resp%. Statistics are Pearson correlations. Children's mean ages at Visits 1 and 2 were 2.5 and 3.6 years, respectively.

*p < .05. **p < .01.

Measures of mothers' and children's conversational discourse were also related (see Table 2). With the exception of the association between mother asking questions and the percentage of the child responding, which was near zero, all other associations between mother and child discourse measures were negative and were somewhat greater within than across visits. Within-visit associations varied from −.11 to −.84 with a median of −.36, whereas Visit 1 to Visit 2 associations varied from −.10 to −.36 with a median of −.27. Thus, generally, higher values for mothers' MTL in utterances, rate of asking questions, and likelihood of responding to questions were associated with lower values for children's MTL in utterances, rate of asking questions, and likelihood of responding to questions.

Additionally, mothers' and children's Visit 1–Visit 2 trajectories (changes from Visit 1 to Visit 2) were related for question rate—children's increases or decreases in question rate were weakly associated with corresponding changes in mother behavior (r = .21, p = .025)—but weakly and inversely related for MTL and the likelihood of responding to questions (r = −.14 and −.12, p = .14 and .20, respectively).

Predicting Children's Spanish Receptive Vocabulary

Our third question examined whether measures of language production and conversational discourse at Visit 1 predicted children's receptive vocabulary at Visit 2 (see Table 2). For mothers, higher MLUw and NDW scores and rate of asking questions at Visit 1 were weakly or moderately associated with children's TVIP scores at Visit 2 (r = .28, .40, and .35; p = .009 or less for all); associations with MTL in utterances and likelihood of responding to questions were near zero (r = .06 and .04, p = .55 and .68). For children, higher NDW scores and lower MTL in utterances at Visit 1 were weakly associated with their TVIP scores at Visit 2 (r = .14 and − .15, p = .16 and .11); associations with MLUw, rate of asking questions, and likelihood of responding to questions were near zero (r = .10, −.065, and ~ 0; p = .31, .50, and 1.0). These correlations hardly changed when controlling for maternal education and income-to-needs ratio.

A multiple regression analysis largely confirmed univariate results. The five Visit 1 mother production and discourse variables in Table 2 accounted for 22.5% of the variance in child Visit 2 TVIP scores (p < .001). Adding the five corresponding child variables accounted for little additional variance (ΔR^2 = 2.4%, p = .86). As would be expected from the zero-order correlations in Table 2, the largest effects for mothers were for the rate of asking questions and NDW (β = .29 and .24, p = .003 and .071), followed by MLU, response percentage, and MTL in utterances (β = .11, −.087, and − .080, p = .38, .37, and .40, respectively). In fact, a model with only mother rate of asking questions and NDW accounted for 20.1% of variance in child TVIP scores (p < .001). The other three mother variables only accounted for an additional 2.4% (p = .38).

Discussion

This longitudinal study examined relations and changes in productive language and conversational discourse during mother–child play in Spanish-speaking dyads in the

United States when children averaged 2.5 and 3.6 years of age. We considered maternal and child productive vocabulary and grammar, turn-taking, and rate of asking and responding to questions, and examined prediction to children's receptive vocabulary development a year later. Our findings highlight the critical importance of productive language and conversational discourse features as children acquire language in a Spanish-speaking sample of Mexican–American mother–child dyads experiencing low income.

Development of Mother–Child Language Production

Our first two research questions were nested, asking how language production and conversational discourse features change and relate between mothers and children over time. Findings largely confirmed our hypotheses and also revealed specificity in mother–child language and discourse. As expected, children showed significant growth in their language production as indexed by greater vocabulary diversity and longer multiword utterances. Moreover, children varied substantially in their skills, and individual differences were remarkably stable across age. These data align with the large body of existing evidence from monolingual English learners on patterns of discontinuity and stability in child language: Group-level means increase over time even as individuals remain consistent in their relative order (Bornstein et al., 2017, 1999; Olsen-Fulero, 1982).

Mothers, in contrast, showed no significant change in grammatical complexity (MLUw) across visits, although their lexical diversity (NDW) increased. Thus, as children's overall productive language skills increased over time, mothers *as a group* similarly adapted their lexical diversity but their grammatical production remained essentially stable. As is often the case, however, group means tend to obscure individual differences. In the current sample, we observed substantial heterogeneity in mothers' vocabulary and grammatical production over time with 54 mothers showing an increase in both MLUw and NDW, 43 showing an increase in NDW but not MLUw, four showing an increase in MLUw but not NDW, and 18 showing no increase in either of the two visits. Understanding how each of these profiles is related to children's school age language outcomes in Spanish and English is an important topic for future research.

At first glance, cross-age continuity in Mexican mothers' grammatical input within this sample may appear to contradict evidence found in predominantly European American samples (Huttenlocher et al., 2007; Snow, 1972) that language spoken to children increases in complexity as children get older. However, variation in parents' goals for language socialization and accommodation of the communicative needs of young children across cultures may help explain this finding (Ochs & Schieffelin, 1984; Tamis-LeMonda et al., 2020). Prior research has documented that mothers of Mexican descent place high value on children's vocabulary learning and report engaging in explicit instruction by labeling objects in the child's environment or introducing new words during daily activities (Cycyk & Hammer, 2020)—a practice that may partially explain mothers' growth in NDW but may not necessarily lead to the use of longer or more complex grammatical structures. Other work on the types of language that Mexican–American parents use has documented that children from infancy to school age hear a relatively large proportion of regulatory language that directs or prohibits children's actions and behaviors (Bhimji, 2005; Kuchirko et al., 2019). Regulatory talk, therefore, serves important social and cultural functions related to the values of respect and comportment but is often characterized by short, repetitive phrases with low word counts. An alternative explanation may be that mothers in our sample were *already* using complex grammar during interactions with toddlers at 2.5, which served to scaffold children's language learning over the next year and, thus, showed nonsignificant increases during this window. Finally, Mexican mothers may modulate complexity of input to children via myriad other features such as decontextualized talk and narrative elaboration (Melzi et al., 2011; Thierry & Sparks, 2019), which may not be captured in MLUw. Ultimately, this finding speaks to the importance of measuring grammatical complexity and vocabulary input to children in diverse samples across a range of developmental stages and different activity settings and communicative contexts.

