THE ROLE OF RELATIONSHIP QUALITY IN VOCABULARY ACQUISITION: EVIDENCE FROM SPANISH-SPEAKING PRESCHOOLERS

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By

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The undersigned, appointed by the dean of the Graduate School, have examined the entitled The ROLE OF RELATIONSHIP QUALITY IN VOCABULARY ACQUISITION: EVIDENCE FROM SPANISH-SPEAKING PRESCHOOLERS

presented by Vida Nana Ama Bonney, a candidate for the degree of Master of Science, and hereby certify that, in their opinion, it is worthy of acceptance.

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DEDICATION

I am blessed to have Edwin, Theodore, and Isabella Bonney in my life. They are the three people who consistently and constantly remind me of the most important things in life. Thank you for your unwavering support, patience, love, and kindness throughout this process.

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THE ROLE OF RELATIONSHIP QUALITY IN VOCABULARY ACQUISITION: EVIDENCE FROM SPANISH-SPEAKING PRESCHOOLERS

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ABSTRACT

Language acquisition is a process that requires frequent social interactions in which children receive input, practice opportunities, and feedback (Duursma et al., 2007), which influence children's subsequent vocabulary skills. For dual language learners, skills in both languages are a reflection of the quantity and quality of linguistic input received in each language as well as the opportunities for practice and feedback during social interactions (Palermo et al., 2014). The qualities of adult-child relationships during these social interactions may influence the association between input received and child language outcomes.

Guided by sociocultural, sociolinguistic, and attachment theoretical frameworks, the present study used a sample of Spanish-speaking preschoolers to examine the role of adult-child relationships as a moderator in the association between the quantity of linguistic input in Spanish and English from parents and teachers and children's later receptive and expressive vocabulary skills in both languages. The findings revealed direct associations between the quantity of input in English and Spanish from teachers and parents and children's expressive and receptive vocabulary skills. Notably, teacher-child relationships and parenting behavior qualities moderated some of these associations. The findings highlight how the contributions of parents' and teachers' linguistic experiences to Spanish-speaking preschoolers' vocabulary skills in English and Spanish may vary as a function of children's relationship qualities with teachers and parents.

The Role of Relationship Quality in Vocabulary Acquisition: Evidence from Spanish-Speaking Preschoolers

Language acquisition is a social process (Gass, 2013; Vygotsky, 1978), and social interactions with adults provide young children with the linguistic input necessary to foster language acquisition (Hoff 2003, 2006). Social interactions provide children with opportunities to hear language from others (e.g., parents, teachers, peers, etc.), practice using it, and receive linguistic feedback (Bowers & Vasilyeva, 2011; Duursma et al., 2007; Gámez, 2015; Hoff, 2003; Hoff-Ginsberg, 1991; Palermo et al., 2014; Place & Hoff, 2011). Children whose parents provide frequent and diverse linguistic input, feedback, and practice opportunities during social interactions are likely to exhibit greater vocabulary skills than the children whose parents provide infrequent and less diverse linguistic input, feedback, and practice opportunities (Hoff 2003, 2006; Hoff-Ginsberg, 1991). For children who are acquiring more than one language, the association between linguistic input and children's skills in each language generally reflects the quantity of language input, diversity, and practice opportunities they received during their social interactions with parents (Duursma et al., 2007; Palermo et al., 2014). Furthermore, there is evidence that linguistic input from teachers in educational settings contributes to children's language acquisition, with the children who receive frequent and diverse language input from teachers exhibiting greater vocabulary skills than those who receive infrequent and less diverse language input (Dickinson & Porche, 2011; Gámez, 2015).

Notably, relationship qualities with parents and teachers may also contribute to children's language acquisition. For bilingual children, close-teacher child relationships, as well as social and instructional support from home, are highly correlated with improved language skills (Duursma et al., 2007; Oades-Sese & Li, 2011). Adult-child relationship qualities and linguistic

input have been traditionally studied as two independent variables when assessing child language outcomes. However, parent- and teacher-child relationship quality underlies the language input that children receive during their social interactions with parents and teachers. This makes relationship quality a key factor that may moderate the contribution of parents' and teachers' linguistic input to children's vocabulary skills. With research showing that the quantity of input that bilingual children receive in both languages is a significant predictor of their bilingual language skills (Place & Hoff, 2011), and that high quality adult-child relationships are associated with better language abilities (Duursma et al., 2007; Oades-Sese & Li, 2011), it is likely that children who have better relationships with adults receive more linguistic input, which in turn contributes to an overall improvement in their language skills.

Previous research suggests that linguistic input received from parents (Hoff 2003, 2006; Hoff-Ginsberg, 1991) and teachers in early educational settings (Dickinson & Porche, 2011; Gámez, 2015) contributes children's vocabulary skills. This is evident in monolingual and bilingual populations given that the quantity of linguistic input received in each language has been positively associated with children's vocabulary skills in those languages (De Houwer, Bornstein, & Putnick, 2014; Hoff et al., 2012; Place & Hoff, 2011). Given this positive association between linguistic input and children's vocabulary skills and the lack of existing research that has investigated the role of relationship qualities as a moderator in this association, the goal of the present study is to examine the extent to which children's relationship qualities with parents and teachers moderates the association between the amount of input in Spanish and English that Spanish-speaking preschoolers receive from these adults and their later vocabulary skills in both languages.

Theoretical Framework

To understand how linguistic input from parents contributes to children's vocabulary skills and how that contribution may vary based on the parent-child relationship quality, I drew on sociocultural (Vygotsky, 1978), sociolinguistic (Gass, 2013), and attachment theoretical frameworks (Ainsworth, Blehar, Waters, & Wall, 2015). Sociocultural theory is grounded in Vygotsky's (1978) work and emphasizes that children learn in the context of social interactions, especially when the content of the social interactions falls within children's zone of proximal development (ZPD; the difference between what children can achieve by themselves and what they can achieve with scaffolding from more knowledgeable adults or peers). Support for this idea comes from research consistently suggesting that language input from parents fosters children's language skills (Hoff, 2003; 2006; Pan et al., 2005). There is also growing evidence suggesting that linguistic input from classroom teachers enhances children's language skills (Dickinson & Porche, 2011; Gámez, 2015).

Building on Vygotsky's (1978) ideas, Gass (2013) developed a sociolinguistic framework to describe how children process language input, particularly second language input, and how it supports children's language acquisition. Gass (2013) proposed a five-stage model for how children convert linguistic input into output. The first stage is Apperceived Input, which occurs right after children receive language input, and they recognize that there is something to learn from that language input, such as a new word. Comprehended Input, which is the second stage of the model, refers to the child's understanding of the language input received based on the context of the conversation. In the third stage, Intake, children engage in psycholinguistic processing of the language input received by comparing the new input to their prior knowledge of the language

to form hypotheses about the semantic and pragmatic properties of that language. During Integration, the fourth stage of the model, children test their hypotheses by using the new linguistic input they received in conversations. If a hypothesis is confirmed, children incorporate the new knowledge into their language skills; if a hypothesis is rejected (e.g., when the interlocutor does not understand a word), children modify their hypothesis based on the feedback received and test it again later. After Integration comes Output, the final stage in which the new knowledge is incorporated into children's language skills and used in conversations.

To understand how the parent-child relationship may moderate the contribution of parents' linguistic input to children's vocabulary skills, I drew on attachment theory which posits that children's relationships and emotional bonds with parents contribute to their developmental outcomes (Ainsworth, Blehar, Waters, & Wall, 2015; Santrock, 2017). Based on children's emotions and behaviors with caregivers, Ainsworth (1973) identified four types of attachment: secure, insecure-avoidant, insecure-resistant, and insecure-disorganized. Secure attachments occur when caregivers respond affectionately to children's behaviors and emotions. This positive response makes children feel they can rely on parents for emotional support, leading them to engage more during parent-child interactions and feel safe exploring the environment around them. Insecure-avoidant, resistant, and disorganized attachments occur when children avoid caregivers, are ambivalent or reluctant, or behave unpredictably with parents during stressful situations. Insecure attachments styles are formed when parents are emotionally unavailable, unresponsive, or neglectful toward children, and the children learn not to rely on caregivers for support. From this perspective, linguistic input may foster the vocabulary skills of securely attached children who are actively engaged and motivated to learn during linguistic interactions

with parents more so than for insecurely attached children who are less engaged, motivated, and attentive during linguistic interactions.

Although attachment theory (Ainsworth, 1973) focuses on parent-child relationships, the idea that close and affectionate relationships contribute to children's developmental outcomes can be extended to other adults in children's lives, such as preschool teachers. Based on the ideas of attachment theory, Pianta (1999) emphasized the bidirectional nature of adult-child relationships. Pianta (1999) noted that teachers' and children's emotions and behaviors contribute to the teacher-child relationship by shaping their perceptions about each other. Additionally, just like parent-child relationships, the quality of teacher-child relationships is based on a bidirectional interaction system. The child's individual characteristics (e.g. temperament, language and cultural background, etc.) may affect how teachers behave towards them and the type of classroom environment teachers create.

The teacher's characteristics (e.g. beliefs, perceptions, experiences, preconceptions, etc.) may also affect how the how the child responds to the teacher and the environment created by the teacher. Research suggests that the teacher-child relationship quality is influenced by a variety of factors. For example, after assessing how different combinations of factors such as child's age, ethnicity, gender, and teacher's ethnicity might influence teacher's perceptions of their relationships with their students who were in daycare, preschool, or kindergarten, one study found that teachers' perceptions of their relationship with students is often influenced by similarities in ethnicity with the child. That is, teachers were more likely to report positive relationships with children who were from the same background as the teacher (Saft & Pianta, 2001). Similarly, in another study about preschool-aged children, researchers concluded that children's characteristics (in this case, temperament and language skills) plays a role in teacher-

child relationship quality. Teachers reported high levels of conflict with children who were more assertive and displayed higher levels of attention-seeking behavior, especially if the children had lower language abilities (Rudasill, Rimm-Kauffman, Justice, & Pence, 2006).

Close teacher-child relationships develop when teachers are responsive and supportive towards children and children are attentive, follow instructions, and behave in socially appropriate ways. On the other hand, conflictual teacher-child relationships may result from less responsive and supportive behavior from teachers as well as less attentive and socially appropriate behavior from children. Close teacher-child relationships may benefit children's vocabulary skills by motivating teachers to support children's learning, engage in richer linguistic interactions with them, and maximize children's engagement during interactions (Birch & Ladd, 1997; Hamre & Pianta, 2001; Rudasill et al., 2006).

