Six Principles of Language Development: Implications for Second Language Learners

Haruka Konishi, Junko Kanero, Max R. Freeman, Roberta Michnick Golinkoff & Kathy Hirsh-Pasek

Published online: 04 Aug 2014.

Submit your article to this journal

View related articles

View Crossmark data

Routledge
Taylor & Francis Group

Six Principles of Language Development: Implications for Second Language Learners

Haruka Konishi

School of Education, University of Delaware, Newark, Delaware

Junko Kanero

Department of Psychology, Temple University, Philadelphia, Pennsylvania

Max R. Freeman

*Roxelyn and Richard Pepper Department of Communication Sciences and Disorders,
Northwestern University, Evanston, Illinois*

Roberta Michnick Golinkoff

School of Education, University of Delaware, Newark, Delaware

Kathy Hirsh-Pasek

Department of Psychology, Temple University, Philadelphia, Pennsylvania

The number of children growing up in dual language environments is increasing in the United States. Despite the apparent benefits of speaking two languages, children learning English as a second language (ESL) often face struggles, as they may experience poverty and impoverished language input at home. Early exposure to a rich language environment is crucial for ESL children's academic success. This article explores how six evidenced-based principles of language learning can be used to provide support for ESL children.

Speaking multiple languages is the norm, not the exception in many parts of the world. Approximately 66% of children throughout the world are being raised bilingual (Associated Press, 2001). In the European Union (EU), 54% of the population can hold a conversation in at least two languages and 25% is able to speak three languages (European Commission, 2012). Even in the United States, roughly 12.9% of individuals over the age of five reported that they spoke a language other than English at home in 2013, representing an increase of 117% since 1990 (U.S. Census Bureau, 2013). Having the ability to speak more than one language

Correspondence should be addressed to Haruka Konishi, School of Education, University of Delaware, Willard Hall Education Building, Room 224, Newark, DE 19716. E-mail: harukak@udel.edu

can be advantageous in an increasingly globalized world, as it allows for a greater number of communicative partners and better job opportunities. Further, being bilingual may offer children and adults cognitive advantages, including benefits in executive function (Bialystok, 2011; Engel de Abreu, Cruz-Santos, Tourinho, Martin, & Bialystok, 2012; but see Valian, 2012), spatial working memory (Luo, Craik, Moreno, & Bialystok, 2013), and metalinguistic awareness (Bialystok & Barac, 2012). These cognitive advantages may be a result of bilinguals' experience with juggling two languages, a process that is thought to recruit inhibitory control mechanisms (Bialystok, 2011; Freeman, Shook, & Marian, in preparation; Werker, 2012).

As the world's bilingual population grows, it is important to note that learning a second language (L2) per se does not lead to language confusion or difficulty succeeding in an academic environment (McCabe et al., 2013; Pearson, Fernandez, & Oller, 1993). Despite this evidence, being bilingual is often perceived as a handicap in the United States (Hakuta, 1986; McCabe et al., 2013), likely because children of immigrant parents who make up the bulk of L2 learners tend to also be of lower socioeconomic status (SES). The poverty rate in 2010 for immigrant families was 23%, compared to 13.5% for native-born families (Camarota, 2012). Many children of immigrant families come to the United States without knowing much English and grow up in poverty. These English as a Second Language (ESL) children who start school with smaller English vocabularies than their monolingual English-speaking peers often fall behind (Hoff, 2013; Hoff, Core, et al., 2012; Oller & Eilers, 2002) and sustain poorer learning trajectories throughout the school years (National Center for Education Statistics, 2005). Finding ways to augment proficiency in the L2 could greatly impact ESL children's learning trajectories and chances of academic success (Espinosa, 2013; Hammer, Jia, & Uchikoshi, 2011; McCabe et al., 2013).

Why does poverty influence language development in L2 learners? One possible explanation is that children from low-income households have smaller vocabulary sizes because they receive less language input from their parents than do middle-class children (Hart & Risley, 1995; Hoff, 2006; Hoff, Laursen, & Bridges, 2012). On average, the number of words children hear per hour at ages 10 months through 3 years differs dramatically across SES: 616 words in the welfare group compared to 1,251 words in the working class group and 2,153 words in the professional group (Hart & Risley, 1995). Importantly, vocabulary size is one of the best predictors of academic achievement and general intelligence (e.g., Anderson & Freebody, 1981). Early language input may have similar and even more dramatic consequences for L2 learners since children growing up in bilingual environments hear less input in *each* of their languages (Hoff, Core, et al., 2012), which is evidenced by the relationship between ESL children's English vocabulary size and their performance on a standardized test of English reading (Garcia, 1991; Proctor, Carlo, August, & Snow, 2005; Saville-Troike, 1984).

This article focuses on children in preschool through the early primary grades who first acquire a language other than English at home and later learn English as a second language in school (Hammer, Lawrence, & Miccio, 2008). We introduce six evidence-based principles of language development (Table 1) that, if translated into practice by caregivers, teachers, and practitioners (e.g., pediatricians, speech-language pathologists) both in the home and in school classrooms, may fuel language development in ESL children. These six principles incorporate multiple factors that impact language acquisition based on existing research on language development in monolingual children and children learning an L2.

TABLE 1
Six Principles of Second Language Development

Principle 1	Children learn what they hear most.
Principle 2	Children learn words for things and events that interest them.
Principle 3	Interactive and responsive rather than passive contexts promote language learning.
Principle 4	Children learn words best in meaningful contexts.
Principle 5	Children need to hear diverse examples of words and language structures.
Principle 6	Vocabulary and grammatical development are reciprocal processes.

SIX PRINCIPLES OF LANGUAGE LEARNING APPLIED TO L2

A large literature on monolingual language development provides a useful guide on how to foster strong language skills in L1 acquisition (e.g., Harris, Golinkoff, & Hirsh-Pasek, 2011; Parish-Morris, Golinkoff, & Hirsh-Pasek, 2013), but less is available on ESL. Because ESL children's early language skills have consequences for their later academic achievement (Miller et al., 2006) and because the number of ESL children entering school is increasing (Batalova & McHugh, 2010), understanding the factors that promote L2 acquisition is imperative.

Principle 1: Children Learn What They Hear Most

Frequency matters; children learn what they hear most. A concern for ESL children growing up in impoverished environments is that the amount of input a child hears in *each* language may affect vocabulary size in *each* language (Gollan, Montoya, Cera, & Sandoval, 2008; Hoff, Core, et al., 2012; Pearson, Fernandez, Lewedeg, & Oller, 1997). Research suggests that ESL children tend to have a smaller vocabulary size in each language compared to their monolingual peers (Bialystok, Craik, Green, & Gollan, 2009; Pearson et al., 1993), although the combined or conceptual vocabulary size of both languages is often equal to that of monolinguals (Hoff, Core, et al., 2012; Pearson et al., 1993). ESL children, who already have an established L1, may face additional struggles that bilingual children who simultaneously acquire two languages do not experience. For example, ESL children are likely to rely on their L1 during the initial stages of L2 acquisition (White, 1996), experiencing negative transfer or interference from the L1 to the L2. Receiving a large amount of L2 input is especially important for ESL children, as they may need extra support.

Why is amount of input important for language learning? As early as 8 months, infants extract regularities, such as word boundaries, from the stream of speech input surrounding them. For example, infants can track transitional probabilities of neighboring speech syllables (i.e., the likelihood that one syllable follows another) in a continuous stream of speech (Saffran, Aslin, & Newport, 1996). This statistical ability is robust and helps children not only detect neighboring sounds and find words in their primary language(s), but also detect words in foreign languages to which they have never been exposed (e.g., Hay, Pelucchi, Graf Estes, & Saffran, 2011). To extract regularities, sufficient input must be present, and the frequency with which children hear words affects their ability to acquire words (Huttenlocher, Haight, Bryk, Seltzer, & Lyons, 1991). In addition, the amount of language input affects processing speed, or the rate at

which children recognize spoken words. Processing speed, in turn, likely affects children ability to grasp the meaning of new words uttered in linguistic context (Weisleder & Fernald, 2013).