As this and other research has demonstrated, child–adult language interaction is a transactional process characterized by dynamic adaptation of both interlocutors (Bassano & Van Geert, 2018; Bornstein et al., 2020; Cox & van Dijk, 2013). Capturing the complexity of mothers' multidimensional language input and how it shapes and interacts with children's own language use during the third and fourth years of life may require evaluation of mothers and children jointly over time (Dale & Spivey, 2006). With regard to correspondence between the dyads, we expected measures of language production for mothers and children to relate within and across visits. Findings provide a granular lens on the role of maternal language input, demonstrating the continuing importance of grammatical complexity in addition to lexical diversity at this stage of development. Specifically, mothers whose productive language was characterized by larger MLUw also had children whose productive language included more diverse vocabularies and greater grammatical complexity—both concurrently and over time. Notably, change in mothers' and children's grammatical complexity but not vocabulary diversity was coupled over time.

Regarding maternal education, mothers' productive language input to children did not vary by educational

attainment except for lexical diversity at Visit 2, where a significant difference was identified between mothers without high school diplomas and mothers who continued education after high school. The relatively limited impact of maternal education on language production in this sample highlights the importance of looking within socioeconomic strata to identify variability at the individual and family levels.

Together, results align with evidence from monolingual English learners showing that the complexity of grammatical structure in early exposure may be of equal or even greater importance to children's language acquisition than vocabulary exposure alone (Cristofaro & Tamis-LeMonda, 2012; Huttenlocher et al., 2007). Insofar as correspondences define mutual influences between mother and child, findings move beyond each individual's contributions to characterize dyadic patterns of attunement in language production described in other populations (Casla et al., 2021; Majorano & Lavelli, 2014). Moreover, these findings have practical implications. For example, supporting parents' increased use of new syntactic forms during conversations may be an important way to bolster child language development beyond exposing children to new and sophisticated vocabulary words (Reynolds et al., 2019).

Development of Mother–Child Conversational Discourse

In terms of mother–child discourse, we hypothesized that as children became older and more verbally conversational, their MTL and rate of asking questions would increase and that mothers would adapt by adjusting their speaking turns and rate of questioning. As expected, children and their mothers showed significant discontinuity in discourse features over time as children transitioned from toddlerhood to preschool age. Here, the give-and-take of dyadic conversational exchange was reflected in mothers' decreased turn length, which corresponded with an increase in children's turn length. Similarly, children's rate of questions increased whereas mothers' decreased over the year. Even though mothers were less likely to ask questions as their children got older, it is possible that the complexity and types of questions asked by mothers shifted to more open-ended and inferential questions (e.g., "why did that fall?") relative to referential questions (e.g., "what's this?") as found previously in mothers of children from 3 to 5 years, including Spanish-speaking dyads (Escobar et al., 2017; Kuchirko et al., 2015). This possibility cannot be confirmed as question types were not coded in this study, although it is an important direction for future research.

Measures of discourse, like measures of productive language, also showed remarkable rank-order stability for measures of mothers' and children's MTL and children's questions. Findings likewise supported the hypothesis that children and mothers would demonstrate continuity and stability in responding to each other's questions. Mothers were highly responsive to children and answered a substantial majority of children's questions, a pattern that is consistent with prior reports of high maternal warmth across Latina samples (Halgunseth, 2019; Serrano-Villar et al., 2017). During both interactions, children were also likely to respond to mothers' questions, although not as consistently as their mothers responded to them, which may reflect the quality of affiliative obedience described in Mexican–American families (Stein & Polo, 2014).

We also found high correspondence in mother–child discourse trajectories, in that changes in children's rate of asking questions were associated with a similar change in mothers, and children's turn-taking and likelihood of responding to questions were inversely related to mothers' overdevelopmental time. These results indicate that children play an active role in shaping conversations with caregivers and align with previous evidence from Mexican–American dyads showing that mothers exhibiting high calm authority and children exhibiting high affiliative obedience together demonstrated balanced interactions (Tamis-LeMonda et al., 2020). Findings support the need to move beyond input alone to consider how mothers and children adapt their discourse behaviors in real time to meet new conversational demands and also how these adaptations relate to meaningful change over developmental time. In fact, interventions that bolster conversational turn-taking by encouraging decontextualized talk may lead to more complex verbal exchanges between children and caregivers (Leech & Rowe, 2021). Providing culturally relevant contexts for verbal exchanges like reminiscing or story creation could be particularly powerful in supporting advanced conversational discourse (Leyva et al., 2021; Quiroz et al., 2010).

As children transition from toddlerhood to early childhood, they are well on their way to completing the critical shift from primarily preverbal to increasingly verbal modes of communication. Mothers' consistent productive language use and decrease in turn length and rate of asking questions over time may reflect shifting balance within the dyad as mothers make space for children's contributions as children become more skilled communication partners. This interpretation is congruent with previous evidence from monolingual English-speaking dyads showing that mothers' vocabulary diversity and conversational support were collinear predictors, explaining the same amount of variance in children's language comprehension at age 5 years (Weizman & Snow, 2001). Although this pattern has been described previously in many middle-income European American samples, this study is among the first to document this pragmatic shift in communication between Mexican-origin mothers and their toddlers experiencing low income. By gradually ceding the floor while still scaffolding discourse with contingent responsiveness, mothers provide opportunities for children to take the lead—a skill that is central to participation during preschool and kindergarten (Leech & Rowe, 2021;

Lindsay et al., 2019) and linked with later academic outcomes in dual language learners (Restrepo et al., 2021).