Conversely, conflictual teacher-child relationships may hinder children's vocabulary skills by leading teachers to spend less time talking with children and by children being less engaged during their interactions with teachers (Birch & Ladd, 1997; Hamre & Pianta, 2001; Rudasill et al., 2006). Specifically, close teacher-child relationships may strengthen the association between linguistic input received from teachers and children's vocabulary skills because, as demonstrated in prior research, positive teacher- child relationships are beneficial for child learning (Birch & Ladd, 1997; Hamre & Pianta, 2001). On the other hand, conflictual teacher-child relationships will weaken the positive association between input and children's vocabulary skills as children are less likely to be engaged during interactions with teachers if the teacher-child relationship is conflictual (Birch & Ladd, 1997; Pianta, 1999; Pianta & Stuhlman, 2004). Thus, the extent to which linguistic input from teachers may contribute to children's vocabulary skills may vary based on the teacher-child relationship quality.

Taken together, sociocultural (Vygotsky, 1978), sociolinguistic (Gass, 2013), and attachment theories (Ainsworth, Blehar, Waters, & Wall, 2015), as well as Pianta's (1999) model of adult-child relationships, led me to hypothesize that the contributions of parents' and teachers' linguistic input to children's vocabulary skills vary as a function of the relationship qualities that children have with them. Children who form close and affectionate relationships with parents and teachers, for example, may be more engaged, attentive, and motivated to learn during linguistic interactions with parents and teachers than the children who develop insecure or conflictual relationships. Consequently, parents' and teachers' linguistic input may support the vocabulary skills of the children with whom they have secure and close relationships by enhancing children's engagement and motivation to learn during linguistic interactions.

Literature Review

The Importance of Language Input

The role of parents' language input. Language input from parents is important in child language development (Cooper et al., 2014; Hoff, 2003; Hoff-Ginsberg, 1991). Research suggests that by age 3, many children from low socioeconomic backgrounds begin to lag behind their middle-class peers in vocabulary production (Pan et al., 2005). One reason may be that mothers' language input varies by socioeconomic status. Compared to middle-income mothers, low-income mothers generally have fewer conversations with children and this affects the number of opportunities that children have to receive input and feedback as they practice using language, which may ultimately impact their vocabulary development (Hart & Risley, 1995; Hoff, 2003; Hoff, 2006; Hoff-Ginsberg, 1991; Pan et al., 2005). Notably, the idea that children from low socioeconomic backgrounds lag behind their peers from higher socioeconomic backgrounds due to receiving less linguistic input has been critiqued for several reasons, including a lack of consideration of the full context within which language input is received (Orellana, 2017; Sperry, Sperry, & Miller, 2019). Subsequent studies that sought to replicate the results of the Hart and Risley (1995) found that the quantity of linguistic input that children from low socioeconomic backgrounds receive is similar to what children from high socioeconomic backgrounds receive, especially when considering linguistic input from multiple sources such as caregivers other than parents, other relatives, etc. (Avineri et al., 2015; McKenna, 2018; Sperry, Sperry, & Miller, 2019). Despite the limitations of the Hart and Risley study, it highlights variability in the linguistic input that children receive based on their parents' socioeconomic status. This variability by socioeconomic status is supported by findings from subsequent studies

(e.g. Hoff, 2003; Hoff-Ginsberg, 1991; Pan et al., 2005). However, this variability in linguistic input by socioeconomic status might be due to the mismatch between the language norms and expectations of lower-income, non-White individuals and the language expectations and norms of schools and higher income, White individuals (Heath, 1989).

The contribution of language input from parents to children's vocabulary may also be influenced by the context and frequency of those interactions. In an examination of the role of language exposure in vocabulary growth during the "period of accelerated growth" between 14 and 26 months of age, Huttenlocher and colleagues (1991) found a positive relation between the linguistic input received during parent-child interactions at home and children's vocabulary skills. Mothers and children were recorded as they went about their typical day-to-day activities. Although there were individual differences in the number of words that children acquired, the rate of vocabulary growth was linked to mothers' quantity of linguistic input (Huttenlocher et al., 1991; Huttenlocher, 1998). Similarly, after recording hour-long parent-child interactions once a month over three months, Hart (1991) found that children's first words were most likely to be the ones that their parents frequently used during the parent-child interactions. These findings suggest that in the course of initial vocabulary acquisition, children are likely to learn words that their parents often use with them during their day-to-day interactions.

Notably, most of the research examining the association between mothers' language input and children's vocabulary development has been conducted with monolingual English-speaking children. However, comparisons of language development between monolingual and bilingual children suggest that the quantity of input bilingual children are exposed to in each language reflects their relative abilities in each language (Hoff, 2013; Hoff et al., 2012; Palermo et al., 2014; Place & Hoff, 2011). For example, in a study examining language input from parents and

other relatives at home, Duursma and colleagues (2007) found that bilingual children's proficiency scores in English or Spanish were positively correlated with parents' reports of the preferred language used at home. That is, children who were exposed to more English than Spanish at home had higher English proficiency scores than those exposed to more Spanish than English. Similarly, a study by Barnes and Garcia (2012) with Basque monolinguals and Basque-French or Basque- Spanish bilingual infants between 8 and 30 months old showed that the quantity of input that children receive in each language influences their vocabulary growth in each of the languages, especially in the early stages of language development.

De Houwer, Bornstein, and Putnick (2014) also compared the expressive and receptive vocabulary skills of 30 monolingual Dutch and 31 bilingual Dutch and French toddlers with similar demographic backgrounds. Their results found that both groups had similar results with overall vocabulary production at both time points (13 months and 20 months). However, the bilingual group showed higher levels of lexical understanding (i.e. receptive vocabulary skills) when compared to their monolingual peers. The authors suggest that linguistic input and diversity of input both contribute to the development of vocabulary skills in bilingual children (De Houwer et al., 2014). Using a sample from the United States, a study by Palermo and colleagues (2014) also showed that English exposure at home was positively associated with the later English receptive and expressive vocabulary skills of Spanish-English bilingual preschoolers. Thus, the quantity of language input that children receive at home is likely to contribute to their language skills.

The role of teachers' language input. During the early stages of language development, the quantity of input that children receive is key to the development of vocabulary skills (Hart & Risley, 1995; Huttenlocher et al., 1991). However, when it comes to language input received

from teachers, there are mixed findings on the contribution that the amount of teacher input has on children's vocabulary development. Studies with monolingual students show that linguistic input from preschool teachers is likely to be positively associated with children's vocabulary and literacy skills, particularly when that input is linguistically diverse (Bowers & Vasilyeva, 2011; Dickinson & Porsche, 2011). For example, Dickinson and Porsche observed 57 English monolingual children over a period of time from preschool to fourth grade. Their results suggest that the complexity and diversity of teachers' language input during the preschool years enhanced children's literacy skills in fourth grade. In another study that compared the vocabulary growth of English language learners (ELLs)[1] to their monolingual peers over one academic year, Bowers and Vasilyeva (2011) found that the lexical diversity of teachers' language input was associated with vocabulary growth for monolingual children. Importantly, for the ELLs in that study, the observed growth in English vocabulary size was associated with the quantity of English input received from teachers (Bowers & Vasilyeva, 2011).

Although Bowers and Vasilyeva (2011) found that ELLs are likely to benefit from the quantity of input received from teachers, other researchers have not found such associations. For example, Palermo and colleagues (2014) did not find significant association between the quantity of teachers' English use and the English receptive and expressive vocabulary skills of the Spanish-speaking preschoolers. Likewise, Gámez (2015) did not find any relation between the amount of English input from teachers and the oral language skills (as measured by the *Memory for Sentences* and *Picture Vocabulary* subtests of the Revised Woodcock Johnson Language

[1] Although some researchers prefer to use the term ELLs, I prefer to use the term Dual Language Learners (DLLs) to refer to young children who are learning two languages at the same time. According to Paradis, Genesee, and Crago (2011), dual language learners are children who have either been learning two languages from birth, or already possess language abilities in the first language and are in the process of learning a second language. My use of the term ELLs in this text is to reflect the terms used by the authors in the reviewed articles.

Proficiency Battery) of the Spanish-speaking ELLs. Additionally, although teachers' use of diverse and complex English structures had a positive effect on the English skills of children in Gámez's (2015) study, this effect was reduced if children were not given an opportunity to use the language.

The mixed evidence of teachers' contributions to vocabulary development may stem from varying methods and sample characteristics. For example, in the Bowers and Vasilyeva (2011) study, the comparison between English monolingual and ELL preschoolers showed that although the quantity of input received made a difference in the English vocabulary outcomes of ELLs, the vocabulary growth for English monolinguals was positively predicted by the diversity of words used by teachers. There are mixed findings as to whether it is just the quantity of input received or there may be other factors at play in the interaction between language input received and child language outcomes. I propose that the mixed findings may be because the contribution of language input from teachers on children's vocabulary skills may vary based on other aspects of children's and teacher's contexts which may essentially influence the quality of teacher-child relationships.

The Importance of Relationship Qualities

Parent-child relationships. Adult-child relationships are bidirectional (Pianta, 1999). Children's reactions or behaviors toward adults are likely to influence adults' responses. Likewise, the adult's behavior or reaction to a child will likely impact children's responses. The quality of parent-child relationships is shaped by factors such as the quality and quantity of interactions, socioeconomic status, family structure (siblings, single or dual-parent homes, etc.), and the individual characteristics of parents and children. Also, the type of attachment that children form with parents will vary based on the parent's responsiveness to the child's

emotional needs (Ainsworth, Blehar, Waters, & Wall, 2015). Attachment relationships continue throughout childhood because children learn to form and maintain relationships with others while they explore their world through social interactions (Pianta, 1999; Sabol & Pianta, 2012). Although Pianta's (1999) model is often used in research on teacher-child relationships (see Rudasill, Rimm-Kauffman, Justice, & Pence, 2006), it can be extended to parent-child relationships because the type of attachment that children have with their parents is likely to guide the formation of other relationships, including parent-child relationships (Hoff, 2006).

The economic resources available to parents also impact the quality of interactions that they have with their children. Hoff (2003; 2006) suggests that parent-child interactions may vary based on socioeconomic status. Mothers from middle-class backgrounds may engage in frequent and complex interactions with their children compared to mothers from lower-income backgrounds. That is, mothers from higher socioeconomic backgrounds may engage in conversations with their children while encouraging conversations with prompts and open-ended questions to a greater extent than the mothers from socioeconomic backgrounds (Hoff 2003; 2006). Heath (1989) suggests that this difference in social classes may be due to the differences in language and literacy socialization norms and expectations among families of different racial and socioeconomic backgrounds. Frequent and engaging conversations with children may encourage positive parent-child relationships as children feel more confident sharing information with their parents.