Statistical learning is likely to be used by ESL children, as studies have shown that infants can track speech sounds in foreign languages (e.g., Hay et al., 2011). Even after children learn to isolate phonemes, stress patterns, and words in the initial stages of acquisition, large quantities of L2 input are needed to acquire syntactic structures. Amount of language input also affects language processing speed and trajectories of vocabulary learning in bilingual children. Input quantity children received at 18 months related to word recognition and vocabulary size at 24 months, such that those who received more input at 18 months were faster in word recognition and knew more words at 24 months (Hurtado, Marchman, & Fernald, 2008).

Because amount of language input is especially important for ESL children who already have an established L1 (Hammer et al., 2008; Hoff, Core, et al., 2012), parents and practitioners who work with ESL children must provide them with large amounts of language input in both languages as early as possible, to prevent future language difficulties that ESL children frequently face. Although research suggests that amount of language input matters, it remains subject to future research to investigate how much L2 input is necessary for ESL children to catch up to their monolingual peers in their academic achievement.

Principle 2: Children Learn Words for Things and Events That Interest Them

Bloom (1993) argued that children are likely to learn words for things they find interesting or salient. In her words, "Language learning is enhanced when the words a child hears bear upon and are pertinent to the objects of engagement, interest, and feelings . . . " (Bloom, 1993, p. 19—Principle of Relevance). The learner's interest plays an essential role in any type of learning. Importantly, what is appealing to an infant may be different from what is interesting to a child. Here, we consider how *perceptual* and *social* factors may promote L1 and L2 development. The Emergentist Coalition Model (ECM) of language development suggests that children have access to a number of co-occurring cues for word learning, but hone in on cues that they are particularly drawn to at different developmental time points (Golinkoff & Hirsh-Pasek, 2006; Hollich et al., 2000). Infants may initially map labels only to salient objects and may not learn the names of objects they consider boring. Indeed, 10-month-old infants rely on perceptual saliency when attaching labels to objects (Pruden, Hirsh-Pasek, Golinkoff, & Hennon, 2006).

By 18 months, infants begin to use social cues from the speaker such as eye gaze and object handling to attach labels to referents (Hollich et al., 2000). Infants initially lack the skills required to coordinate attention between objects and social partners; however, their ability to maintain *joint attention*, or the mechanism of sharing common referents within a dyad, becomes well consolidated by the age of 18 months (Bakeman & Adamson, 1984). Once infants acquire the capacity to engage in joint attention, adults can manipulate objects to sustain the child's interest, which facilitates word learning. Indeed, the amount of time dyads spent in joint attentional episodes during six months of home observation, beginning with the child's first birthday, was positively related to the child's vocabulary size at 18 months (Tomasello & Todd, 1983; see also Tomasello, Mannle, & Kruger, 1986). Research suggests that children whose parents *follow* their child's interest to an object, creating a joint attention situation, are more likely to learn the label for that object than when parents *redirect* their children's attention to another referent (Akhtar, Dunham, & Dunham,

1991; Tomasello & Farrar, 1986). This process scaffolds children's challenge in linking linguistic symbols to their referents (Baldwin & Markman, 1989; Carpenter, Nagell, & Tomasello, 1998; Tomasello & Farrar, 1986).

Although both monolingual and bilingual children must monitor and respond to pragmatic cues to avoid miscommunication, bilingual children are known to have heightened sensitivity to social and pragmatic cues. In fact, Yow and Markman (2011) found that 3- and 4-year-old bilingual children were more adept at using gesture and gaze direction to locate a hidden object than monolingual children. Brojde, Ahmed, and Colunga (2012) also demonstrated that bilingual children rely more on pragmatic cues such as eye gaze than their monolingual counterparts when learning novel words. We may be able to boost ESL children's language knowledge by utilizing their existing sensitivity to social cues and piquing their interest in language through engaging activities.

Principle 3: Interactive and Responsive Rather Than Passive Contexts Promote Language Learning

Frequent language input matters but the social context in which language learning takes place is also important to consider. For example, hearing words—even if presented in an interesting format like television—does not guarantee that language learning will occur (Kuhl, Tsao, & Liu, 2003; Roseberry, Hirsh-Pasek, Parish-Morris, & Golinkoff, 2009). Interactions that involve periods of joint focus, positive affect, sensitivity, cooperation, and acceptance provide children with the scaffolding necessary to facilitate language acquisition (Bornstein, Tamis-LeMonda, Hahn, & Haynes, 2008; Clarke-Stewart, 1973; Katz, 2001; Tamis-LeMonda & Bornstein, 2002; Tamis-LeMonda, Kuchirko, & Song, 2014; Tomasello & Farrar, 1986).

Infants and young children learn language in contexts in which their vocalizations, gesture, and facial expressions evoke responses from the people around them. That is, infants appear to thrive in social interactions—and learn language—when they engender contingent responses from their interlocutors. By contingent, we mean responses that promptly follow infant action within a brief period of time (Tamis-LeMonda et al., 2014).

An empirical investigation examined whether English-reared 9-month-olds can learn Mandarin phonemes through live social interaction, televised, or audio-only presentation. Infants learned phonemes only from live interaction, suggesting that contingent social interaction can play a causal role in speech perception (Kuhl et al., 2003). Similarly, Roseberry, Hirsh-Pasek, and Golinkoff (2013) tested 24- to 30-month-old children's ability to learn novel verbs in one of three conditions: live interaction training, socially contingent video training, and non-contingent video training. Only the children in the live interaction training and contingent video training condition successfully learned novel verbs, highlighting the significance of social contingency in language learning. Contingency, or parental responsiveness more generally, has been found to facilitate word learning across various cultures (Tamis-LeMonda et al., 2014).

Socially contingent contexts may be beneficial for language development due to *co-regulation*, or the process by which communication between individuals is continuously modified depending on the actions and needs of their partners (Fogel, 1993). Co-regulation allows parents to scaffold their child's learning based on their needs. For example, when a mother talks to her baby in an excited voice (e.g., "Where is the teddy bear?"), the baby may immediately look at the toy box and

giggle. This mutually regulated exchange between the parent and infant has also been referred to as coordination, reciprocity, reciprocal engagement, mutual responsiveness, attunement, and synchrony (Harrist & Waugh, 2002). Infants at 7 months who were given more opportunities for co-regulated communication had larger vocabularies 7 months later than children who were less exposed to co-regulated communication (Lunden & Silven, 2011). Co-regulated playful interactions provide an opportunity to present vocabulary in a meaningful manner, which in turn fosters L1 and L2 development (Hirsh-Pasek & Golinkoff, 2003; Hirsh-Pasek, Golinkoff, Berk, & Singer, 2009; Lunden & Silven, 2011; Singer, Golinkoff, & Hirsh-Pasek, 2006).

The ESL literature also demonstrates a link between early interactive parenting and later language ability. Frequency of story-book reading and children's vocabulary in their L1 and L2 were found to be related. Caregivers who frequently read to children in English or Spanish and used labeling questions (e.g., "What do you call this little animal?") during book reading were more likely to have children with a greater vocabulary in both languages (Quiroz, Snow, & Zhao, 2010). These findings indicate that by asking engaging questions and establishing interactive learning environments, caregivers can provide a positive influence on children's vocabulary development in both the L1 and the L2.