Predicting Children's Spanish Receptive Vocabulary

Our third research question asked whether aspects of mother and child language production and conversational discourse in toddlerhood would predict Spanish receptive vocabulary outcomes at age 3.6 years. Correlations revealed that three maternal variables (i.e., MLUw and NDW scores and rate of asking questions) were significantly associated with children's receptive vocabulary development a year later. Regression analyses confirmed this finding and added specificity to these results, showing that mothers' rate of asking questions and use of diverse vocabulary words accounted for the largest proportion of variance in children's receptive vocabulary scores. This finding bolsters evidence from European American samples that it is not only *amount* of talk that fosters children's word knowledge but also the *content* of talk including lexical richness, syntactic complexity, and adults' efforts to engage children through questioning that is critical to language outcomes for children from diverse linguistic backgrounds (Hoff, 2006; Masek et al., 2021; Montag et al., 2018).

It is noteworthy that children's vocabulary development was best explained by a combination of language production and discourse features, underscoring the value or considering how multiple factors may jointly contribute to language learning during early verbal exchanges. Providing ample opportunities for children to respond to questions, therefore, may be more impactful than focusing solely on increasing the quantity of linguistic input as a mechanism for driving child language outcomes (Leech et al., 2018). Such findings can guide the development and implementation of two-generation, parent-and-child training programs. Indeed, a growing body of evidence focusing on Spanish-speaking families in the United States has shown that dyadic features of communication exchanges such as balancing parent–child conversational turns may be ideal targets for home-based programs aimed at fostering children's language learning trajectories (Cycyk & Huerta, 2020; Cycyk et al., 2020; Larson et al., 2020; Núñez & Tejero Hughes, 2021).

Limitations and Future Directions

A number of limitations inspire questions for future studies. Results presented in this paper are from the first two data collection points (2009–2011 and 2011–2013) in an ongoing longitudinal study that currently includes six additional data collection points. The availability of this expanding data set allows future work to examine how language and discourse in Spanish between mothers and young children may be associated with subsequent bilingualism and later academic achievement. New studies with this sample would benefit from a family-systems approach that evaluates the role of partners, fathers, siblings, or other key caregivers such as grandparents living in the home. Finally, there is a need for more work that investigates interactions between family language use and environmental variables such as changes in income and sources of stress and support.

Other limitations relate to the need for replication and generalization of these findings. Although this study examined specific measures of language production (MLUw and NDW) and conversational discourse features (MTL, asking and responding to questions) from a longitudinal perspective, the evidence base should be extended to other aspects of language production and more nuanced metrics of discourse. Specifically, future work should add more fine-grained language production measures that may yield new insights, such as subordination index, proportion of grammatical utterances, and moving-average type–token ratio. In addition, the complexity and function of questions caregivers ask (e.g., yes/no, open vs. close-ended, or wh-questions) and the accuracy of children's responses to a variety of question types during parent–child play should be examined. Longitudinal work is also needed on early language use in parent–child dyads from diverse racial and ethnic backgrounds, including Spanish-speaking dyads from origins other than Mexico, and parent–child dyads not experiencing low income and low maternal education. Furthermore, there is a need to investigate how early mother–child language use is continually affected by changes in sociocultural factors including impacts of the COVID-19 pandemic.

Conclusions

The formative years between toddlerhood and preschool are critical for Spanish-speaking children's language and learning trajectories. Our findings extend previous work based largely on monolingual English-speaking children to evaluate the changes and impact of language production and conversational discourse during an important developmental period for Mexican–American children reared in families experiencing low income. Results align with existing evidence that individual variation in language use is largely stable and highlight the importance of supporting a strong home language foundation within the first 3 years. Our study reveals that communication between Mexican immigrant mothers and their toddlers sets the stage for later language development by supporting not only children's grammar and vocabulary but also their conversational discourse skills. Critically, this work emphasizes children's active role in communicative interactions as a key path to language learning. Opportunities to answer questions and practice language skills during

meaningful exchanges are central to children's early Spanish language development.

Author Contributions

Amy Pace: Conceptualization (Lead), Data curation (Equal), Formal analysis (Supporting), Methodology (Equal), Writing – original draft (Lead). **Raúl Rojas:** Conceptualization (Equal), Data curation (Equal), Formal analysis (Supporting), Methodology (Equal), Writing – original draft (Equal). **Roger Bakeman:** Formal analysis (Lead), Writing – original draft (Supporting). **Lauren B. Adamson:** Conceptualization (Supporting), Writing – original draft (Supporting). **Catherine S. Tamis-LeMonda:** Conceptualization (Supporting), Writing – original draft (Supporting). **Margaret O'Brien Caughy:** Conceptualization (Supporting), Funding acquisition (Lead), Investigation (Lead), Project administration (Lead), Writing – original draft (Supporting). **Margaret Tresch Owen:** Conceptualization (Supporting), Funding acquisition (Lead), Investigation (Supporting), Project administration (Supporting), Writing – original draft (Supporting). **Katharine Suma:** Methodology (Supporting), Project administration (Supporting), Writing – original draft (Supporting).