Teacher-child relationships. Teachers play a key role in child development once children enter preschool or kindergarten. Teacher-child relationships are generally formed and maintained within a classroom setting. Similar to parents, teachers provide instruction and care for the children in their classroom as the children develop academic, social, and emotional skills.

Positive or close teacher-child relationships are associated with positive child behavior, self-regulation, and vocabulary development (Birch & Ladd, 1997; Burchinal et al., 2008; Pianta, 1999; Pianta & Stuhlman, 2004; Rudasill, Rimm-Kauffman, Justice, & Pence, 2006), whereas negative or conflictual teacher-child relationships are linked to school avoidance and behavioral problems (Birch & Ladd, 1997).

Close teacher-child relationships are positively associated with children's academic and social competence (Palermo et al., 2007). For example, in a longitudinal study on children in first grade, Pianta and Stuhlman (2004) found that teacher's perceptions of their relationship qualities with children from preschool to first grade were associated with children's academic and social competence in first grade. Relatedly, in a study with children in preschool and kindergarten, Burchinal and colleagues (2008) found that, in addition to the quality of instruction (e.g., clear communication and use of language to aid the development of reasoning skills), positive teacher-child interactions characterized by warmth and responsiveness during the pre-kindergarten year can be used to predict receptive and expressive language skills, math, literacy, and social skills at the end of one academic year in kindergarten. In another study about the possible effects of teacher-child closeness, conflict, and dependence on children's school adjustment, Birch and Ladd (1997) found that close teacher-child relationships fostered children's academic performance, positive attitude, and engagement in school.

On the other hand, conflictual teacher-child relationships may influence children's academic and social skills negatively (Palermo et al., 2007). Teachers' reports of conflictual relationships with children have been positively associated with teachers' reports of children's behavioral problems and negatively associated with their reports of children's school liking and cooperative behavior (Birch & Ladd, 1997; Pianta &Stuhlman, 2004). Conflictual teacher-child

relationships may have long-lasting effects on children's school adjustment. In a longitudinal study that followed children from kindergarten through 8th grade, Hamre and Pianta (2001) found that negative teacher-child relationships in kindergarten were predictive of problem behaviors and academic outcomes through elementary and middle school, especially for boys and at-risk children.

Proposed Study

Based on the proposed model of second language acquisition by Gass (2013), attachment theory (Ainsworth, Blehars, Waters, & Wall, 2015), and prior research about the role of input, social interactions, and attachment relationships on language abilities (e.g. Duursma et al., 2007; Hamre & Pianta, 2001; Pan, Rowe, Singer, & Snow, 2005), I proposed that the quality of parent-child and teacher-child relationships moderates the relationship between linguistic input from adults on the Spanish and English vocabulary skills of Spanish-speaking preschoolers. Given that adult-child relationships are a key aspect of social interaction for young children, I hypothesized that relationship quality would moderate the way children develop language skills in Spanish and English. The term "adult" in this study was used in reference to parents (mostly mothers) and teachers (see the conceptual model in *Fig. 1*)

Research Questions and Hypotheses

The present study was conducted to examine adult-child relationship quality as a moderator in the association between the linguistic input that Spanish-speaking preschoolers receive from parents and preschool teachers and their vocabulary skills in Spanish and English at the end of one year in preschool. The research questions that guided this study are stated below.

1. Does parent-child relationship quality moderate the association between the English and Spanish input that Spanish-speaking preschoolers receive from their parents and their vocabulary skills in both languages?
2. Does teacher-child relationship quality moderate the association between the English and Spanish input that Spanish-speaking preschoolers receive from their teachers and their vocabulary skills in both languages?

Based on prior research, I expected that the association between adult linguistic input and child English and Spanish vocabulary skills would be positive. As such, the hypotheses were stated as follows:

1. The positive association between children's vocabulary skills in English and Spanish and parents' input in both languages will be stronger for the children who experience positive parent-child relationships.
2. The positive association between children's vocabulary skills in English and Spanish and parents' input in both languages will be weaker for the children who experience negative parent-child relationships.
3. The positive association between children's vocabulary skills in English and Spanish and teachers' input in both languages will be stronger for the children who have close relationships with their teachers.
4. The positive association between children's vocabulary skills in English and Spanish and teachers' input in both languages will be weaker for the children who have conflictual relationships with their teachers.

Methods

I used a preexisting data set for this study. The Language and Educational Excellence (LEE) data was gathered from a population of low-income Spanish-speaking preschoolers in the U.S. A convenient sample was selected from 10 Head Start half-day preschool classrooms in a major metropolitan area in Southwest U.S. Out of 161 children, there was parental consent obtained for data to be collected from 143 students (89% permission rate). Data collection methods included parent and teacher questionnaires, standardized assessments, and naturalistic observation. In each of the preschool classrooms, there were 15 to 20 students who attended school five days a week. There was at least one adult (lead teacher or aide) who spoke Spanish in each classroom. About 56% of the final sample were boys and the children ranged in age from 44 to 60 months old (M = 53, SD = *4* months) at the start of the study. Parent reports showed that 25 of children were of unknown descent, 2% had Central/South American ancestry, and the majority of children (96%) were of Mexican descent. About 90% of children were born in the US. Between 70% to 100% of the children in each classroom spoke Spanish and most parents (87% of mothers and 92% of fathers) were immigrants. Also, 82% of families reported annual incomes household incomes below $30,000.

The proposed study, I focused on portions of the LEE data collected from 137 parents, children (M = 52.60, SD = 4.42), and teachers. Questionnaires in both Spanish and English were used to collect data from parents in the fall about their home language use, socioeconomic status, parenting behaviors, and their perceptions of their children's use of Spanish and English. As further described below, the English and Spanish versions of two standardized tests were used to assess the receptive and expressive vocabulary skills of children in both languages. Additionally, teachers provided information about their relationships with children. Further, classroom

observations were conducted in both the spring and fall semesters to assess the amount of input in English that children receive from their peers and teachers and child language use in a variety of contexts.

Measures

English and Spanish input from adults. To gauge the amount of English and Spanish children heard at home, parents completed five items from the PAVEd for Success home literacy inventory (Hamilton, Restrepo, Neuharth-Pritchett, & Schwanenflugel, n.d.). The items in this measure require parents to rate how often their children hear English and Spanish during interactions with their parents and other people in the home.

To obtain information on how much language input children received from their teachers, I used the observational data from the LEE data set. Using naturalistic observation methods, data were collected by 17 trained English/Spanish bilingual undergraduate research assistants and one English/Spanish bilingual graduate research assistant throughout the fall semester (September to December). The observations were conducted during indoor and outdoor activities for about 8 to 10 hours each week. During the observations, each participating child was observed for 15 seconds at a time, and the observers repeated the same procedure (from the top to the bottom of the list, 15 seconds for each child) throughout the period when they were available for observation. During the 15 second observations, observers coded each child's activity as social play (involving interactions or conversations with peers), parallel play (engaging in the same activity beside a peer), solitary play (playing by themselves), teacher-oriented behavior (engaging with teachers), onlooking behavior (observing others without being involved), or unoccupied behavior (not focused or engaged in any activity). In addition, the observers noted the language being used by the target child, teachers, and peers during each observation. For the

proposed study, I focused on 622 of the total 2,092 observations gathered over the 2-year data collection period because those observations involved teachers use of language with the target child (417 observations for teacher's English use, 96 for Spanish, and 109 for both Spanish and English in the one 15 second observation).

Parent-child relationships. To measure parent-child relationship qualities, parents completed the Parent Perception Inventory (PPI) (Hazzard, Christensen, &Margolin, 1983; see Appendix). The PPI contains 20 items with two subscales to assess warm and harsh parenting. Although the PPI was created to assess young children's views of parenting, it can be adapted to gauge parents' perceptions (Laible, Carlo, Torquati, & Ontai, 2004). It should be noted that the PPI has not been assessed for cultural sensitivity and appropriateness for this population. In the PPI, parenting behaviors are assessed on a five-point scale ranging from *never* to *a lot.* The warm parenting scale includes questions such as "*How often do you talk to your child, just listen, or have a good conversation with him/her?"*. The harsh parenting scale includes questions such as *"How often do you tell your child that s/he didn't do something right, or criticize him/her?"* Both scales are reported to have acceptable internal consistency *(a* =.76 for warm parenting, *a*= .74 for harsh parenting) (Laible, Carlo, Torquati, & Ontai, 2004). In the present dataset, warm parenting is labeled as positive parenting whereas harsh parenting is labeled as negative parenting.

Teacher-child relationships. Teachers' perceptions of the quality of their relationships with each child were assessed with the Student-Teacher Relationship Scale (STRS; Pianta, 2001; see Appendix), which is a 28-item rating scale containing three subscales labeled Conflict, Closeness, and Dependency. The present study only included teachers' responses to the items on the Conflict and Closeness subscales. Sample items include "this child and I always seem to be

struggling with each other" for the 12 items on the Conflict subscale, and "I share an affectionate, warm relationship with this child" for the Closeness subscale. Responses ranged on a scale of 1 (*definitely does not apply*) to 5 (*definitely applies*). Reliability for both subscales is reported as = .93 for Conflict, α = .86 for Closeness (Hamre & Pianta, 2001).

Vocabulary skills. Children's receptive vocabulary skills in English were assessed with the Peabody Picture Vocabulary Test (PPVT; Dunn, 2007). The Spanish version of this same test, Test de Vocabulario en Imagenes Peabody (TVIP; Dunn, 1986) was used to assess receptive skills in Spanish. Both tests assess the child's receptive skills by presenting children with four images and asking them to point to a specific one in the relevant language. To measure children's expressive vocabulary skills in both languages, the Picture Vocabulary subscale of the third edition of the Woodcock-Johnson Test of Achievement (WJ-3; Woodcock, McGrew, & Mather, 2000) and the Batería III Woodcock-Muñoz (WM, Woodcock, Muñoz-Sandoval, McGrew, & Mather, 2004) were used. Both tests gauge children's expressive vocabulary skills by presenting children with images and asking them to name the object in the image in the relevant language.