Within an interactive environment, the mindset of caregivers is also important. Mexican-American mothers who saw themselves as an important participant in their children's language learning were more likely to actively listen to their children, interact with them, label objects and ideas, and create opportunities for interaction with others (Hammer, Miccio, & Rodriguez, 2004). Such interactions in turn have an impact on ESL children's language development (Patterson, 2002).

In sum, research demonstrates that quantity and quality of interactive environments have implications for children's later language development (Cartmill et al., 2013). Types of interactions that benefit children's language development include joint focus, positive affect, and appropriate scaffolding that changes depending on the child's development and interest. Asking questions about things children are interested in and engaging in shared book reading may foster both L1 and L2 acquisition (Hoff & Naigles, 2002; Raikes et al., 2006).

Principle 4: Children Learn Words Best in Meaningful Contexts

"Strategies that introduce young children to new words and entice them to engage in meaningful contexts through semantically related activities are much needed" (Neuman & Dwyer, 2009, p. 384). This insight is in line with research on memory: adults retain information long-term when it is presented in integrated contexts rather than as a set of isolated facts (Bartlett, 1932; Bransford & Johnson, 1972). This same idea can be applied to learning an L2 for ESL children. Meaningful connections between words are also fostered when thematic play is used as a prop for language development. For instance, children who often engage in thematic play such as picking up a cup and pretending to drink out of it are more likely to have a larger receptive vocabulary (Tamis-LeMonda & Bornstein, 1994).

Experimental research comparing vocabulary learning in meaningful versus less meaningful contexts is limited. Yet, correlational studies in language, play, and memory research converge to suggest that teaching vocabulary in integrated and meaningful contexts enriches children's background knowledge and hence their mental lexicons (Hirsh-Pasek et al., 2009). Encouraging

children to play with objects that come from the same superordinate category is a form of "guided play" in which adults scaffold children's active exploration in service of a learning goal (Weisberg, Zosh, Hirsh-Pasek, & Golinkoff, 2013). Since parents and teachers provide input that makes language learning possible, it is crucial to understand guided play environments that are designed to stimulate children's curiosity and acquisition of language (Christie & Roskos, 2006; Fisher, Hirsh-Pasek, Golinkoff, Singer, & Berk, 2011; Weisberg et al., 2013).

Children who are given an opportunity to use vocabulary in a playful context learn more effectively than those children who learn only under explicit instruction. Han, Moore, Vukelich, and Buell (2011) investigated how play intervention affected low-income children's vocabulary knowledge. The control group spent 30 minutes in a storybook session and received explicit vocabulary instruction. The play group spent 20 minutes in a storybook session and heard the associated definitions but also had 10 minutes to engage in play with props that corresponded to words from the story. Following the reading, they heard the word "bake," for example, while shown a picture elucidating the meaning of the word in the storybook. They were then offered a "child-friendly" definition of *bake* and asked to repeat it and point to an instance of the concept. Subsequent vocabulary tests revealed that the play group remembered more of the target vocabulary and had more children who reached vocabulary benchmark levels on the standardized Peabody Picture Vocabulary Test (Han et al., 2011).

Guided play approaches promote superior learning, retention, and academic achievement compared to direct instruction (Burts et al., 1992; Burts, Hart, Charlesworth, & Kirk, 1990; Lillard & Else-Quest, 2006; Roskos, Tabors, & Lenhart, 2004, 2009; Schweinhart & Weikart, 1988; Schweinhart, Weikart, & Larner, 1986). In guided play contexts, children's interests serve as the foundation for learning. Educators structure an environment around a general curricular goal by encouraging children's natural curiosity, exploration, and play with learning-oriented objects or materials (Fein & Rivkin, 1986; Fisher et al., 2011; Hirsh-Pasek et al., 2009; Marcon, 2002; Weisberg et al., 2013). Conversations between adults and children in a playful context build on children's interests and offer them new lexical concepts that are more likely to be retained than unbidden verbal explanations (e.g., Golinkoff, 1986).

ESL children not only face the challenge of learning a new language but also learning a new culture. Thus, instructional methods that incorporate individual experiences of ESL students may benefit L2 learning. Reading programs involving open discussion around characters and themes of the story allow students to make connections between the story and students' experiences and cultural backgrounds. Such reading programs allow ESL students to deeply engage in the material and develop their literacy abilities (Tharp, 1982). Meaningful learning environments and instructional methods that are tailored to the individual needs of ESL students should be beneficial in developing their L2.

Principle 5: Children Need to Hear Diverse Examples of Words and Language Structures

A growing body of research emphasizes the importance of *diversity* in linguistic input to foster rich language outcomes. Mothers' use of rare words and the breadth of children's vocabulary in kindergarten and second grade are strongly related (Weizman & Snow, 2001; see also Pan, Rowe, Singer, & Snow, 2005). Similarly, when fathers use diverse vocabulary in interactions

with their children at 6 months of age, their children have more advanced communication skills at 15 and 36 months (Pancsofar, Vernon-Feagans, & The Family Life Project Investigators, 2010). More recently, Rowe (2012) reported that the diversity of vocabulary input toddlers receive at 18 months is related to children's later vocabulary ability at 42 months even when controlling for SES, amount of input, and children's vocabulary skill at 18 months.

Receiving multiple sources of language input is also crucial in facilitating a deeper grasp of language. Seven-month-olds do not recognize a word when the gender of the speaker (Houston & Jusczyk, 2000) or the tone of voice varies (Jusczyk & Aslin, 1995; Singh, 2008; Singh, Morgan, & White, 2004). Thus, receiving input from multiple speakers will likely promote the formation of abstract phonological representation of words (Richtsmeier, Gerken, Goffman, & Hogan, 2009). Hearing English from different speakers and the amount of English input provided by native speakers explains the variation found in children's English skills (Place & Hoff, 2011), suggesting that an optimal language-learning environment for ESL children occurs when they are exposed to diverse input from multiple native speakers.

Similarly, multiple examples of referents must be presented for each word in different contexts. Hearing different examples helps children develop abstract meanings of words (Oakes, Coppage, & Dingel, 1997; Perry, Samuelson, Malloy, & Schiffer, 2010), which encourages children to recognize how words link to categories. For example, seeing different breeds of dogs and hearing the label "dog" helps children extract the essential components of the category and form an adult-like representation of dogs with a deeper semantic understanding of the concept. Indeed, studies using event-related potentials (ERPs) have shown that infants as young as 6 months display the neural signature associated with concept formation (Quinn, Westerlund, & Nelson, 2006). In contrast, if infants are familiarized with highly similar exemplars, they may develop an inaccurately narrow basis for category formation (Smith & Yu, 2008).

Diverse input facilitates not only semantic development but also syntactic development. Verbs stipulate the syntactic structure of a sentence. The verb *eat* is an optional two-argument verb or is a verb that can either omit or preserve its direct object (e.g., *I ate lunch* or *I ate*). However, obligatory two-argument verbs such as *want*, require a direct object (e.g., *I want a prize*). Hearing various verbs in different syntactic frames may help children abstract the components of sentence structure that vary by verb type (e.g., Gleitman, 1990; Hoff-Ginsberg, 1986; Naigles, 1996; Pinker, 1994). Hoff and Naigles (2002) found that variation in the syntactic complexity of mothers' utterances also correlates with children's productive vocabulary.

Rich language input and sensitive social interactions offered together provide a powerful combination for language development. A longitudinal study on teacher–child conversations reported that rich language input during free play and group book reading at age 4 correlated positively with children's literacy skills at the end of kindergarten and fourth grade, even when controlling for children's mean length of utterance (MLU) at age 3, as well as parental income, education, and home support for literacy (Tabors, Snow, & Dickinson, 2001).