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References

Adamson, L. B., Bakeman, R., Deckner, D. F., & Nelson, P. B. (2014). From interactions to conversations: The development of joint engagement during early childhood. *Child Development, 85*(3), 941–955. https://doi.org/10.1111/cdev.12189

Adamson, L. B., Caughy, M. O., Bakeman, R., Rojas, R., Owen, M. T., Tamis-LeMonda, C. S., Pacheco, D., Pace, A., & Suma, K. (2021). The quality of mother–toddler communication predicts language and early literacy in Mexican-American children from low-income households. *Early Childhood Research Quarterly, 56*(3), 167–179. https://doi.org/10.1016/j.ecresq.2021.03.006

Armon-Lotem, S., & Meir, N. (2018). The nature of exposure and input in early bilingualism. In A. De Houwer & L. Ortega (Eds.), *The Cambridge handbook of bilingualism* (pp. 193–212). Cambridge University Press. https://doi.org/10.1017/9781316831922.011

Bassano, D., & Van Geert, P. (2018). New perspectives on input-output dynamics. In M. Hickman, E. Veneziano, & H. Jisa (Eds.), *Sources of variation in first language acquisition: Languages, contexts, and learners* (pp. 201–218). John Benjamins Publishers. https://doi.org/10.1075/tilar.22.11bas

Bhimji, F. (2005). Language socialization with directives in two Mexican immigrant families in South Central Los Angeles. In A. C. Zentella (Ed.), *Building on strength: Language and literacy in Latino families and communities* (pp. 60–76). Teachers College Press.

Bornstein, M. H., Putnick, D. L., & Esposito, G. (2017). Continuity and stability in development. *Child Development Perspectives, 11*(2), 113–119. https://doi.org/10.1111/cdep.12221

Bornstein, M. H., Putnick, D. L., Hahn, C. S., Tamis-LeMonda, C. S., & Esposito, G. (2020). Stabilities of infant behaviors and maternal responses to them. *Infancy, 25*(3), 226–245. https://doi.org/10.1111/infa.12326

Bornstein, M. H., Tamis-LeMonda, C. S., & Haynes, O. M. (1999). First words in the second year: Continuity, stability, and models of concurrent and predictive correspondence in vocabulary and verbal responsiveness across age and context. *Infant Behavior and Development, 22*(1), 65–85. https://doi.org/10.1016/S0163-6383(99)80006-X

Boyce, L. K., Gillam, S. L., Innocenti, M. S., Cook, G. A., & Ortiz, E. (2013). An examination of language input and vocabulary development of young Latino dual language learners living in poverty. *First Language, 33*(6), 572–593. https://eric.ed.gov/?id=EJ1079118, https://doi.org/10.1177/0142723713503145

Branum-Martin, L., Mehta, P. D., Carlson, C. D., Francis, D. J., & Goldenberg, C. (2014). The nature of Spanish versus English language use at home. *Journal of Educational Psychology, 106*(1), 181–199. https://doi.org/10.1037/a0033931

Bridges, M., Cohen, S. R., McGuire, L. W., Yamada, H., Fuller, B., Mireles, L., & Scott, L. (2012). Bien educado: Measuring the social behaviors of Mexican American children. *Early Childhood Research Quarterly, 27*(3), 555–567. https://doi.org/10.1016/j.ecresq.2012.01.005

Cabrera, N. J., Karberg, E., Malin, J. L., & Aldoney, D. (2017). The magic of play: Low-income mothers' and fathers' playfulness and children's emotion regulation and vocabulary skills. *Infant Mental Health Journal, 38*(6), 757–771. https://doi.org/10.1002/imhj.21682

Callanan, M., Solis, G., Castañeda, C., & Jipson, J. (2020). Children's question-asking across cultural communities. In L. Butler, S. Ronfard, & K. Corriveau (Eds.), *The questioning child: Insights from psychology and education* (pp. 73–88). Cambridge University Press.

Calzada, E. J., Fernandez, Y., & Cortes, D. E. (2010). Incorporating the cultural value of respeto into a framework of Latino parenting. *Cultural Diversity and Ethnic Minority Psychology, 16*(1), 77–86. https://doi.org/10.1037/a0016071

Calzada, E. J., Tamis-LeMonda, C. S., & Yoshikawa, H. (2013). Familismo in Mexican and Dominican families from low-income, urban communities. *Journal of Family Issues, 34*(12), 1696–1724. https://doi.org/10.1177/0192513X12460218

Casillas, M., Bobb, S. C., & Clark, E. V. (2016). Turn-taking, timing, and planning in early language acquisition. *Journal of Child Language, 43*(6), 1310–1337. https://doi.org.10.1017/S0305000915000689

Casillas, M., & Frank, M. C. (2017). The development of children's ability to track and predict turn structure in conversation. *Journal of Memory and Language, 92,* 234–253. https://doi.org/10.1016/j.jml.2016.06.013

Casla, M., Méndez-Cabezas, C., Montero, I., Murillo, E., Nieva, S., & Rodríguez, J. (2021). Spontaneous verbal repetition in toddler-adult conversations: A longitudinal study with Spanish-speaking two- year-olds. *Journal of Child Language,* 1–36. https://doi.org/10/1017/S030500092100015

Caughy, M. O., Mills, B. A., Owen, M. T., & Hurst, J. R. (2013). Emergent self-regulation skills among very young ethnic minority children: A confirmatory factor model. *Journal*

of Experimental Child Psychology, 116(4), 839–855. https://doi.org/10.1016/j.jecp.2013.07.017

Cha, K., & Goldenberg, C. (2015). The complex relationship between bilingual home language input and kindergarten children's Spanish and English oral proficiencies. *Journal of Educational Psychology, 107*(4), 935–953. https://doi.org/10.1037/edu0000030

Choi, B., Nelson, C. A., Rowe, M. L., & Tager-Flusberg, H. (2020). Reciprocal influences between parent input and child language skills in dyads involving high- and low-risk infants for autism spectrum disorder. *Autism Research, 13*(7), 1168–1183. https://doi.org/10/1002/aur.2270

Clark, E. V. (2014). Pragmatics in acquisition. *Journal of Child Language, 41*(S1), 105–116. https://doi.org/10/1017/S0305000914000117

Clark, E. V. (2018). Conversation and language acquisition: A pragmatic approach. *Language Learning and Development, 14*(3), 170–185. https://doi.org/10.1080/15475441,2017.1340843

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Erlbaum.