Data Analysis

I used regression analysis to assess moderation effects that relationship qualities might have on the association between linguistic input received and children's vocabulary skills in English and Spanish. First, I conducted multiple linear regressions to assess the relationships between linguistic input from parents and teachers in both languages and children's expressive and receptive vocabulary skills in both languages. Children's receptive and expressive vocabulary skills in Spanish and English were assessed in the spring semester, with receptive vocabulary skills in English assessed by the Peabody Picture Vocabulary Test (PPVT; Dunn,

2007) and receptive vocabulary skills in Spanish assessed by the Test de Vocabulario en Imagenes Peabody (TVIP; Dunn, 1986). I used the raw scores of the TVIP and PPVT in the analyses because they are not norm-referenced or compared to the expected average performance of students on these tests. The expressive vocabulary skills of children were assessed in English by the picture vocabulary subscale of the third edition of the Woodcock-Johnson Test of Achievement (WJ-3; Woodcock, McGrew, & Mather, 2000). The Spanish version of this same test, the Batería III Woodcock-Muñoz (WM, Woodcock, Muñoz-Sandoval, McGrew, & Mather, 2004), was used to assess children's receptive vocabulary skills in Spanish. The w-scores of children's performance on the Woodcock-Johnson tests were used in these analyses. The w-scores are not norm-referenced in that the students' performances on these tests are not compared to the supposed typical averages for monolingual students. I also assessed the association between relationship qualities and quantity of input received and also the association between relationship qualities and children's vocabulary skills in English and Spanish To appropriately gauge the moderating effect that relationship qualities might have on the association between language input received and children's vocabulary skills, demographic information provided from parents (e.g. income and parents' education), gender, and non-verbal cognitive abilities were used as control measures. I controlled for these variables because they are associated with children's vocabulary skills in prior research (e.g., Hart & Risley, 1995; Hoff 2003, 2006; Hoff-Ginsberg, 1991, Huttenlocher et al., 1991). I employed multiple imputation procedures available in SPSS to handle all missing data.

Results

The goal of this study was to examine adult-child relationship quality as a moderator for the association between the linguistic input that Spanish-speaking preschoolers receive from parents and preschool teachers and their vocabulary skills in Spanish and English at the end of one year in preschool. I tested 16 regression models with mothers' positive and negative parenting practices as moderators of the association between linguistic input in Spanish and English received from parents and children's expressive and receptive vocabulary skills in both languages. I also tested models with teachers' reports of conflictual or close relationships with their students as moderators of the association between linguistic input in provided by teachers in Spanish and English, and children's expressive and receptive vocabulary skills in those languages. All variables used in these analyses were standardized ($M = 0$, $SD = 1$). To examine if adult-child relationship qualities moderated the associations between adult input in Spanish and English and children's receptive and expressive vocabulary skills in both languages, I also created several interactions terms between linguistic input and adult-child relationship qualities. Children's non-verbal cognitive abilities in the fall, as measured with the Naglieri Nonverbal Ability Test (NNAT, 2003), parents' education, and children's gender were used as control variables in all these models because previous research suggests that these characteristics may influence children's vocabulary skills.

Preliminary Analyses

I conducted preliminary analyses to examine the normality of all variables of interest in this study. Skewness values ranged between -.14 and 1.45. Skewness values ranging from +2 to -2 indicate a normal distribution (Bachman, 2004). Mean level comparisons indicated no

significant differences between males and females on English receptive, F (1, 117) = .060, p =.807, and expressive vocabulary skills, F (1, 117) = .241 p =.626. Similar comparisons also showed no sex differences for Spanish receptive, F (1, 118) = .001 p =.979, and expressive vocabulary skills F (1, 119) = .024 p =.876. The degrees of freedom varied in these analyses due to cases with partially missing data. To handle the cases with missing data, I used multiple imputation procedures available in SPSS. Specifically, 10 data sets were created, analyzed separately in regression, and pooled to create a final set of model results.

The bivariate correlations, means, standard deviations, and ranges are reported in Table 1. Children's English receptive vocabulary skills were positively correlated with their non-verbal cognitive abilities, positive parenting, parents' and teachers' input in English, teacher-child conflict, and children's expressive vocabulary skills in English. These skills were negatively correlated with parents' and teachers' input in Spanish, teacher-child conflict, and children's expressive vocabulary skills in Spanish. Also, their Spanish receptive vocabulary skills were positively correlated with parents' education, children's non-verbal cognitive abilities, linguistic input from in Spanish from parents and in English from teachers, teacher-child conflict, and children's expressive vocabulary skills in Spanish and in English. Results showed a negative correlation between Spanish receptive vocabulary skills and parents' English, teachers' Spanish, and teacher-child closeness. Moreover, expressive vocabulary skills in English were positively correlated with mothers' education, non-verbal cognitive abilities, positive parent-child relationship quality, English and Spanish input from both parents and expressive vocabulary skills in Spanish. Further, Spanish expressive vocabulary skills were positively correlated with parents' education, children's non-verbal cognitive abilities, positive parenting, parents' and teachers' English, and teacher-child conflict. There was a negative correlation for English

expressive vocabulary skills with teacher-child conflict and Spanish expressive vocabulary skills. Lastly, there were positive associations between Spanish expressive vocabulary skills and parents' education, non-verbal cognitive abilities, and parents' and teachers' input in Spanish. Negative correlations were found between Spanish expressive vocabulary skills and positive and negative parenting, parents' and teachers' input in English, and teacher-child close and conflictual relationships. These results imply that non-verbal cognitive abilities and positive parent-child relationships play a significant role in children's receptive and expressive vocabulary skills in English.

Table 1.

Bivariate Correlations, Means, Standard Deviations, and Ranges of the Study Variables (N = 137)

	SEX	PEDUC	NNAT	POSPAR	NEGPAR	PARENG	PARSPAN	TENG	TSPAN	TCONF	TCLOSE	WJS	WJE	PPVT	TVIP
SEX															
PEDUC	-.09**														
NNAT	-.08**	.01													
POSPAR	-.14**	.18**	.07*												
NEGPAR	-.13**	-.06*	.11**	-.01											
PARENG	.05	.11**	.05	.13**	.08*										
PARSPAN	-.07*	.04	.08*	-.08*	.21**	-.16**									
TENG	-.16**	.09*	.39**	.12**	.23**	.33**	-.03								
TSPAN	.15**	-.01	-.37**	-.02	-.29**	-.34**	-.01	-.89**							
TCONF	-.03	.04	.13**	-.03	.11**	-.03	.03	.08	.01						
TCLOSE	.28**	-.00	.06	-.01	-.18**	.06	-.18**	-.02	-.07	-.41**					
WJS	-.01	.14**	.11**	-.14**	-.06*	-.31**	.29**	-.12**	.09*	-.14**	-.01				
WJE	-.05	.14**	.35**	.37**	.01	.31**	.01	.32**	-.31**	.09*	.04	-.12**			
PPVT	.02	.05	.30**	.25**	.03	.36**	-.14**	.30**	-.33**	.10**	-.02	-.06*	.64**		
TVIP	.00	.17**	.13**	-.01	-.06	-.12**	.14**	.10**	-.13**	.17**	-.03	.62**	.12**	.23**	
M	1.46	2.17	8.23	4.12	2.23	1.98	3.40	.74	.14	1.65	3.96	430.37	435.83	38.58	20.48
SD	.50	1.41	4.24	.48	.54	.63	.72	.23	.15	.69	.54	21.77	21.86	19.50	12.99
Range	1.-2.	1-6	.0 - 20	2.56 - 5.00	1.10-3.30	1-3	2-4	.20-1.0	.00-.56	1-3.75	2.09-4.82	388-472	384-477	11-93	5-59

Note: PEDUC = Parents' Education; NNAT = Non-Verbal Cognitive Abilities; POSPAR = Positive Parenting; NEGPAR = Negative Parenting; PARENG = Parents' Linguistic Input in English; PARSPAN = Parents' Linguistic Input in Spanish; TENG = Teacher's Linguistic Input in English; TSPAN = Teacher's Linguistic Input in Spanish; TCONF = Teacher-Child Conflict; TCLOSE = Teacher-Child Closeness; WJS = Spanish Expressive Vocabulary Skills; WJE = English Expressive Vocabulary Skills; PPVT = English Receptive Vocabulary Skills; TVIP = Spanish Receptive Vocabulary Skills. *$p < .05$, ** $p < .01$

Parent-Child Relationship Quality as a Moderator between Linguistic Input from Parents and Children's Expressive and Receptive Vocabulary Skills

Receptive Vocabulary Skills

English. I used regression analyses to investigate the relation between parents' input in English and children's English receptive vocabulary skills. To examine if parent-child relationships moderated the association between English input and English receptive vocabulary skills, I created and included two interactions between parents' input in English and parent-child relationship qualities and entered those as predictors within the first two models. As reported in the regression table below (see Table 2.1), the results from the first model showed a significant effect of children's non-verbal cognitive abilities on their receptive vocabulary skills in English. The model also indicated a positive association between linguistic input in English from parents and children's receptive vocabulary skills in English, and also a significant association between maternal positive parenting and children's receptive vocabulary skills in English. All other effects tested in this model were not significant. This suggests that the association between linguistic input in English and children's receptive vocabulary skills in English did not vary by mothers' positive parenting behaviors.

The second model was similar to the one above, except that negative parenting served as the moderator of the association between parents' input in English and children's English receptive vocabulary skills. As before, the results revealed a significant effect of children's non-verbal cognitive abilities on their receptive vocabulary skills. This model indicated a significant effect of English input on children's English receptive vocabulary skills. The interaction between negative parenting and parents' input in English was also significant. Using the standardized (*M*

= 0, *SD* = 1) parents' English input and negative parenting variables, I created an interaction term NEGPAR *PARENG. I found that negative parenting moderated the association between parents' input in English and children's English receptive vocabulary skills. As shown in Table 2.1 and Figure 2, the association between parents' English input and children's English receptive vocabulary skills was positive and significant in both cases, with children who experienced lower levels of negative parenting (1 *SD* above the mean; $b = .310$, *S.E.* = 9.803, $p = .000$) demonstrating higher English receptive vocabulary skills than those who had higher levels of negative parenting (1 *SD* above the mean; $b = .552$, *S.E.* = 12.343, $p = .000$). These results suggest that, for the children in this study, negative parenting strengthened the relationship between English input received and English receptive vocabulary skills. The other effects were non-significant.