Diverse input appears to have benefits at the phonological, semantic, syntactic, and literacy level of children's L1 and L2. However, the need for diverse input is a more complex issue for ESL children, as some ESL children may not have access to rich language input at home. Intervention programs for L2 learning are beginning to address these concerns by focusing on creating increasingly diverse linguistic experiences. Multisensory structured language (MSL) teaching, for instance, encourages a learning experience using auditory, visual, and tactile-kinesthetic input (Schneider & Evers, 2009). The program asks instructors to explicitly indicate

multiple contexts in which a word can be used. As MSL uses various strategies at once, assessing the effects of providing diverse examples per se is difficult. Nevertheless, ESL learners at risk for learning disabilities who received MSL achieved a higher level of English proficiency than those who received traditional instructional methods (Sparks et al., 1998). The implication for practice is that exposure to various words in a variety of contexts in the L2 is beneficial for ESL children as well as for monolingual children.

Principle 6: Vocabulary and Grammatical Development Are Reciprocal Processes

The final principle is based on the notion that children rarely learn new words and their meanings in isolation. The ECM of language learning predicts that after overcoming the initial bias of favoring perceptual saliency to learn words, children began to rely on linguistic cues such as sentence context (Golinkoff & Hirsh-Pasek, 2006, 2007; Hollich et al., 2000). The idea that children use the syntactic structure of a sentence to learn new words is a mechanism known as *syntactic bootstrapping* (e.g., Dionne, Dale, Boivin, & Plomin, 2003; Fisher, Klinger, & Song, 2006; Gillette, Gleitman, Gleitman, & Lederer, 1999; Hirsh-Pasek & Golinkoff, 1996; Landau & Gleitman, 1985; Naigles, 1990). Children use syntactic bootstrapping in learning new vocabulary, just as children use vocabulary knowledge to learn the structure of language (i.e., semantic bootstrapping) (e.g., Pinker, 1994).

Studies illustrate that vocabulary and grammar develop simultaneously (Dionne et al., 2003). The relationship between vocabulary and grammar has been investigated in a large sample of children between 16 to 30 months ($N = 1,461$), using the MacArthur Communicative Development Inventory vocabulary and grammatical complexity scores. Results showed that expressive vocabulary predicted grammar knowledge, suggesting that vocabulary and grammar are "developing in synchrony across the first few years of life" (Dixon & Marchman, 2007, p. 209).

The reciprocity between vocabulary and grammar can be understood in two ways. First, by noting the linguistic context in which words appear, children gain information about a word's part of speech (Imai et al., 2008). For example, the sentence "Sally blorked John" suggests a different meaning for "blork" than the sentence "Sally has a blork." The former suggests that "blork" is a transitive verb, whereas the latter implies that "blork" must be a noun. Indeed, when one teaches contextual cues as part of a word learning intervention, L2 learners are better at mastering novel vocabulary items (Carlo et al., 2004). Meaning emerges from how words are used in linguistic contexts. Grammatical and morphological cues can signal parts of speech and be used as a *tool* for further vocabulary learning. Second, once a word is known children can detect the nuances in word meaning by observing its use in diverse linguistic contexts (Gillette et al., 1999; Yu & Smith, 2012).

The relationship between grammar and vocabulary learning is also observed in research with children learning two languages. Toddlers' English vocabulary size predicted English grammar abilities and their Spanish vocabulary size predicted Spanish grammar abilities, supporting the theoretical perspective that "learning in the lexical and grammatical domains of language is continuous and utilizes common mechanisms" (Conboy & Thal, 2006, p. 728). Vocabulary and grammar development in bilingual children proceeds in the same manner as in monolingual children of each language (Conboy & Thal, 2006; Marchman, Martinez-Sussman, & Dale, 2004).

Although only a few studies have investigated the role of syntactic and semantic bootstrapping in L2 acquisition, bilingual children seem to utilize their syntactic and semantic bootstrapping skills to learn new words or grammatical structures in two languages (Conboy & Thal, 2006; de Bot, Paribakht, & Wesche, 1997).

What are some ways in which the acquisition of grammar and vocabulary in ESL children can be facilitated? One way to foster this reciprocal development may be to introduce new words in various syntactic frames. For example, listen-and-do tasks appear to be effective in promoting beginner ESL children's vocabulary and grammar knowledge (Shintani, 2012). In listen-and-do tasks, learners need to first listen to commands and then perform actions to show that they have understood the commands. The study by Shintani (2012) found that children who were engaged in listen-and-do tasks improved their receptive and productive vocabulary knowledge and their understanding of plural and singular forms compared to the control group. Instructional methods that teach vocabulary as an independent list of words devoid of semantic or syntactic context may not be effective in enhancing language development. The presentation of new words in different syntactic contexts will facilitate ESL children's L2 development.

CONCLUSION

Language is crucial for children's academic success—in both reading (Durand, Loe, Yeatman, & Feldman, 2013; Scarborough, 2001) and in the STEM (Science, Technology, Engineering, and Mathematics) disciplines (Levine, Suriyakham, Huttenlocher, Rowe, & Gunderson, 2010; Pruden, Levine, & Huttenlocher, 2011). Language acquisition occurs most effectively in preschool classrooms that mimic the way language learning naturally takes place in the home (Harris et al., 2011). However, since the 1900s, ESL curricula have had limited success in teaching English to young children who may receive impoverished language input in the home (Faltis, 2011; Hoff, Core, et al., 2012). One reason for such findings could be that, although many ESL students speak "conversational" English (e.g., greetings), learning the type of English used in classrooms and performing well on assessments may take more language experience and exposure than some of these children have at home (Cummins, 1984). Another reason may be that general classroom teachers receive little education or support to adapt their instruction to ESL students (Constantino, 1994).

Despite a rich scientific base regarding how to foster ESL students' L1 and L2 development, this information rarely reaches parents and the community at large. Dissemination of information about language development may be affected by the lack of knowledge about the availability of programs such as CANNE-*Criando a Nuestros Niños hacia el Éxito*, the Spanish adaptation of PACE—*Parenting Our Children to Excellence* that aim to reduce the risk of adverse child outcomes by providing effective parenting techniques in socially disadvantaged areas (Dumas, Arriaga, Begle, & Longoria, 2010, 2011). Home visitations in which professionals visit families to provide guidance and working together with pediatricians may be another means to spread this message. *Increased collaboration and communication about scientific research regarding language development between researchers, practitioners, and policy makers is crucial to circulate information and to have an impact on ESL curricula.*

Research on L2 acquisition is continuing to accrue, although much is still unknown. The L1 literature can guide caregivers and educators in designing curricula to foster children's L1 and L2.

Equipped with a set of developmentally appropriate, evidenced-based principles derived from the science of learning, we can promote the academic trajectory of ESL children. We have argued based on the research in the field of language development, that there may be sufficient empirical evidence to offer a toolbox of six principles to promote ESL children's language development and academic success.

Principle 1: Children benefit from increased amounts of language input. That is, the more English children hear, the more likely they are to acquire it. Principle 2: Incorporating information that capture the interests of children may facilitate ESL students' L2 development. Principle 3: Interactive contexts are superior to passive contexts for learning language. Playful learning environments in which children are happily engaged afford opportunities to promote L2 acquisition. Principle 4: Meaningful learning environments are important for language acquisition. Scaffolded interaction and instruction that occur in an integrated context are ideal learning situations. Principle 5: The use of diverse examples and sentence structures promote language development. Hearing different exemplars of words and grammar by different English speakers may help ESL children gain a better grasp of their L2. Principle 6: Vocabulary and grammar play a complementary role in language learning. Learning more vocabulary can enhance children's knowledge of the syntactic structure of their L2 and vice versa. Our six principles of language development bring together the research on language development and offer implications for practice to promote L2 learning. Putting these principles into practice will increase language competences of ESL children and will thus put them on the path to greater academic success from preschool and beyond.