Collins, B. A., & Toppelberg, C. O. (2021). The role of socioeconomic and sociocultural predictors of Spanish and English proficiencies of young Latino children of immigrants. *Journal of Child Language, 48*(1), 129–156. https://doi.org/10.1017/S0305000920000203

Cox, R. F., & van Dijk, M. (2013). Microdevelopment in parent-child conversations: From global changes to flexibility. *Ecological Psychology, 25*(3), 304–315. https://doi.org/10.1080/10407413.2013.810095

Cristofaro, T. N., & Tamis-LeMonda, C. S. (2012). Mother–child conversations at 36 months and at pre-kindergarten: Relations to children's school readiness. *Journal of Early Childhood Literacy, 12*(1), 68–97. https://doi.org/10.1177/1468798411416879

Cycyk, L. M., & Hammer, C. S. (2020). Beliefs, values, and practices of Mexican immigrant families towards language and learning in toddlerhood: Setting the foundation for early childhood education. *Early Childhood Research Quarterly, 52,* 25–37. https://doi.org/10.1016/j.ecresq.2018.09.009

Cycyk, L. M., & Huerta, L. (2020). Exploring the cultural validity of parent-implemented naturalistic language intervention procedures for families from Spanish-speaking Latinx homes. *American Journal of Speech-Language Pathology, 29*(3), 1241–1259. https://doi.org/10.1044/2020_AJSLP-19-00038

Cycyk, L. M., Moore, H. W., De Anda, S., Huerta, L., Méndez, S., Patton, C., & Bourret, C. (2020). Adaptation of a caregiver-implemented naturalistic communication intervention for Spanish-speaking families of Mexican immigrant descent: A promising start. *American Journal of Speech-Language Pathology, 29*(3), 1260–1282. https://doi.org/10.1044/2020_AJSLP-19-00142

Dale, R., & Spivey, M. J. (2006). Unraveling the dyad: Using recurrence analysis to explore patterns of syntactic coordination between children and caregivers in conversation. *Language Learning, 56*(3), 391–430. https://doi.org/10.1111/j.1467-9922.2006.00372.x

Davison, M. D., Hammer, C., & Lawrence, F. R. (2011). Associations between preschool language and first grade reading outcomes in bilingual children. *Journal of Communication Disorders, 44*(4), 444–458. https://doi.org/10.1016/jcomdis.2011.02.003

Day, A. (1996). *Good dog, Carl*. Little Simon.

Dunn, L. M., & Dunn, L. M. (1981). *Peabody Picture Vocabulary Test–Revised (PPVT-R). Manual for forms L and M*. AGS.

Dunn, L. M., Padilla, E., Lugo, D., & Dunn, L. M. (1986). *Test de Vocabulario en Imágenes Peabody: Adaptación Hispanoamericana (TVIP)*. AGS.

Escobar, K., Melzi, G., & Tamis-LeMonda, C. S. (2017). Mother and child narrative elaborations during booksharing in low-income Mexican-American dyads. *Infant and Child Development, 26*(6), e2029. https://doi.org/10.1002/icd.2029

Fagan, J., Iglesias, A., & Kaufman, R. (2016). Associations among Head Start fathers' involvement with their preschoolers and child language skills. *Early Child Development and Care, 186*(8), 1342–1356. https://doi.org/10.1080/03004430.2015.1094654

Fasoli, A. D. (2014). To play or not to play: Diverse motives for Latino and Euro-American parent-child play in a Children's museum. *Infant and Child Development, 23*(6), 605–621. https://doi.org/10.1002/icd.1867

Ferjan Ramírez, N., Lytle, S. R., & Kuhl, P. K. (2020). Parent coaching increases conversational turns and advances infant language development. *Proceedings of the National Academy of Sciences, 117*(7), 3484–3491. https://doi.org/10.1073/pnas.1921653117

Fletcher, K. K., Cates, C. B., Mendelsohn, A. L., & Tamis-LeMonda, C. S. (2020). Play in Mexican-American mothers and toddlers is frequent, multimodal, and rich in symbolic content. *Infancy, 25*(5), 535–551. https://doi.org/10.1111/infa.12344

Ganek, H., Smyth, R., Nixon, S., & Eriks-Brophy, A. (2018). Using the Language ENvironment Analysis (LENA) system to investigate cultural differences in conversational turn count. *Journal of Speech, Language, and Hearing Research, 61*(9), 2246–2258. https://doi.org/10.1044/2018_JSLHR-L-17-0370

Gutiérrez-Clellen, V. F., Restrepo, M. A., Bedore, L., Peña, E., & Anderson, R. (2000). Language sample analysis in Spanish-speaking children. *Language, Speech, and Hearing Services in Schools, 31*(1), 88–98. https://doi.org/10.1044/0161-1461.3101.88

Halgunseth, L. C. (2019). Latino and Latin American parenting. In M. H. Bornstein (Ed.), *Handbook of parenting: Volume 4: Social conditions and applied parenting* (3rd ed., pp. 24–56). Routledge.