Figure 2

Association between Parents' English Input and Children's English Receptive Vocabulary Skills by Negative Parenting

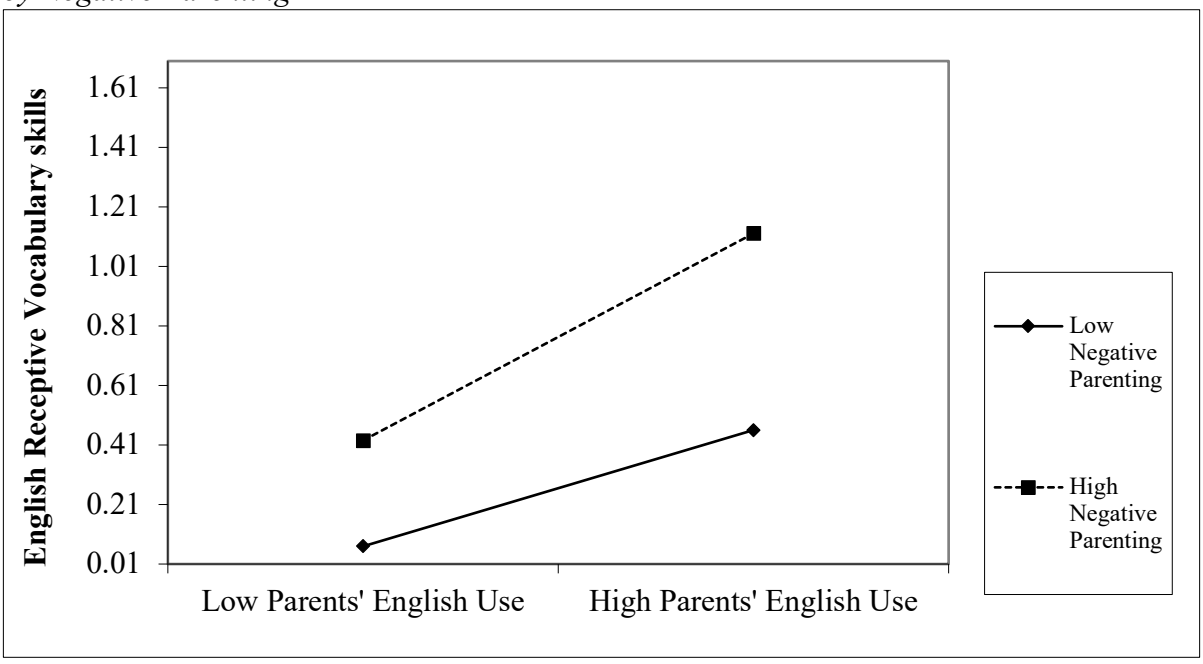

Table 2.1

Parents' English Input and Children's English Receptive Vocabulary Skills by Positive and Negative Parenting

	β	***SE***	***P***
Model 1			
Receptive vocabulary skills in English with positive parenting			
Constant	-0.383	.307	.211
SEX	.334	.206	.104
PEDUC	-.035	.096	.714
NNAT	.318	.100	.002
POSPAR	.307	.110	.005
PARENG	.356	.101	.000
POSPAR*PARENG	.173	.103	.094
Model 2			
Receptive vocabulary skills in English with negative parenting			
Constant	-.349	.320	.275
SEX	.303	.214	.157
PEDUC	.084	.101	.404
NNAT	.392	.102	.000
NEGPAR	.029	.098	.768
PARENG	.310	.102	.002
NEGPAR*PARENG	.242	.109	.026

Note. SEX = Sex of Child; PEDUC = Parents' Education; NNAT = Non-Verbal Cognitive Abilities; POSPAR = Positive Parenting; NEGPAR = Negative Parenting; PARENG = Parents' Linguistic Input in English.

Spanish. For the third and fourth models, I used regression analyses to investigate the relation between parents' input in Spanish and children's Spanish receptive vocabulary skills. Again, there were two interaction variables created between parents' input in Spanish and parent-child relationship qualities, and those were entered as predictors in the next two models. The results from these models are reported in Table 2.2. There were no significant effects reported in models three and four, indicating that parents' input in Spanish, parent-child relationship

qualities, and the interactions between parents' Spanish input and parent-child relationship qualities had no significant effects on children's receptive vocabulary skills in Spanish.

Table 2.2

Parents' Spanish Input and Children's Spanish Receptive Vocabulary Skills by Positive and Negative Parenting

	β	***SE***	***P***
Model 3 Receptive vocabulary skills in Spanish with positive parenting			
(Constant)	-.111	.354	.753
SEX	.109	.238	.646
PEDUC	.182	.110	.099
NNAT	.209	.115	.069
POSPAR	-.008	.498	.987
PARSPAN	.119	.113	.295
POSPAR*PARSPAN	-.026	.487	.958
Model 4 Receptive vocabulary skills in Spanish with negative parenting			
(Constant)	-.095	.342	.781
SEX	.096	.228	.674
PEDUC	.171	.107	.110
NNAT	.211	.115	.066
NEGPAR	-.108	.109	.319
PARSPAN	.157	.119	.187
NEGPAR*PARSPAN	.040	.119	.735

Note. SEX = Sex of Child; PEDUC = Parents' Education; NNAT = Non-Verbal Cognitive Abilities; POSPAR = Positive Parenting; NEGPAR = Negative Parenting; PARSPAN = Parents' Linguistic Input in Spanish.

Expressive Vocabulary Skills

English. In models five and six, I used regression analyses to assess the relation between parents' input in English and children's English expressive vocabulary skills and used two interactions between parents' input in English and parent-child relationship qualities as

predictors in the models. The results reported in Table 3.1 show positive associations between children's non-verbal cognitive abilities and their English expressive vocabulary skills in both model 5. Model 5 was used to assess the association between parents' English input and children's expressive vocabulary skills in English with positive parenting as a moderator. Results indicated a positive association between linguistic input in English from parents and children's expressive vocabulary skills in English, and also a significant association between maternal positive parenting and children's expressive vocabulary skills in English. The interaction between mothers' positive parenting and linguistic input in English had a marginally significant effect on the association between linguistic input from parents and children's receptive vocabulary skills. To evaluate this interaction effect, I standardized the parents' English and positive parenting variables ($M = 0$, $SD = 1$) and created an interaction term POSPAR *PARENG term. I found that negative parenting moderated the association between parents' input in English and children's English expressive vocabulary skills. The results of this interaction are shown in Table 3.1 and Figure 3 The association was positive and significant for children who experienced higher levels of positive parenting (1 *SD* above the mean; $b = .455$, *S.E.* = 10.174, $p = .000$) but not for those who had low levels of positive parenting (1 *SD* above the mean; $b = .098$, *S.E.* = .295, $p = .768$) . This suggests that the association between linguistic input in English and children's expressive vocabulary skills in English varies by mothers' positive parenting behaviors, with those who have higher levels of positive parenting demonstrating better English expressive vocabulary skills. The other effects tested in this model were non-significant.

In model 6, negative parenting was used as the moderator of the association between parents' input in English and children's English expressive vocabulary skills. The association between non-verbal cognitive abilities and English expressive vocabulary skills was significant. This model indicated a significant effect parents' input in English on children's English expressive vocabulary skills. The other associations tested were non-significant.

Figure 3

Association between Parents' English Input and Children's English Expressive Vocabulary Skills by Positive Parenting

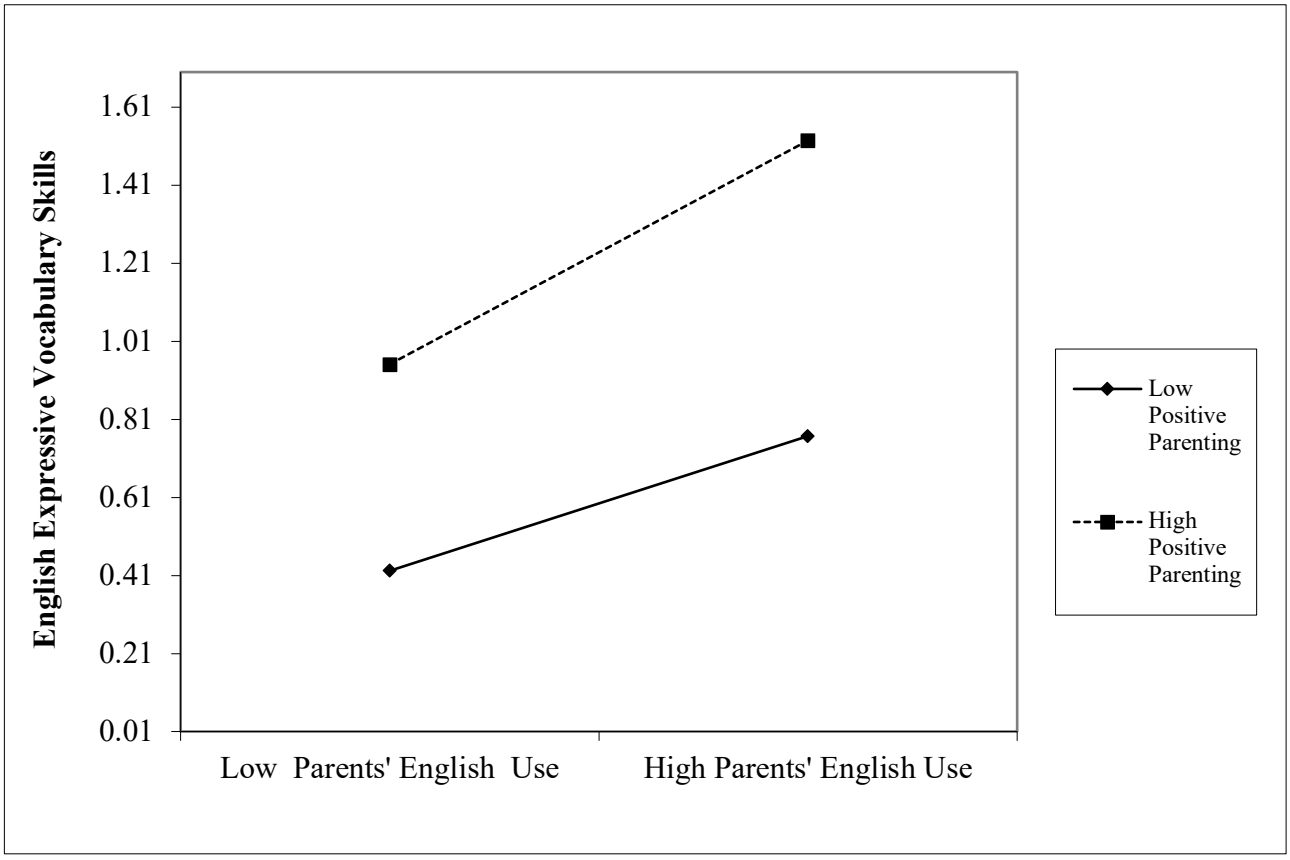

Table 3.1

Parents' English Input and Children's English Expressive Vocabulary Skills by Positive and Negative Parenting

	β	***SE***	***P***
Model 5			
Expressive vocabulary skills in English with positive parenting			
(Constant)	.052	.284	.854
SEX	.008	.189	.968
PEDUC	.069	.090	.447
NNAT	.358	.094	.000
POSPAR	.285	.101	.005
PARENG	.274	.093	.003
POSPAR*PARENG	.181	.094	.054
Model 6			
Expressive vocabulary skills in English with positive parenting			
(Constant)	.225	.305	.461
SEX	-.120	.203	.555
PEDUC	.137	.096	.156
NNAT	.427	.098	.000
NEGPAR	-.049	.093	.596
PARENG	.255	.096	.008
NEGPAR*PARENG	.081	.103	.430

Note: SEX = Sex of Child; PEDUC = Parents' Education; NNAT = Non-Verbal Cognitive Abilities; POSPAR = Positive Parenting; NEGPAR = Negative Parenting; PARENG = Parents' Linguistic Input in English.