REFERENCES

Akhtar, N., Dunham, F., & Dunham, P. (1991). Directive interactions and early vocabulary development: The role of joint attentional focus. *Journal of Child Language*, *18*, 41–49. doi:10.1017/S0305000900013283

Anderson, R. C., & Freebody, P. (1981). Vocabulary knowledge. In J. T. Guthrie (Ed.), *Comprehension and teaching: Research reviews* (pp. 77–117). Newark, DE: International Reading Association.

Associated Press. (2001). Some facts about the world's 6,800 tongues. Retrieved from http://articles.cnn.com/2001-06-19/us/language.glance_1_languages-origin-tongues?_s=PM:US

Bakeman, R., & Adamson, L. B. (1984). Coordinating attention to people and objects in mother-infant and peer-infant interaction. *Child Development*, *55*(4), 1278–1289. doi:10.2307/1129997

Baldwin, D. A., & Markman, E. M. (1989). Establishing word–object relations: A first step. *Child Development*, *60*(2), 381–398. doi:10.2307/1130984

Bartlett, F. (1932). *Remembering: A study in experimental and social psychology*. New York, NY: Cambridge University Press.

Batalova, J., & McHugh, M. (2010). *Number of schools in need of English instruction*. Washington, DC: Migration Policy Institute.

Bialystok, E. (2011). Reshaping the mind: The benefits of bilingualism. *Canadian Journal of Experimental Psychology*, *65*(4), 229–235. doi:10.1037/a0025406

Bialystok, E., & Barac, R. (2012). Emerging bilingualism: Dissociating advantages for metalinguistic awareness and executive control. *Cognition*, *122*(1), 67–73. doi:10.1016/j.cognition.2011.08.003

Bialystok, E., Craik, F. I. M., Green, D. W., & Gollan, T. H. (2009). Bilingual minds. *Psychological Science*, *10*(3), 89–129. doi:10.1177/1529100610387084

Bloom, L. (1993). *The transition from infancy to language: Acquiring the power of expression*. New York, NY: Cambridge University Press.

Bornstein, M. H., Tamis-LeMonda, C. S., Hahn, C-S., & Haynes, M. (2008). Maternal responsiveness to young children at three ages: Longitudinal analysis of a multidimensional, modular, and specific parenting construct. *Developmental Psychology*, *44*(3), 867–874. doi:10.1037/0012-1649.44.3.867

Bransford, J. D., & Johnson, M. K. (1972). Contextual prerequisites for understanding: Some investigations of comprehension and recall. *Journal of Verbal Learning and Verbal Behavior*, *11*(6), 717–726. doi:10.1016/S0022-5371(72)80006-9

Brojde, C. L., Ahmed, S., & Colunga, E. (2012). Bilingual and monolingual children attend to different cues when learning new words. *Frontiers in Psychology*, *3*(155), 1–11. doi:10.3389/fpsyg.2012.00155

Burts, D. C., Hart, C. H., Charlesworth, R., Fleege, P. O., Mosley, J., & Thomasson, R. H. (1992). Observed activities and stress behaviors of children in developmentally appropriate and inappropriate kindergarten classrooms. *Early Childhood Research Quarterly*, *7*(2), 297–318. doi:10.1016/0885-2006(92)90010-V

Burts, D. C., Hart, C. H., Charlesworth, R., & Kirk, L. (1990). A comparison of frequencies of stress behaviors observed in kindergarten children in classrooms with developmentally appropriate versus developmentally inappropriate instructional practices. *Early Childhood Research Quarterly*, *5*(3), 407–423. doi:10.1016/0885-2006(90)90030-5

Camarota, S. A. (2012). *Immigrants in the United States, 2010: A profile of America's foreign-born population*. Retrieved from http://cis.org/2012-profile-of-americas-foreign-born-population

Carlo, M. S., August, D., McLaughlin, B., Snow, C., Dressler, C., Lippman, D. N., . . . White, C. E. (2004). Closing the gap: Addressing the vocabulary needs of English-language learners in bilingual and mainstream classrooms. *Reading Research Quarterly*, *39*(2), 188–215. doi:10.1598/RRQ.39.2.3

Carpenter, M., Nagell, K., & Tomasello, M. (1998). Social cognition, joint attention, and communicative competence from 9 to 15 months of age. *Monograph of the Society for Research in Child Development*, *63*, 1–147.

Cartmill, E. A., Armstrong, B. F., III, Gleitman, L. R., Goldin-Meadow, S., Medina, T. N., & Trueswell, J. C. (2013). Quality of early input predicts child vocabulary 3 years later. *Proceedings of the National Academy of Sciences of the United States of America*, *110*(28), 11278–11283. doi:10.1073/pnas.1309518110

Christie, J., & Roskos, K. (2006). Standards, science, and the role of play in early literacy education. In D. G. Singer, R. M. Golinkoff, & K. Hirsh-Pasek (Eds.), *Play = learning: How play motivates and enhances children's cognitive and social-emotional growth* (pp. 57–73). New York, NY: Oxford University Press.

Clarke-Stewart, K. A. (1973). Interactions between mothers and their young children: Characteristics and consequences. *Monographs of the Society for Research in Child Development*, *38*(6), 1–109. doi:10.2307/1165928

Conboy, B. T., & Thal, D. (2006). Ties between the lexicon and grammar: Cross-sectional and longitudinal studies of bilingual toddlers. *Child Development*, *77*(3), 712–735. doi:10.1111/j.1467-8624.2006.00899.x

Constantino, R. (1994). A study concerning instruction of ESL students comparing all English-classroom teacher knowledge and English as a second language teacher knowledge. *Journal of Educational Issues of Language Minority Students*, *13*, 37–57.

Cummins, J. (1984) The role of primary language development in promoting educational success for language minority students. In California Department of Education (Ed.), *Schooling for language minority students: A theoretical framework* (pp. 3–49). Los Angeles: California State University, Los Angeles.

de Bot, K., Paribakht, T. S., & Wesche, M. (1997). Toward a lexical processing model for the study of second language vocabulary acquisition: Evidence from ESL reading. *The Journal of Studies in Second Language Acquisition (SSLA)*, *19*(3), 309–329.

Dionne, G., Dale, S. P., Boivin, M., & Plomin, R. (2003). Genetic evidence for bidirectional effects of early lexical and grammatical development. *Child Development*, *74*(2), 394–412. doi:10.1111/1467-8624.7402005

Dixon, J. A., & Marchman, V. A. (2007). Grammar and the lexicon: Developmental ordering in language acquisition. *Child Development*, *78*(1), 190–212. doi:10.1111/j.1467-8624.2007.00992.x

Dumas, J. E., Arriaga, Z., Begle, A. M., & Longoria, Z. N. (2010). "When will your program be available in Spanish?" Adapting an early parenting intervention for Latino families. *Cognitive and Behavioral Practice*, *17*(2), 176–187. doi:10.1016/j.cbpra.2010.01.004

Dumas, J. E., Arriaga, Z., Begle, A. M., & Longoria, Z. N. (2011). Child and parental outcomes of a group parenting intervention for Latino families: A pilot study of the CANNE program. *Culture Diversity and Ethnic Minority Psychology*, *17*(1), 107–115. doi:10.1037/a0021972

Durand, V. N., Loe, I. M., Yeatman, J. D., & Feldman, H. M. (2013). Effects of early language, speech, and cognition on later reading: A mediation analysis. *Frontiers in Psychology*, *4*, 1–11. doi:10.3389/fpsyg.2013.00586

Engel de Abreu, P. M., Cruz-Santos, A., Tourinho, C. J., Martin, R., & Bialystok, E. (2012). Bilingualism enriches the poor: Enhanced cognitive control in low-income minority children. *Psychological Science*, *23*(11), 1364–1371. doi:10.1177/0956797612443836

Espinosa, L. M. (2013). *PreK–3rd: Challenging common myths about dual language learners: An update to the seminal 2008 report*. New York, NY: Foundation for Child Development. Retrieved from http://fcdus.org/sites/default/files/Challenging%20Common%20Myths%20Update.pdf

European Commission. (2012). *Europeans and their languages: Special Eurobarometer 386*. Retrieved from http://ec.europa.eu/public_opinion/archives/ebs/ebs_386_en.pdf

Faltis, K. (2011). Bilingual, ESL, and English immersion: Educational models for limited English proficient students in Texas. *Pepperdine Policy Review, 4*, 81–98.