Hammer, C. S., Lawrence, F. R., & Miccio, A. W. (2008). Exposure to English before and after entry into head start: Bilingual children's receptive language growth in Spanish and English. *International Journal of Bilingual Education and Bilingualism, 11*(1), 30–56. https://doi.org/10.2167/beb376.0

Hiebert, L., & Rojas, R. (2021). A longitudinal study of Spanish language growth and loss in young Spanish–English bilingual children. *Journal of Communication Disorders, 92,* 106110. https://doi.org/10.1016/j.jcomdis.2021.106110

Hoff, E. (2006). How social contexts support and shape language development. *Developmental Review, 26*(1), 55–88. https://doi.org/10.1016/j.dr.2005.11.002

Hoff, E. (2013). Interpreting the early language trajectories of children from low-SES and language minority homes: Implications for closing achievement gaps. *Developmental Psychology, 49*(1), 4–14. https://doi.org/10.1037/a0027238

Hoff, E., Core, C., & Shanks, K. F. (2020). The quality of child-directed speech depends on the speaker's language proficiency. *Journal of Child Language, 47*(1), 132–145. https://doi.org/10.1017/S030500091900028X

Hoff, E., Giguere, D., Quinn, J., & Lauro, J. (2018). The development of English and Spanish among children in immigrant families in the United States. *Pensamiento Educativo, Revista De Investigación Latinoamericana (PEL), 55*(2), 1–19. https://doi.org/10.7764/PEL.55.2.2018.1

Hoff, E., Welsh, S., Place, S., & Ribot, K. (2014). Properties of dual language input that shape bilingual development and properties of environments that shape dual language input. In T. Grüter & J. Paradis (Eds.), *Input and experience in bilingual development* (Vol. 13, pp. 119–140). John Benjamins. https://doi.org/10.1075/tilar.13.07hof

Huttenlocher, J., Vasilyeva, M., Waterfall, H. R., Vevea, J. L., & Hedges, L. V. (2007). The varieties of speech to young children. *Developmental Psychology, 43*(5), 1062–1083. https://doi.org/10.1037/0012-1649.43.5.1062

Jackson, C. W., Schatschneider, C., & Leacox, L. (2014). Longitudinal analysis of receptive vocabulary growth in young Spanish English-speaking children from migrant families. *Language, Speech, and Hearing Services in Schools, 45*(1), 40–51. https://doi.org/10.1044/2013_LSHSS-12-0104

Jang, E., & Brutt-Griffler, J. (2019). Language as a bridge to higher education: A large-scale empirical study of heritage language proficiency on language minority students' academic success. *Journal of Multilingual and Multicultural Development, 40*(4), 322–337. https://doi.org/10.1080/01434632.2018.1518451

Kremin, L. V., Arredondo, M. M., Hsu, L. S. J., Satterfield, T., & Kovelman, I. (2019). The effects of Spanish heritage language literacy on English reading for Spanish–English bilingual children in the US. *International Journal of Bilingual Education and Bilingualism, 22*(2), 192–206. https://doi.org/10.1080/13670050.2016.1239692

Kuchirko, Y. A., Schatz, J. L., Fletcher, K. F., & Tamis-LeMonda, C. S. (2019). Do, say, learn: The functions of mothers' speech to infants. *Journal of Child Language, 47*(1), 64–84. https://doi.org/10.1017/S0305000919000308

Kuchirko, Y. A., Tamis-Lemonda, C. S., Luo, R., & Liang, E. (2015). 'What happened next?': Developmental changes in mothers' questions to children. *Journal of Early Childhood Literacy, 16*(4), 498–521. https://doi.org/10.1177/1468798415598822

Landry, S. H., Smith, K. E., & Swank, P. R. (2006). Responsive parenting: Establishing early foundations for social, communication, and independent problem-solving skills. *Developmental Psychology, 42*(4), 627–642. https://doi.org/10.1037/0012-1649.42.4.627

Larson, A. L., Cycyk, L. M., Carta, J. J., Hammer, C. S., Baralt, M., Uchikoshi, Y., An, Z. G., & Wood, C. (2020). A systematic review of language-focused interventions for young children from culturally and linguistically diverse backgrounds. *Early Childhood Research Quarterly, 50,* 157–178. https://doi.org/10.1016/j.ecresq.2019.06.001

Leech, K. A., & Rowe, M. L. (2021). An intervention to increase conversational turns between parents and young children. *Journal of Child Language, 48*(2), 399–412. https://doi.org/10.1017/S0305000920000252

Leech, K. A., Wei, R., Harring, J. R., & Rowe, M. L. (2018). A brief parent-focused intervention to improve preschoolers' conversational skills and school readiness. *Developmental Psychology, 54*(1), 15–28. https://doi.org/10.1037/dev0000411

Levinson, S. C. (2016). Turn-taking in human communication–origins and implications for language processing. *Trends in Cognitive Sciences, 20*(1), 6–14. https://doi.10.1016/j.tics.2015.10.010

Leyva, D., Catalán Molina, D., Suárez, C., Tamis-LeMonda, C. S., & Yoshikawa, H. (2021). Mother–child reminiscing and first-graders' emotion competence in a low-income and ethnically diverse sample. *Journal of Cognition and Development, 22*(4), 501–522. https://doi.org/10.1080/15248372.2021.1908293

Lindsay, L., Gambi, C., & Rabagliati, H. (2019). Preschoolers optimize the timing of their conversational turns through flexible coordination of language comprehension and production. *Psychological Science, 30*(4), 504–515. https://doi.org/10.1177/0956797618822802

Luo, R., Escobar, K., & Tamis-LeMonda, C. S. (2020). Heterogeneity in the trajectories of US Latine mothers' dual-language input from infancy to preschool. *First Language, 40*(3), 275–299. https://doi.org/10.1177/0142723720915401

Luo, R., & Tamis-LeMonda, C. S. (2017). Reciprocity between maternal questions and child contributions during book-sharing. *Early Childhood Research Quarterly, 38,* 71–83. https://doi.org/10.1016/j.ecresq.2016.08.003

Majorano, M., & Lavelli, M. (2014). Maternal input to children with specific language impairment during shared book reading: Is mothers' language in tune with their children's production. *International Journal of Language & Communication Disorders, 49*(2), 204–214. https://doi.org/10.1111/1460-6984.12062

Mancilla-Martinez, J., & Lesaux, N. K. (2017). Early indicators of later English reading comprehension outcomes among children from Spanish-speaking homes. *Scientific Studies of Reading, 21*(5), 428–448. https://doi.org/10.1080/10888438.2017.1320402