Spanish. The seventh and eighth regression models were used to assess the association between parents' Spanish input and children's expressive vocabulary skills in Spanish. The results of both models are displayed in Table 3.2. Similar to the previous models, I created and included two interaction variables for Spanish input from parents and parent-child relationship qualities as predictors in these models. In regard to model 7, which included parents input in Spanish, positive parenting, and the interaction between parents' Spanish input and positive parenting, the only significant association was between parents' input in Spanish and children's

expressive vocabulary skills. Model 8 included the interaction between parents input in Spanish, negative parenting, and the interaction between parents' Spanish input and negative parenting. The only significant association in the 8th model was between parents' input in Spanish and children's expressive vocabulary skills in Spanish**.**

Table 3.2
Parents' Spanish Input and Children's Spanish Expressive Vocabulary Skills by Positive and Negative Parenting

	β	***SE***	***P***
Model 7			
Expressive vocabulary skills in Spanish with positive parenting			
(Constant)	.029	.342	.933
SEX	-.009	.230	.969
PEDUC	.132	.107	.217
NNAT	.115	.111	.299
POSPAR	-.056	.481	.907
PARSPAN	.271	.110	.013
POSPAR*PARSPAN	-.085	.470	.856
Model 8			
Expressive vocabulary skills in Spanish with negative parenting			
(Constant)	-.032	.332	.924
SEX	.034	.222	.879
PEDUC	.100	.104	.334
NNAT	.098	.112	.382
NEGPAR	-.111	.106	.295
PARSPAN	.334	.116	.004
NEGPAR*PARSPAN	.083	.115	.474

Note: SEX = Sex of Child; PEDUC = Parents' Education; NNAT = Non-Verbal Cognitive Abilities; POSPAR = Positive Parenting; NEGPAR = Negative Parenting; PARSPAN = Parents' Linguistic Input in Spanish.

Teacher-Child Relationship Quality as a Moderator between Linguistic Input from Teachers and Children's Expressive and Receptive Vocabulary Skills

Receptive Vocabulary Skills

The models for teachers were similar to the ones described above, except that teacher's input served as the predictor instead of parents' input. Also, the interaction variables were created using teachers' input and teacher-child relationship qualities.

English. Teacher-child relationship quality was used as a moderator to assess the role of teacher's English input on children's English receptive vocabulary skills. Model 9 was used to assess the role of close teacher-child relationships whereas model 10 was used to assess the role of conflictual child relationships. There were interaction terms created using teachers' input and either close or conflictual relationships in each of the separate models. Children's non-verbal cognitive abilities had a significant effect on their receptive vocabulary skills in English for both model 9 and model 10. As shown in Table 4.1, all other effects were non-significant.

Table 4.1

Teachers' English Input and Children's English Receptive Vocabulary Skills by Teacher-Child Close and Conflictual Relationships

	β	***SE***	***P***
Model 9 Receptive vocabulary skills in English with teacher-child closeness			
(Constant)	-.255	.409	.533
SEX	.229	.286	.424
PEDUC	.039	.133	.767
NNAT	.314	.144	.030
TENG	.191	.150	.202

TCLOSE	.042	.147	.776
TCLOSE*TENG	-.150	.143	.294
Model 10 Receptive vocabulary skills in English with teacher-child conflict			
(Constant)	-.245	.399	.539
SEX	.226	.282	.421
PEDUC	.053	.136	.698
NNAT	.319	.143	.026
TENG	.163	.153	.286
TCONF	.081	.157	.604
TCONF*TENG	-.087	.221	.694

Note: SEX = Sex of Child; PEDUC = Parents' Education; NNAT = Non-Verbal Cognitive Abilities; TENG = Teacher's Linguistic Input in English; TCONF = Teacher-Child Conflict; TCLOSE = Teacher-Child Closeness.

Spanish. For models 11 and 12, teacher-child relationship quality was used to evaluate the effects of Spanish input from teachers on children's receptive vocabulary skills in Spanish. Teacher-closeness was the moderator in model 11, whereas teacher-child conflict was the moderator in model 12. Similar to previous models, there were interaction terms created using teachers' input and either close or conflictual relationships in the relevant models. was used to assess the role of teacher's English input on children's English expressive vocabulary skills. There were no significant effects found in model 11. In model 12, there was a significant association between mothers' education and their children's Spanish receptive vocabulary skills. The interaction between teacher-child conflict and teachers' Spanish input also had a significant effect on the children's receptive vocabulary skills. Here, I used the standardized ($M = 0$, $SD = 1$) teachers' Spanish input and teacher-child conflict and created an interaction term TCONF

*TSPAN. After plotting the interaction, I found that teacher-child conflict moderated the association between teachers' input in Spanish and children's Spanish receptive vocabulary skills. The results of this interaction are shown in Table 4.2 and Figure 4. The association was negative and significant for children who experienced lower levels of teacher-child conflict (1 *SD* below the mean; b = -.099, *S.E.* = -2.214, p = .029) and positive for those who had high levels of conflict with their teachers (1 *SD* above the mean; b = .337, *S.E.* = 4.766, p = .000). This result suggests that, for the children who participated in this study, low teacher-child conflict weakend the the association between teachers' input in Spanish and children's receptive vocabulary skills in Spanish. In contrast, high teacher-child conflict strengthened the association between input received and children's receptive vocabulary skills. All other effects tested were not significant.

Figure 4

Association between Teachers' Spanish Input and Children's Spanish Receptive Vocabulary Skills by Teacher- Child Conflict

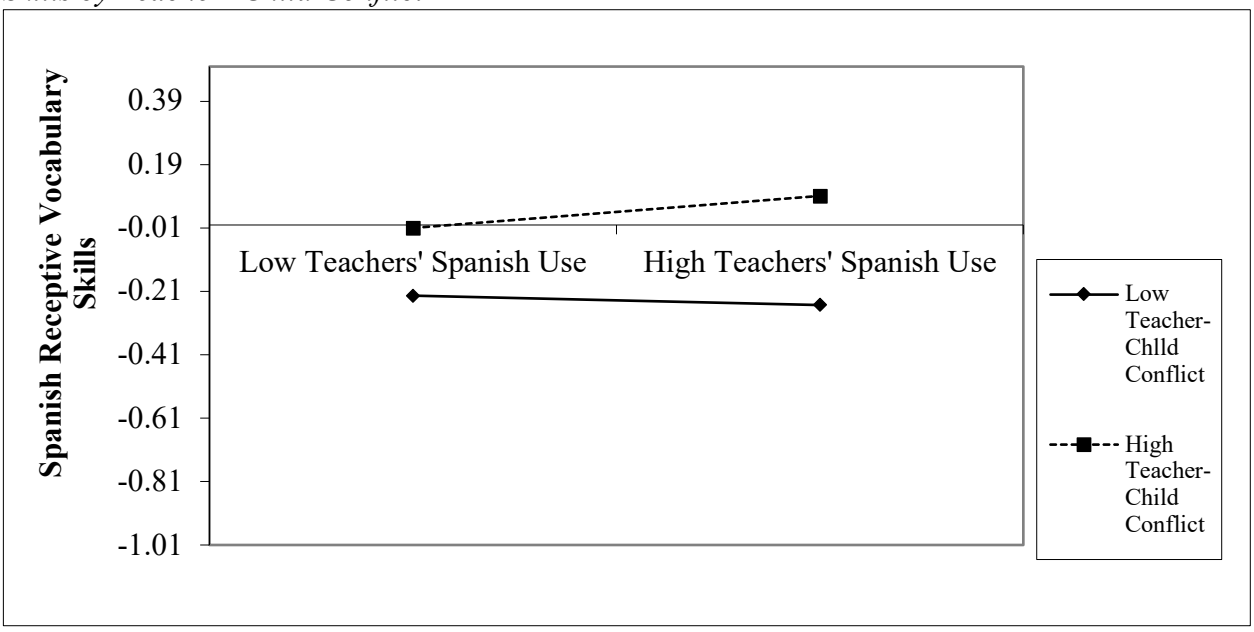

Table 4.2

Teachers' Spanish Input and Children's Spanish Receptive Vocabulary Skills by Teacher-Child Close and Conflictual Relationships

	β	***SE***	***P***
Model 11 Receptive vocabulary skills in Spanish with teacher-child closeness			
(Constant)	-.309	.454	.496
SEX	.333	.316	.292
PEDUC	.233	.146	.110
NNAT	.062	.159	.699
TSPAN	-.124	.165	.451
TCLOSE	-.023	.167	.891
TCLOSE*TSPAN	-.023	.192	.905
Model 12 Receptive vocabulary skills in Spanish with teacher-child conflict			
(Constant)	-.224	.416	.590
SEX	.264	.293	.367
PEDUC	.308	.143	.031
NNAT	.033	.150	.827
TSPAN	-.099	.158	.530
TCONF	.218	.141	.124
TCONF*TSPAN	.436	.204	.032

Note: SEX = Sex of Child; PEDUC = Parents' Education; NNAT = Non-Verbal Cognitive Abilities; TSPAN = Teacher's Linguistic Input in Spanish; TCONF = Teacher-Child Conflict; TCLOSE = Teacher-Child Closeness.