Fein, G., & Rivkin, M. (1986). *The young child at play: Reviews of research* (Vol. 4). Washington, DC: NAEYC.

Fisher, C., Klinger, S. L., & Song, H. (2006). What does syntax say about space? 2-year-olds use sentence structure to learn new prepositions. *Cognition*, *101*(1), 19–29. doi:10.1016/j.cognition.2005.10.002

Fisher, K., Hirsh-Pasek, K., Golikoff, R. M., Singer, D., & Berk, L. E. (2011). Playing around in school: Implications for learning and educational policy. In A. Pellegrini (Ed.), *The Oxford handbook of the development of play* (pp. 341–360). New York, NY: Oxford University Press.

Fogel, A. (1993). *Developing through relationships: Origins of communication, self, and culture*. Chicago, IL: University of Chicago Press.

Freeman, M. R., Shook, A., & Marian, V. (in preparation). Cognitive and emotional effects of bilingualism in adulthood. In E. Nicoladis & S. Montanari (Eds.), *Lifespan perspectives on bilingualism*. Berlin, Germany: Gruyter

Garcia, G. (1991). Factors influencing the English reading test performance of Spanish-speaking Hispanic children. *Reading Research Quarterly*, *26*(4), 371–392. doi:10.2307/747894

Gillette, J., Gleitman, L. R., Gleitman, H., & Lederer, A. (1999). Human simulations of vocabulary learning. *Cognition*, *73*(2), 135–176. doi:10.1016/S0010-0277(99)00036-0

Gleitman, L. (1990). Structural sources of verb learning. *Language Acquisition*, *1*, 1–63.

Golinkoff, R. M. (1986). I beg your pardon?: The preverbal negotiation of failed messages. *Journal of Child Language*, *13*(3), 455–476. doi:10.1017/S0305000900006826

Golinkoff, R. M., & Hirsh-Pasek, K. (2006). *The emergentist coalition model of word learning in children has implications for language in aging*. In E. Bialystok & F. Craik (Eds.), *Lifespan cognition: Mechanisms of change* (pp. 207–222). New York, NY: Oxford University Press.

Golinkoff, R. M., & Hirsh-Pasek, K. (2007). *Language development: The view from the radical middle*. [Keynote address.] In H. Caunt-Nulton, S. Kulatilake, & I. Woo (Eds.), *Proceedings of the 31st Annual Boston University Conference on Language Development* (pp. 1–25). Somerville, MA: Cascadilla Press.

Gollan, T. H., Montoya, R. I., Cera, C. M., & Sandoval, T. C. (2008). More use almost always means smaller a frequency effect: Aging, bilingualism, and the weaker links hypothesis. *Journal of Memory and Language*, *58*(3), 787–814. doi:10.1016/j.jml.2007.07.001

Hakuta, K. (1986). *Mirror of language: The debate on bilingualism*. New York, NY: Basic Books.

Hammer, C. S., Jia, G., & Uchikoshi, Y. (2011). Language and literacy development of dual language learners growing up in the United States: A call for research. *Child Development Perspectives*, *5*(1), 4–9. doi:10.1111/j.1750-8606.2010.00140.x

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. doi:10.2167/beb376.0

Hammer, C. S., Miccio, A. W., & Rodriguez, B. L. (2004). Bilingual language acquisition and the child socialization process. In B. A. Goldstein (Ed.), *Bilingual language development and disorders in Spanish–English speakers* (pp. 21–50). Baltimore, MD: Paul H. Brookes.

Han, M., Moore, N., Vukelich, C., & Buell, M. (2011). Does play make a difference? How play intervention affects the vocabulary learning of at-risk preschoolers. *American Journal of Play*, *3*(1), 82–104.

Harris, J., Golinkoff, R., & Hirsh-Pasek, K. (2011). Lessons from the crib for the classroom: How children really learn vocabulary. In S. B. Neuman & D. K. Dickinson (Eds.), *Handbook of early literacy research* (pp. 49–65). New York, NY: Guilford Press.

Harrist, A. W., & Waugh, R. M. (2002). Dyadic synchrony: Its structure and function in child development. *Developmental Review*, *22*(4), 555–592. doi:10.1016/S0273-2297(02)00500-2

Hart, B., & Risley, T. R. (1995). *Meaningful differences in the everyday experience of young American children*. Baltimore, MD: Paul H. Brookes.

Hay, J. F., Pelucchi, B., Graf Estes, K., & Saffran, J. R. (2011). Linking sounds to meanings: Infant statistical learning in a natural language. *Cognitive Psychology*, *63*(2), 93–106. doi:10.1016/j.cogpsych.2011.06.002

Hirsh-Pasek, K., & Golinkoff, R. (1996). *The origins of grammar*. Cambridge, MA: MIT Press.

Hirsh-Pasek, K., & Golinkoff, R. (2003). *Einstein never used flashcards: How our children really learn and why they need to play more and memorize less*. Emmaus, PA: Rodale Press.

Hirsh-Pasek, K., Golinkoff, R. M., Berk, L. E., & Singer, D. G. (2009). *A mandate for playful learning in preschool: Presenting the evidence*. New York, NY: Oxford University Press.

Hoff, E. (2006). Environmental supports for language acquisition. In D. K. Dickinson & S. B. Neuman (Eds.), *Handbook of early literacy research* (Vol. 2, pp. 163–172). New York, NY: Guildford Press.

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. doi:10.1037/10027238

Hoff, E., Core, C., Place, S., Rumiche, R., Señor, M., & Parra, M. (2012). Dual language exposure and early bilingual development. *Journal of Child Language*, *39*(1), 1–27. doi:10.1017/S0305000910000759

Hoff, E., Laursen, B., & Bridges, K. (2012). Measurement and model building in studying the influence of socioeconomic status on child development. In M. Lewis & L. Mayes (Eds.), *The Cambridge handbook of environment in human development*. New York, NY: Cambridge University Press.