Marchman, V. A., Bermúdez, V. N., Bang, J. Y., & Fernald, A. (2020). Off to a good start: Early Spanish-language processing efficiency supports Spanish-and English-language outcomes at 4½ years in sequential bilinguals. *Developmental Science, 23*(6), e12973. https://doi.org/10.1111/desc.12973

Martoccio, T. L., Brophy-Herb, H. E., & Onaga, E. E. (2014). Road to readiness. *Infants & Young Children, 27*(3), 193–206. https://doi.org/10.1097/IYC.0000000000000014

Masek, L. R., Paterson, S. J., Golinkoff, R. M., Bakeman, R., Adamson, L. B., Owen, M. T., Pace, A., & Hirsh-Pasek, K. (2021). Beyond talk: Contributions of quantity and quality of communication to language success across socioeconomic strata. *Infancy, 26*(1), 123–147. https://doi.org/10.1111/infa.12378

Melzi, G., Schick, A. R., & Kennedy, J. L. (2011). Narrative elaboration and participation: Two dimensions of maternal elicitation style. *Child Development, 82*(4), 1282–1296. https://doi.org/10.1111/j.1467-8264.2011.01600.x

Miller, J. F., & Iglesias, A. (2017). *Systematic Analysis of Language Transcripts (SALT) Research Version 18* [Computer software]. SALT Software, LLC.

Moní, Y., Mealy, M., Del Ama, J. C., & Conway, J. M. (2018). Bidimensional acculturation and academic success among Latina/o college students. *Journal of Latina/o Psychology, 6*(3), 220–234. https://doi.org/10.1037/lat0000098

Montag, J. L., Jones, M. N., & Smith, L. B. (2018). Quantity and diversity: Simulating early word learning environments. *Cognitive Science, 42,* 375–412. https://doi.org/10.1111/cogs.12592

Nelson, K. (2009). *Young minds in social worlds: Experience, meaning, and memory*. Harvard University Press.

NICHD Early Child Care Research Network. (1999). Child care and mother–child interaction in the first three years of life. *Developmental Psychology, 35*(6), 1399–1413. https://doi.org/10.1037/0012-1649.35.6.1399

Niederhoffer, K. G., & Pennebaker, J. W. (2002). Linguistic style matching in social interaction. *Journal of Language and Social Psychology, 21*(4), 337–360. https://doi.org/10.1177/026192702237953

Núñez, G., & Tejero Hughes, M. (2021). The experiences of a home-based language program with Mexican immigrant mothers. *Journal of Latinos and Education*. https://doi.org/10.1080/15348431.2021.1888294

Ochs, E., & Schieffelin, B. (1984). Language acquisition and socialization. In R. Shweder & R. Levine (Eds.), *Culture theory: Essays on mind, self, and emotion* (pp. 276–320). Cambridge University Press.

Olsen-Fulero, L. (1982). Style and stability in mother conversational behaviour: A study of individual differences. *Journal of Child Language, 9*(3), 543–564. https://doi.org/10.1017/S0305000900004906

Pace, A., Levine, D., Morini, G., Golinkoff, R., & Hirsh-Pasek, K. (2015). Language acquisition: From words to world and back again. In L. Balter & C. S. Tamis-LeMonda (Eds.),

Child psychology: A Handbook of contemporary issues (3rd ed., pp. 59–94). Psychology Press.

Pace, A., Luo, R., Levine, D., Iglesias, A., de Villiers, J., Golinkoff, R. M., Wilson, M. S., & Hirsh-Pasek, K. (2021). Within and across language predictors of word learning processes in dual language learners. *Child Development, 92*(1), 35–53. https://doi.org/10.1111/cdev.13418

Palacios, N., Kibler, A. K., Baird, A. S., Parr, A., & Bergey, R. (2015). An examination of language practices during mother–child play activities among Mexican immigrant families. *International Multilingual Research Journal, 9*(3), 197–219. https://doi.org/10.1080/19313152.2015.1048543

Paradis, J., & Jia, R. (2017). Bilingual children's long-term outcomes in English as a second language: Language environment factors shape individual differences in catching up with monolinguals. *Developmental Science, 20*(1), e12433. https://doi.org/10.1111/desc.12433

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*(4), 379–399. https://doi.org/10.1177/1367006910370919

Restrepo, M. A., Mesa, C., & Yeomans-Maldonado, G. (2021). English and Spanish predictors of grade 3 reading comprehension in bilingual children. *Journal of Speech, Language, and Hearing Research, 64*(3), 889–908. https://doi.org/10.1044/2020_JSLHR-20-00379

Reynolds, E., Vernon-Feagans, L., Bratsch-Hines, M., Baker, C. E., & The Family Life Project Key Investigators. (2019). Mothers' and fathers' language input from 6 to 36 months in rural two-parent-families: Relations to children's kindergarten achievement. *Early Childhood Research Quarterly, 47,* 385–395. https://doi.org/10.1016/j.ecresq.2018.09.002

Rojas, R., Hiebert, L., Gusewski, S., & Francis, D. J. (2019). Moving forward by looking back: Understanding why some Spanish-speaking English learners fall behind. *New Directions for Child and Adolescent Development, 2019*(166), 43–77. https://doi.org/10.1002/cad.20305

Rojas, R., & Iglesias, A. (2013). The language growth of Spanish-speaking English Language Learners. *Child Development, 84*(2), 630–646. https://doi.org/doi:10.1111/j.1467-8624.2012.01871.x

Rojas, R., & Iglesias, A. (2019). Assessing the bilingual (Spanish/English) population. In J. F. Miller, K. Andriacchi, & A. Nockerts (Eds.), *Assessing language production using SALT software: A clinician's guide to language sample analysis* (3rd ed., pp. 115–127). SALT Software, LLC.