Expressive Vocabulary Skills

English. In models 13 and 14, teacher-child relationship qualities were used as moderators in the association between English input from teachers and children's expressive vocabulary skills in English. I created an interaction variable between teacher-child closeness and teachers' input in English for model 13, and, for the interaction term for model 14, I used

teacher-child conflict and teachers' input in English. The results displayed in Table 5.1 show that the only significant effects in both models were for the effects of children's non-verbal cognitive abilities on their expressive vocabulary skills for model 13 and model 14.

Table 5.1

Teachers' English Input and Children's English Expressive Vocabulary Skills by Teacher-Child Close and Conflictual Relationships

	β	***SE***	***P***
Model 13 Expressive vocabulary skills in English with teacher-child closeness			
(Constant)	.308	.363	.395
SEX	-.161	.250	.520
PEDUC	.139	.115	.228
NNAT	.322	.128	.012
TENG	.131	.129	.310
TCLOSE	.153	.131	.242
TCLOSE*TENG	-.122	.124	.326
Model 14 Expressive vocabulary skills in English with teacher-child conflict			
(Constant)	.240	.352	.497
SEX	-.122	.246	.621
PEDUC	.112	.119	.348
NNAT	.349	.126	.006
TENG	.132	.132	.319
TCONF	-.067	.137	.625
TCONF*TENG	.136	.193	.479

Note: SEX = Sex of Child; PEDUC = Parents' Education; NNAT = Non-Verbal Cognitive Abilities; TENG = Teacher's Linguistic Input in English; TCONF = Teacher-Child Conflict; TCLOSE = Teacher-Child Closeness.

Spanish. Similar to previous models, the last two models tested teacher-child relationship qualities as moderators in the association between Spanish input from teachers and children's expressive vocabulary skills in Spanish. The interactions that I created for these models were for the interaction between teacher-child closeness and teachers' input in Spanish for model 15 and between teacher-child conflict and teachers' input in Spanish for model 16. As shown in Table 5.2, there were no significant effects indicated in these two models.

Table 5.2

Teachers' Spanish Input and Children's Spanish Expressive Vocabulary Skills by Teacher-Child Close and Conflictual Relationships

	β	***SE***	***P***
Model 15 Expressive vocabulary skills in Spanish with teacher-child closeness			
(Constant)	-.169	.407	.677
SEX	.187	.284	.510
PEDUC	.093	.131	.478
NNAT	.178	.142	.211
TSPAN	.067	.148	.650
TCLOSE	.015	.150	.920
TCLOSE*TSPAN	.034	.172	.844
Model 16 Expressive vocabulary skills in English with teacher-child conflict			
(Constant)	-.166	.376	.658
SEX	.195	.264	.460
PEDUC	.136	.129	.291

NNAT	.198	.135	.143
TSPAN	.090	.143	.529
TCONF	-.177	.128	.166
TCONF*TSPAN	.167	.184	.364

Note: SEX = Sex of Child; PEDUC = Parents' Education; NNAT = Non-Verbal Cognitive Abilities; TSPAN = Teacher's Linguistic Input in Spanish; TCONF = Teacher-Child Conflict; TCLOSE = Teacher-Child Closeness.

Discussion

Regression analysis was used to assess whether adult-child relationship qualities moderated the association between Spanish and English linguistic input from adults, and children's receptive and expressive vocabulary skills in both languages. In comparison with previous research about the role of input and relationship qualities, the results of these analyses were mixed. I explain these mixed findings in the subsequent paragraphs.

Input from Parents and Parent-Child Relationship Quality

There were mixed findings in the regression models used to assess the effects of parents' input in English and Spanish on children's receptive and expressive vocabulary skills and the role of parent-child relationships in that association. First, the results showed that parents' input in English positively influenced children's receptive and expressive vocabulary skills. This finding is consistent with previous research conducted with English monolinguals which showed that the quantity of English input that children receive from their parents, especially between 14 and 26 months of age when language abilities are rapidly developing, has a positive effect on their growth in vocabulary skills input (Huttenlocher et al., 1991; Huttenlocher, 1998). In a similar vein, other studies with bilingual children have also shown the importance of the quantity of input received on children's vocabulary skills as demonstrated in these analyses (e.g. Duursma et al., 2007; Hoff, 2013; Hoff et al., 2012; Palermo et al., 2014; Place & Hoff, 2011).

Additionally, the results of my analyses showed that parents' input in Spanish was positively associated with children's expressive vocabulary skills in Spanish, but not with their receptive vocabulary skills. Based on the comparative study by De Houwer and colleagues (2014) in which the bilingual children expressed higher receptive vocabulary skills when

compared to their monolingual peers, I expected a significant effect for children's receptive vocabulary skills as well. De Houwer and colleagues (2014) conclude that diversity and linguistic input both contribute to the development of language skills. Since I do not have a measure of the diversity of parents' linguistic input in both languages, it is difficult to draw a definitive conclusion as to why parents' Spanish input did not influence children's receptive vocabulary skills. However, it is possible that for the children in my study the quantity of parents' Spanish input alone was not a significant contributor to the receptive vocabulary skills. It is also possible the method used was not able to fully capture the quantity of parents' Spanish.

In the models in which I tested the role of parent-child relationship quality on children's vocabulary skills, I found that positive parenting had a significant effect on both expressive and receptive vocabulary skills in English. This was not surprising because language acquisition is a social process and like all relationships, closer relationships provide an avenue for more positive interactions that influence child outcomes such as academic achievement (Jeynes, 2003). As such, it is possible that the children in this study who had positive relationships with their parents were afforded more opportunities for input, practice, and feedback (Bowers & Vasilyeva, 2011; Duursma et al., 2007; Gámez, 2015; Hoff, 2003; Hoff-Ginsberg, 1991; Palermo et al., 2014; Pianta, 199; Place & Hoff, 2011).

The interaction between negative parenting and parents' English showed a significant effect on children's English receptive vocabulary skills although negative parenting on its own showed no such effects. This finding suggests that, for the sample of children used in this study, parents' English input influenced their English receptive vocabulary skills, and this influence was stronger for those children who had higher levels of negative parenting. To understand this

finding, it is important to note that the PPI measure used to evaluate parent-child relationship quality has not been validated for use with Latino families. Also, most of the items that make up the negative parenting variable on the PPI focused on parents' use of control with their children (e.g. "*How often do you order your child around, tell him/her what to do or give commands?*"). There is evidence that suggests that Baumrind's (1967) traditional parenting styles (e.g., authoritative and authoritarian parenting), which are based on a scale of parental warmth and control, may not be appropriate for studies involving ethnic-minority populations (Kim & Rohner, 2002). The definitions and expression of warmth and control in the Western world may be different from the definitions of these two constructs and the factors that influence them in other cultural contexts (Halgunseth, 2019). It is possible that in Latino families living in the US, high levels of parental control may not have a negative effect on children due to other interacting factors such as family and cultural values, context (e.g., number of years spent in the US), and level of acculturation. As such, the positive influence of the negative parenting on children's receptive vocabulary skills may be due to the fact that in other cultural contexts other than the US, control from parents may serve as protective factors for children. Further, it is possible that, although the relationship quality is negative, children are still receiving input during those interactions with parents (Huttenlocher et al., 1991; Huttenlocher, 1998), although they may not have the opportunity to express themselves and receive feedback on their use of language (i.e. expressive vocabulary skills).

There were no significant effects found for the role of positive or negative parenting and Spanish input on children's expressive and receptive vocabulary skills. Again, it is possible that the Westernized ideas of parenting styles and their effects on child outcomes are less relevant to

the sample used in this study. It is also likely that the English input that the children received from home was also supported by the English input from teachers at school, thus strengthening their English vocabulary skills. The results for the teacher-child models will be discussed below.

Input from Teachers and Teacher-Child Relationship Quality

I did not find any significant effects in the models for the effects of teachers' input in Spanish and English on children's expressive and receptive vocabulary skills. This is consistent with previous studies in which the quantity of teachers' linguistic input did not influence children's expressive and receptive vocabulary skills (Palermo et al., 2014). Linguistic diversity is important in the development of literacy and vocabulary skills for English monolinguals (Bowers & Vasilyeva, 2011; Dickinson & Porsche, 2011), so it is possible that the diversity of input from teachers in both languages might have made a difference in children's vocabulary skills. However, due to the methods of data collection, I do not have observational data about the diversity of teachers' input in this study, so it is impossible for me to draw conclusions about the possible role of diverse input in this case.

Although prior research emphasizes the role of teacher-child relationship quality on children's academic and social competence (e.g. Palermo et al., 2007), I did not find any significant direct effects for the role of teacher-child relationship quality in this study. However, as demonstrated in Figure 4, there was a significant interaction effect between linguistic input and teacher-child relationship quality. This suggests that teacher-child relationship quality might be important when assessing the role of input received in children's subsequent vocabulary skills. Teacher-child relationship quality is influenced by the individual characteristics of both teachers and children (Pianta, 1999). Saft and Pianta (2001) noted that teachers tend to report

more positive relationships with students who are from the same background (e.g., racial/ethnic) as the teacher. Because very few of the teachers in this study were from the same racial/ethnic background as the students in their classrooms, it is possible that teachers' reports of closeness or conflict with the students may have been influenced by their perceptions of their own similarities with students. Also, there were two teachers in the 10 classrooms where data were collected for this study: a lead teacher and a teacher's aide. The STRS was completed by the lead teachers, who were mostly English monolinguals and may not have been the ones who were speaking Spanish with the children. It is possible that the teachers' reports of closeness or conflict may not be reflective of the actual teacher-child relationships with students because the lead teachers may have been using English as the main language of communication with the children. If teacher-child relationships are shaped partly by similarities in teacher-child characteristics, then it is possible that the reports of close and conflictual teacher-child relationships may have been different if the STRS had been completed by the teachers' aides who were mostly bilingual Spanish and English speakers.

Similar to the significant effects found for the interaction between negative parenting and parents' English input on children's receptive vocabulary skills, the interaction between teacher-child conflict and teachers' input in Spanish also had a significant effect on children's Spanish receptive vocabulary skills. These results indicate that, for the children who participated in this study, high conflictual relationships with teachers influenced the association between teachers' input in Spanish and children's receptive vocabulary skills in Spanish. Again, this finding provides support for the role of input on the development of language skills because, although it is a conflictual relationship, children are still receiving input during those interactions with

teachers. Also, considering the ages of the children involved in this study (44 to 60 months old), and the fact that between the ages of 3 and 4 years old, children have higher receptive vocabulary skills than expressive vocabulary skills (Santrock, 2014), it is possible that because input is being provided regardless of the type of relationship quality, children are only exhibiting the appropriate language skills for that developmental period. Furthermore, the items on the STRS were more associated to the socioemotional aspects of child behavior (e.g.*"This child becomes easily angry with me"*) rather than teachers' use of control in the classroom. Since teacher-child relationships are bidirectional and are influenced by both teacher and child characteristics (Saft & Pianta, 2001) it is possible that children may be picking up on teachers' emotions during their interactions with them.