Hoff, E., & Naigles, L. (2002). How children use input to acquire a lexicon. *Child Development*, *73*(2), 418–433. doi:10.1111/1467-8624.00415

Hoff-Ginsberg, E. (1986). Function and structure in maternal speech: Their relation to the child's development of syntax. *Developmental Psychology*, *22*(2), 155–163. doi:10.1037/0012-1649.22.2.155

Hollich, G., Hirsh-Pasek, K., Golinkoff, R. M., Brand, R., Brown, E., Chung, H., & Rocroi, C. (2000). Breaking the language barrier: An emergentist coalition model for the origins of word learning. *Monographs of the Society for Research in Child Development*, *65*(3), v–123. doi:10.1111/1540-5834.00090

Houston, D. M., & Jusczyk, P. W. (2000). The role of talker-specific information in word segmentation by infants. *Journal of Experimental Psychology: Human Perception and Performance*, *26*(5), 1570–1582. doi:10.1037//0096-1523.26.5.1570

Hurtado, N., Marchman, V. A., & Fernald, A. (2008). Does input influence update? Links between maternal talk, processing speed and vocabulary size in Spanish-learning children. *Developmental Science*, *11*(6), 31–39. doi:10.1111/j.1467-7687.2008.00768.x

Huttenlocher, J., Haight, W., Bryk, A., Seltzer, M., & Lyons, T. (1991). Early vocabulary growth: Relation to language input and gender. *Developmental Psychology*, *27*(2), 236–248. doi:10.1037/0012-1649.27.2.236

Imai, M., Li, L., Haryu, E., Okada, H., Hirsh-Pasek, K., & Golinkoff, R. (2008). Novel noun and verb learning in Chinese-, English-, and Japanese-speaking children. *Child Development*, *79*(4), 979–1000. doi:10.1111/j.1467-8624.2008.01171.x

Jusczyk, P. W., & Aslin, R. N. (1995). Infants' detection of the sound patterns of words in fluent speech. *Cognitive Psychology*, *29*(1), 1–23. doi:10.1006/cogp.1995.1010

Katz, J. R. (2001). Playing at home: The talk of pretend play. In D. K. Dickinson & P. O. Tabors (Eds.), *Beginning literacy with language* (pp. 53–73). New York, NY: Brookes.

Kuhl, P. K., Tsao, F. M., & Liu, H. M. (2003). Foreign-language experience in infancy: Effects of short-term exposure and social interaction on phonetic learning. *Proceedings of the National Academy of Sciences*, *100*(15), 9096–9101. doi:10.1073/pnas.1532872100

Landau, B., & Gleitman, L. R. (1985). *Language and experience: Evidence from the blind child*. Cambridge, MA: Harvard University Press.

Levine, S. C., Suriyakham, L. W., Huttenlocher, J., Rowe, M. I., & Gunderson, E. A. (2010). What counts in the development of young children's number of knowledge? *Developmental Psychology*, *46*(5), 1309–1319. doi:10.1037/a0019671

Lillard., A., & Else-Quest, N. (2006). Evaluating Montessori education. *Science*, *313*(5795), 1893–1894. doi:10.1126/science.1132362

Lunden, M., & Silven, M. (2011). Balanced communication in mid-infancy promotes early vocabulary development: Effects of play with mother and father in mono- and bilingual families. *The International Journal of Bilingualism*, *15*(4), 535–559. doi:10.1177/1367006911425816

Luo, L., Craik, F., Moreno, S., & Bialystok, E. (2013). Bilingualism interacts with domain in working memory task: Evidence from aging. *Psychology and Aging*, *28*(1), 28–34. doi:10.1037/a0030875

Marchman, V., Martinez-Sussman, C., & Dale, P. (2004). The language-specific nature of grammatical development: Evidence from bilingual language learners. *Developmental Science*, *7*(2), 212–224. doi:10.1111/j.1467-7687.2004.00340.x

Marcon, R. (2002). Moving up the grades: Relationship between preschool model and later school success. *Early Childhood Research & Practice*, *4*, 1–23.

McCabe, A., Tamis-LeMonda, C. S., Bornstein, M. H., Cates, C. B., Golinkoff, R., Hirsh-Pasek, K.,,. . .Guerra, A. W. (2013). Multilingual children: Beyond myths and towards best practices. *Social Policy Report, Society for Research in Child Development*, *27*(4), 2–37.

Miller, J. F., Heilmann, J., Nockerts, A., Iglesias, A., Fabiano, L., & Francis, D. J. (2006). Oral language and reading in bilingual children. *Learning Disabilities Research & Practice*, *21*(1), 30–43. doi:10.1111/j.1540-5826.2006.00205.x

Naigles, L. (1990). Children use syntax to learn verb meanings. *Journal of Child Language*, *17*, 357–374.

Naigles, L. (1996). The use of multiple frames in verb learning via syntactic bootstrapping. *Cognition*, *58*, 221–251.

National Center for Education Statistics. (2005). *National assessment of educational progress, the Nation's report card: Reading 2005* (DoED Publication No. NCES 2006-451). Retrieved from http://nces.ed.gov/nationsreportcard/pdf/main2005/2006451.pdf

Neuman, S. B., & Dwyer, J. (2009). Missing in action: Vocabulary instruction in Pre–K. *The Reading Teacher*, *62*, 384–392. doi:10.1598/RT.62.5.2

Oakes, L. M., Coppage, D. J., & Dingel, A. (1997). By land or by sea: The role of perceptual similarity in infants' categorization of animals. *Developmental Psychology*, *33*(3), 396–407. doi:2073/10.1037/0012-1649.33.3.396

Oller, D. K., & Eilers, R. E. (2002). *Language and literacy in bilingual children*. Clevedon, England: Multilingual Matters.

Pan, B. A., Rowe, M. L., Singer, J. D., & Snow, C. E. (2005). Maternal correlates of growth in toddler vocabulary production in low-income families. *Child Development*, *76*, 763–782. doi:10.1111/j.1467-8624.2005.00876.x

Pancsofar, N., Vernon-Feagans, L., & The Family Life Project Investigators. (2010). Fathers' early contributions to children's language development in families from low-income rural communities. *Early Childhood Research Quarterly, 25*, 450–463. doi:10.1016/j.ecresq.2010.02.001

Parish-Morris, J., Golinkoff, R. M., & Hirsh-Pasek, K. (2013). From coo to code: Language acquisition in early childhood. In P. Zelazo (Ed.), *The Oxford handbook of developmental psychology* (pp. 867–908). New York, NY: Oxford University Press.

Patterson, J. L. (2002). Relationship of expressive vocabulary to frequency of reading and television experience among bilingual toddlers. *Applied Psycholinguistics*, *23*, 493–508. doi:10.1017/S0142716402004010

Pearson, B. Z., Fernandez, M. C., & Oller, D. K. (1993). Lexical development in bilingual infants and toddlers: Comparison to monolingual norms. *Language Learning*, *43*, 93–120. doi:10.1017/S0142716400009863

Pearson, B. Z., Fernandez, S. C., Lewedeg, V., & Oller, D. K. (1997). The relation of input factors to lexical learning by bilingual infants. *Applied Psycholinguistics*, *18*, 41–58. doi:2073/10.1111/j.1467-1770.1993.tb00174.x

Perry, L. K., Samuelson, L. K., Malloy, L. M., & Schiffer, R. N. (2010). Learn locally, think globally: Exemplar variability supports higher-order generalization and word learning. *Psychological Science*, *21*(12), 1894–1902. doi:2073/10.1177/0956797610389189

Pinker, S. (1994). How could a child use verb syntax to learn verb semantics? *Lingua*, *92*, 377–410. doi:10.1016/0024-3841(94)90347-6

Place, S., & Hoff, E. (2011). Properties of dual language exposure that influence 2-year-olds' bilingual proficiency. *Child Development*, *82*, 1834–1849. doi:10.111/j.1467-8624.2011.01660.x

Proctor, C. P., Carlo, M. S., August, D., & Snow, C. E. (2005). Native Spanish-speaking children reading in English: Toward a model of comprehension. *Journal of Educational Psychology*, *97*(2), 246–256. doi:10.1037/0022-0663.97.2.246

Pruden, S., Hirsh-Pasek, K., Golinkoff, R., & Hennon, E. (2006). The birth of words: Ten-month-olds learn words through perceptual salience. *Child Development*, *77*, 266–280. doi:10.1111/j.1467-8624.2006.00869.x

Pruden, S., Levine, S. C., & Huttenlocher, J. (2011). Children's spatial thinking: Does talk about the spatial world matter? *Developmental Science*, *14*(6), 1417–1430. doi:10.1111/j.1467-7687.2011.01088.x