Romeo, R. R., Leonard, J. A., Robinson, S. T., West, M. R., Mackey, A. P., Rowe, M. L., & Gabrieli, J. D. (2018). Beyond the 30-million-word gap: Children's conversational exposure is associated with language-related brain function. *Psychological Science, 29*(5), 700–710. https://doi.org/10.1177/0956797617742725

Ronfard, S., Zambrana, I. M., Hermansen, T. K., & Kelemen, D. (2018). Question-asking in childhood: A review of the literature and a framework for understanding its development. *Developmental Review, 49,* 101–120. https://doi.org/10.1016/j.dr.2018.05.002

Rowe, M. L., Leech, K. A., & Cabrera, N. (2017). Going beyond input quantity: Wh-questions matter for toddlers' language and cognitive development. *Cognitive Science, 41*(S1), 162–179. https://doi.org/10.1111/cogs.12349

Rowe, M. L., & Weisleder, A. (2020). Language development in context. *Annual Review of Developmental Psychology, 2,* 201–223. https://doi.org/10.1146/annurev-devpsych-04220-121816

Schieffelin, B. B., & Ochs, E. (Eds.). (1986). *Language socialization across cultures*. Cambridge University Press.

Serrano-Villar, M., Huang, K. Y., & Calzada, E. J. (2017). Social support, parenting, and social emotional development in young Mexican and Dominican American children. *Child Psychiatry and Human Development, 48,* 597–609. https://doi.org/10.1007/s10578-016-0685-9

Sénéchal, M., Cornell, E. H., & Broda, L. S. (1995). Age-related differences in the organization of parent-infant interactions during picture-book reading. *Early Childhood Research Quarterly, 10*(3), 317–337. https://doi.org/10.1016/0885-2006(95)90010-1

Snow, C. E. (1972). Mothers' speech to children learning language. *Child Development, 43*(2), 549–565. https://doi.org/10.2307/1127555

Song, L., Tamis-LeMonda, C. S., Yoshikawa, H., Kahana-Kalman, R., & Wu, I. (2012). Language experiences and vocabulary development in Dominican and Mexican infants across the first 2 years. *Developmental Psychology, 48*(4), 1106–1123. https://doi.org/10.1037/a0026401

Stein, G. L., & Polo, A. J. (2014). Parent-child cultural value gaps and depressive symptoms among Mexican American youth. *Journal of Child and Family Studies, 23*(2), 189–199. https://doi.org/10.1007/s10826-013-9724-3

Stivers, T., Enfield, N. J., Brown, P., Englert, C., Hayashi, M., Heinemann, T., Hoymann, G., Rossano, F., de Ruiter, J. P., Yoon, K., & Levinson, S. C. (2009). Universals and cultural variation in turn-taking in conversation. *Proceedings of the National Academy of Sciences, 106*(26), 10587–10592. https://doi.org/10.1073/pnas.0903616106

Tamis-LeMonda, C. S., Baumwell, L., & Cristofaro, T. (2012). Parent–child conversations during play. *First Language, 32*(4), 413–438. https://doi.org/10.1177/0142723711419321

Tamis-LeMonda, C. S., **Caughy, M. O., Rojas, R., Bakeman, R., Adamson, L. B., Pacheco, D., Owen, M. T., Suma, K., & Pace. A.** (2020). Culture, parenting, and language: Respeto in Latine mother–child interactions. *Social Development, 29*(3), 689–712. https://doi.org/10.1111/sode.12430

Tamis-LeMonda, C. S., Kuchirko, Y., & Song, L. (2014). Why is infant language learning facilitated by parental responsiveness. *Current Directions in Psychological Science, 23*(2), 121–126. https://doi.org/10.1177/0963721414522813

Thibodeau-Nielsen, R. B., Gilpin, A. T., Nancarrow, A. F., Pierucci, J. M., & Brown, M. M. (2020). Fantastical pretense's effects on executive function in a diverse sample of preschoolers. *Journal of Applied Developmental Psychology, 68,* 101137. https://doi.org/10.1016/j.appdev.2020.101137

Thierry, K. L., & Sparks, A. (2019). Latino families engage in elaborative conversations: Effects on children's recall and vocabulary. *Journal of Child and Family Studies, 28*(8), 2297–2311. https://doi.org/10.1007/s10826-019-01446-0

Tukey, J. (1977). *Exploratory data analysis*. Addison-Wesley.

Weisleder, A., & Fernald, A. (2013). Talking to children matters: Early language experience strengthens processing and builds vocabulary. *Psychological Science, 24*(11), 2143–2152. https://doi.org/10.1177/0956797613488145

Weizman, Z. O., & Snow, C. E. (2001). Lexical output as related to children's vocabulary acquisition: Effects of sophisticated exposure and support for meaning. *Developmental Psychology, 37*(2), 265–279. https://doi.org/10.1037/0012-1649.37.2.265

Wood, C., Diehm, E. A., & Callender, M. F. (2016). An investigation of language environment analysis measures for Spanish–English bilingual preschoolers from migrant low-socioeconomic-status backgrounds. *Language, Speech, and Hearing Services in Schools, 47*(2), 123–134. https://doi.org/10.1044/2015_LSHSS-14-0115

Wynn, C. J., Borrie, S. A., & Pope, K. A. (2019). Going with the flow: An examination of entrainment in typically developing children. *Journal of Speech, Language, and Hearing Research,*

62(10), 3706–3713. https://doi.org/10.1044/2019_JSLHR-S-19-0116

Yu, Y., Bonawitz, E., & Shafto, P. (2019). Pedagogical questions in parent–child conversations. *Child Development, 90*(1), 147–161. https://doi.org/10.1111/cdev.12850

Zambrana, I. M., Hermansen, T. K., & Rowe, M. L. (2020). Mothers' use of questions and children's learning and language development. In L. P. Butler, S. Ronfard, & K. H. Corriveau (Eds.), *The questioning child: Insights from psychology and education* (pp. 212–231). Cambridge University Press.