Limitations and Future Directions

There were some limitations to this study. First, the lack of data about the quality of linguistic input received from both parents and teachers made it impossible to assess the contributions of the quality of input received to children's vocabulary skills. Additionally, as noted in the methods section, the measure used to assess parent-child relationship quality in this data set (PPI) was not assessed for cultural sensitivity and appropriateness for this population. Lastly, I only used three control measures (i.e., parents' education, children's biological sex, and children's non-verbal cognitive abilities) in my analyses because I found other research which suggests that those variables might impact children's vocabulary skills. However, there may be other factors in the child's environment that might have an indirect influence on children's vocabulary skills.

For future studies, I suggest that researchers use robust measures of the classroom environment that will enable them to get a clearer picture of the quantity and quality of input that teachers provide for students. For example, instead of brief periods of rotated observations, the use of video cameras in the classroom might provide more details about other aspects of the classroom environment and teacher-child interactions that might support dual-language development. The use of video recordings of teacher-child interactions (e.g., during free play or choice time) might provide researchers with more details about the duration, content, and quality of teacher-child interactions. Also, researchers can incorporate a mixed-method approach where they conduct in-depth interviews and observations of parents and teachers to learn more details about the specific types of interactions that they engage in with the children (e.g. book reading, conversations, tv shows, etc.) and the languages used during those interactions. Further, in future

studies, the selected measures used to assess parent-child relationship quality in this population should be specifically tailored to the nuances in the ethnic and cultural background of this population. These may include an assessment of the importance of family values, parents' cultural orientation, and socialization practices (Halgunseth, 2019). If the measures available to researchers are adapted from or created for another population, they should be assessed for cultural sensitivity and appropriateness before being used. Additionally, anupdated measure should be used to assess the Spanish receptive vocabulary skills of students since the TVIP measure is outdated and may not capture the full range of Spanish linguistic input that children are currently being exposed to. In regard to control variables, future studies can explore other factors (e.g. dominant language spoken in the neighborhood, number of individuals in the home, siblings, language used by other individuals in the home, etc.) that may influence the quantity and quality of input that children receive in both languages.

Conclusion

The goal of this study was to examine the role of relationship qualities as a moderator in the association between the quantity of input in Spanish and English from parents and teachers and children's expressive and receptive vocabulary skills in both languages. In this study, I found evidence to support prior research which suggests that the quantity of input from parents and teachers influences children's expressive and receptive vocabulary skills. I also found that positive parent-child interactions can affect children's vocabulary skills. Furthermore, even when adult-child relationship qualities are perceived as negative, especially from a Western perspective, I found that there may be some cultural and ethnic differences between populations, which might lead to positive outcomes for children.

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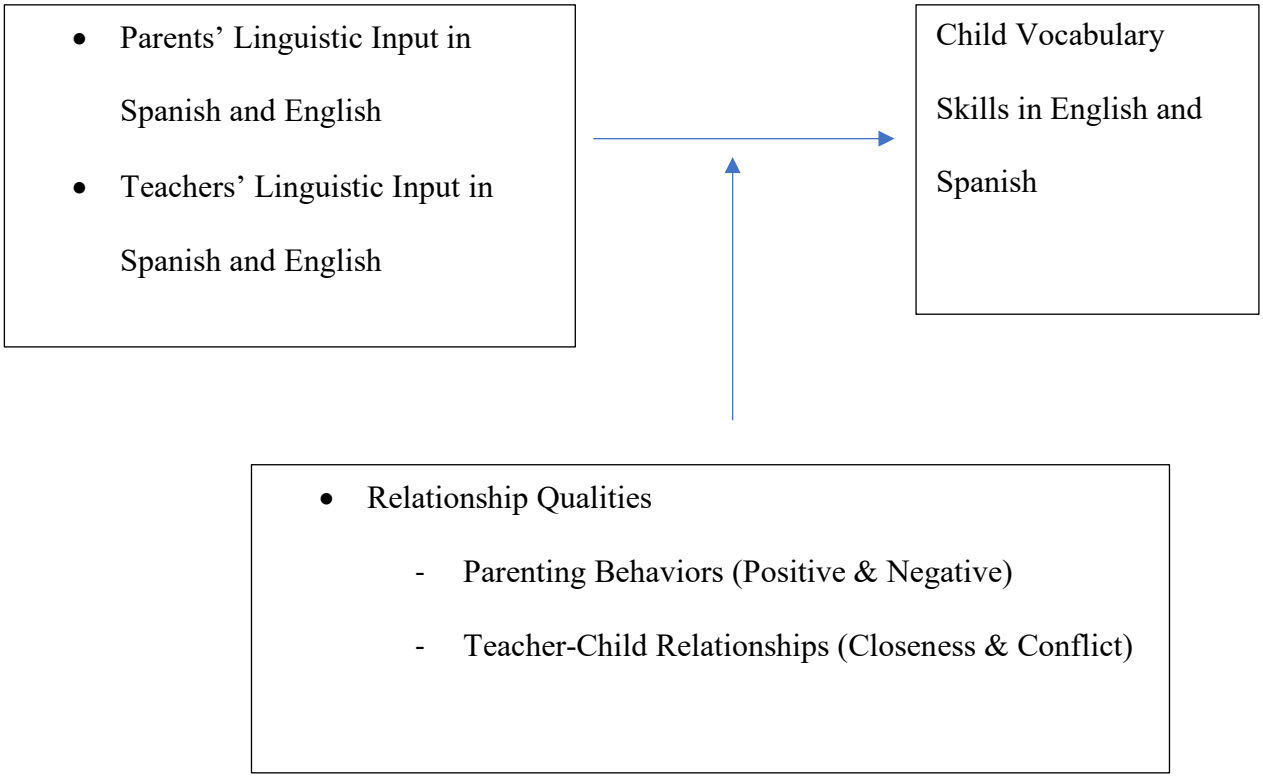
Appendix A

Figure 1: Conceptual Model



Appendix B

Parent Perception Inventory Scale (PPI; Hazzard, Christensen, &Margolin, 1983).
Response Scale: 1=Never **2**=A Little **3**=Sometimes **4**=A Lot **5**=Always
Questions
1. How often will you say thank you to your child for doing things, tell him/her when you like what s/he did, give something to or let him/her do something special when s/he behaves well?
2. How often do you take things away from your child when s/he misbehaves (for example, not letting him/her watch TV, eat dessert, etc.)?
3. How often do you talk to your child when s/he feels bad and help him/her to feel better, to solve problems and to feel comforted?
4. How often do you tell your child that s/he didn't do something right, or criticize him/her?
5. How often do you talk to your child, just listen, or have a good conversation with him/her?
6. How often do you order your child around, tell him/her what to do or give commands?
7. How often do you let your child help decide what to do or let him/her help solve problems?
8. How often do you spank, slap, or hit your child?
9. How often do you play with your child, spend time together, or do things together which your child likes?
10. How often do you get mad at your child and yell at him/her?
11. How often do you say nice things, compliment your child or tell him/her that s/he is a good person?
12. How often do you threaten or warn your child or tell him/her that s/he will get into trouble if s/he does something wrong?
13. How often do you let your child do what other kids his/her age do or let your child do things on his/her own?
14. How often do you send your child to his/her room (or the corner) when s/he has done something wrong?
15. How often do you help your child with something when s/he needs it (with a hard job, something s/he can't do)?
16. How often do you nag, tell your child what to do over and over again, or keep after him/her to do things?
17. How often do you hug, kiss, tickle, or smile at your child?

18. How often do you ignore, not pay any attention to or not talk to your child?
19. How often do you give reasons or explain why, when you tell your child that s/he is supposed to do something or not do something?
20. How often do you give unfair punishments that are worse than your child deserves, or which s/he doesn't deserve at all?
Note: Wording of some items was changed to make for clearer translation.
Scale Scoring
Positive Parenting = Mean (1, 3, 5,7, 9, 11, 13,15,17, 19)
Negative Parenting = Mean (2, 4, 6, 8, 10, 12, 14,16, 18, 20)

Appendix C

Student-Teacher Relationship Scale (STRS; Pianta, 2001)
Response Scale: 1=Definitely does not apply **2**=Does not really apply **3**=Neutral, not sure **4**=Applies somewhat **5**=Definitely applies
Questions
1. I share an affectionate, warm relationship with this child.
2. This child and I always seem to be struggling with each other.
3. If upset, this child will seek comfort from me.
4. This child is uncomfortable with physical affection or touch from me.
5. This child values his/her relationship with me.
6. This child appears hurt or embarrassed when I correct him/her.
7. When I praise this child, he/she beams with pride.
8. This child reacts strongly to separation from me.
9. This child spontaneously shares information about himself/herself.
10. This child is overly dependent on me.
11. This child becomes easily angry with me.
12. This child tries to please me.
13. This child feels that I treat him/her unfairly.
14. This child asks for my help when he/she really does not need help.
15. It is easy to be in tune with what this child is feeling.
16. This child sees me as a source of punishment and criticism.
17. This child expresses hurt or jealousy when I spend time with other children
18. This child remains angry or is resistant after being disciplined.
19. When this child is misbehaving, he/she responds well to my look or tone of voice.
20. Dealing with this child drains my energy.
21. I've noticed this child copying my behavior or ways of doing things.
22. When this child is in a bad mood, I know we're in for a long and difficult day.
23. This child's feelings toward me can be unpredictable or can change suddenly.
24. Despite my best efforts, I'm uncomfortable with how this child and I get along.
25. This child whines or cries when he/she wants something from me.
26. This child is sneaky or manipulative with me.
27. This child openly shares his/her feelings and experiences with me.
28. My interactions with this child make me feel effective and confident.

Scale Scoring
Closeness = Mean (1, 3, 4r, 5, 7, 9, 12, 15, 21, 27, 28)
Conflict = Mean (2, 11, 13, 16, 18,19r, 20, 22, 23, 24, 25, 26)
Dependency = Mean (6, 8, 10, 14, 17)