Quinn, P. C., Westerlund, A., & Nelson, C. A. (2006). Neural markers of categorization in 6-month-old infants. *Psychological Science*, *17*, 59–66. doi:10.1111/j.1467-7687.2009.00903

Quiroz, B. G., Snow, C. E., & Zhao, J. (2010). Vocabulary skills of Spanish-English bilinguals: Impact of mother-child language interactions and home language and literacy support. *International Journal of Bilingualism*, *14*, 379–399. doi:10.1177/1367006910370919

Raikes, H., Pan, B. A., Luze, G., Tamis-LeMonda, C. S., Brooks-Gunn, J., Constantine, J., . . . Rodriguez, E. T. (2006). Mother-child bookreading in low-income families: Correlates and outcomes during the first three years of life. *Child Development*, *4*, 924–953. doi:10.1111/j.1467-8624.2006.00911.x

Richtsmeier, P. T., Gerken, L. A., Goffman, L., & Hogan, T. (2009). Statistical frequency in perception affects children's lexical production. *Cognition*, *111*, 372–377. doi:10.1016/j.cognition.2009.02.009

Roseberry, S., Hirsh-Pasek, K., & Golinkoff, R. M. (2013). Skype me! Socially contingent interactions help toddlers learn language. *Child Development*, *85*, 956–970.

Roseberry, S., Hirsh-Pasek, K., Parish-Morris, J., & Golinkoff, R. M. (2009). Live action: Can young children learn verbs from video? *Child Development*, *80*, 1360–1375. doi:10.1111/j.1467-8624.2009.01338.x

Roskos, K., Tabors, P. O., & Lenhart, L. A. (2004). *Oral language and early literacy in preschool: Talking, reading, and writing*. Newark, DE: International Reading Association.

Roskos, K., Tabors, P. O., & Lenhart, L. A. (2009). *Oral language and early literacy in preschool: Talking, reading, and writing* (2nd ed.). Newark, DE: International Reading Association.

Rowe, M. L. (2012) A longitudinal investigation of the role of quantity and quality of child-directed speech in vocabulary development. *Child Development*, *83*, 1762–1774.

Saffran, J. R., Aslin, R. N., & Newport, E. L. (1996). Statistical learning by 8-month-old infants. *Science*, *274*, 1926–1928. doi:10.1126/science.274.5294.1926

Saville-Troike, M. (1984). What really matters in second language learning for academic achievement? *TESOL Quarterly*, *18*(2), 199–219. doi:10.2307/3586690

Scarborough, H. S. (2001). Connecting early language and literacy to later reading disabilities: Evidence, theory, and practice. In D. K. Dickinson & S. B. Neuman (Eds.), *Handbook of early literacy research* (Vol. 1, pp. 97–110). New York, NY: Guilford Press.

Schneider, E., & Evers, T. (2009). Linguistic intervention techniques for at-risk English language learners. *Foreign Language Annals*, *42*(1), 55–76. doi:10.1111/j.1944-9720.2009.01008.x

Schweinhart, L. J., Weikart, D., & Larner, M. B. (1986). Consequences of three preschool curriculum models through age 15. *Early Childhood Research Quarterly*, *1*, 15–45.

Schweinhart, L. J., & Weikart, D. P. (1988). The High/Scope Perry Preschool Program. In R. H. Price, E. L. Cowen, R. P. Lorion, & J. Ramos-McKay (Eds.), *Fourteen ounces of prevention: A casebook for practitioners* (pp. 53–65). Washington, DC: American Psychological Association.

Shintani, N. (2012). Input-based tasks and the acquisition of vocabulary and grammar: A process-product study. *Language Teaching Research*, *16*(2), 253–279. doi:10.1177/1362168811431378

Singer, D., Golinkoff, R., & Hirsh-Pasek, K. (2006). *Play = learning: How play motivates and enhances children's cognitive and social-emotional growth*. New York, NY: Oxford University Press.

Singh, L. (2008). Influences of high and low variability on infant word recognition. *Cognition*, *106*, 833–870. doi:10.1016/j.cognition. 2007. 05.002

Singh, L., Morgan, J., & White, K. (2004). Preference and processing: The role of speech affect in early spoken word recognition. *Journal of Memory and Language*, *51*(2), 173–189. doi:10.1016/j.jml.2004.04.004

Smith, L., & Yu, C. (2008). Infants rapidly learn word-referent mappings via cross-situational statistics. *Cognition*, *106*(3), 1558–1568. doi:10.1016/j.cognition.2007.06010

Sparks, R., Artzer, M., Patton, J., Ganschow, L., Miller, K., Hordubay, D. J., & Walsh, G. (1998). Benefits of multisensory structured language instruction for at-risk foreign language learners: A comparison study of high school Spanish students. *Annals of Dyslexia*, *48*, 239–270. doi:10.1007/s11881-998-0011-8

Tabors, P. O., Snow, C. E., & Dickinson, D. K. (2001). Homes and schools together: Supporting language and literacy development. In D. K. Dickinson & P. O. Tabors (Eds.), *Beginning literacy with language: Young children learning at home and school* (pp. 313–334). Baltimore, MD: Paul H Brookes Publishing.

Tamis-LeMonda, C. S., & Bornstein, M. H. (1994). Specificity in mother-toddler language-play relations across the second year. *Developmental Psychology*, *2*, 283–292. doi:10.1037/0012-1649.30.2.283

Tamis-LeMonda, C. S., & Bornstein, M. H. (2002). Maternal responsiveness and early language acquisition. *Advances in Child Development and Behavior*, *29*, 89–127. doi:10.1177/0963721414522813

Tamis-LeMonda, C. S., Kuchirko, Y., & Song, L. (2014). Why is infant language learning facilitated by parental responsiveness? *Current Directions in Psychological Science*, *23*, 121–126.

Tharp, R. G. (1982). The effective instruction of comprehension: Results and description of the Kamehameha Early Education Program. *Reading Research Quarterly*, *17*, 503–527.

Tomasello, M., & Farrar, J. M. (1986). Joint attention and early language. *Child Development*, *57*, 1454–1463.

Tomasello, M., Mannle, S., & Kruger, A. (1986). The linguistic environment of one to two year old twins. *Developmental Psychology*, *22*, 169–176. doi:10.1037/0012-1649.22.2.169

Tomasello, M., & Todd, J. (1983). Joint attention and lexical acquisition style. *First Language*, *4*, 197–212. doi:10.1177/014272378300401202

U.S. Census Bureau. (2013). Hispanic Heritage Month 2013: Sept. 15–Oct. 15. Retrieved from http://www.census.gov/newsroom/releases/archives/facts_for_features_special_editions/cb13-ff19.html

Valian, V. (2012, November). *Executive control is equal for monolingual and multilingual young adults*. Poster presented at the Boston University Conference on Language Development. Boston, MA.

Weisberg, D. S., Zosh, J. M., Hirsh-Pasek, K., & Golinkoff, R. M. (2013). Talking it up: Play, language development, and the role of adult support. *American Journal of Play*, *6*, 39–54.

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

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

Werker, J. (2012). Perceptual foundations of bilingual acquisition in infancy. *Annals of the New York Academy of Sciences*, *1251*, 50–61. doi:10.1111/j.1749-6632.2012.06484.x

White, J. (1996). *An input enhancement study with ESL children: Effects on the acquisition of possessive determiners* (Doctoral thesis). McGill University, Montreal, Canada.

Yow, W. Q., & Markman, E. (2011). Young bilingual children's heightened sensitivity to referential cues. *Journal of Cognition and Development*, *12*, 12–31. doi:10.1080/15248372.2011.539524

Yu, C., & Smith, L. B. (2012). Modeling cross-situational word-referent learning: Prior questions. *Psychological Review*, *119*, 21–39. doi:10.1037/a0026182