ANNUAL REVIEWS **Further**

Click here to view this article's online features:

- Download figures as PPT slides
- Navigate linked references
- Download citations
- Explore related articles
- Search keywords

Identifying Pathways Between Socioeconomic Status and Language Development

Amy Pace,[1] Rufan Luo,[2] Kathy Hirsh-Pasek,[2] and Roberta Michnick Golinkoff[3]

[1]Speech and Hearing Sciences, University of Washington, Seattle, Washington 98195; email: amypace@uw.edu

[2]Department of Psychology, Temple University, Philadelphia, Pennsylvania 19122; email: rufan.luo@temple.edu, khirshpa@temple.edu

[3]School of Education, University of Delaware, Newark, Delaware 19716; email: roberta@udel.edu

Annu. Rev. Linguist. 2017. 3:285–308

First published online as a Review in Advance on September 14, 2016

The *Annual Review of Linguistics* is online at linguist.annualreviews.org

This article's doi: 10.1146/annurev-linguistics-011516-034226

Copyright © 2017 by Annual Reviews. All rights reserved

Keywords

parent–child interaction, learning materials, language trajectories, verbal ability, early intervention

Abstract

Children from low-income backgrounds consistently perform below their more advantaged peers on standardized measures of language ability, setting long-term trajectories that translate into gaps in academic achievement. Our primary goals in this review are to describe how and why this is so, in order to focus attention on ways to enrich early language experiences across socioeconomic strata. We first review the literature on the relation between socioeconomic status (SES) and language ability across domains in early childhood. We then identify three potential pathways by which SES might influence language development—child characteristics, parent–child interaction, and availability of learning resources—recognizing the complicated interaction between the child's own language learning skill and his/her environmental support. Finally, we review interventions that target these three pathways with an eye toward best practice. Future research should focus on the diversity of contexts in which children acquire language and adopt methods of language measurement that are sensitive to cultural variation.

1. INTRODUCTION

Language ability in early childhood is among the best predictors of school readiness and later school success (Hoff 2013, Burchinal et al. 2016). By school entry, however, many children from lower-socioeconomic-status (SES) homes perform well below their peers on standardized measures of language comprehension and production (Ginsborg 2006). Much attention has been directed toward Hart & Risley's (1995) seminal research, which estimated that, by the time they are 4 years old, children reared in poverty have heard 30 million words fewer than their more affluent peers. Recent research corroborates that SES-related differences in early language environments are not limited to the quantity of input, but extend to the quality of interactions and language learning opportunities as well (Rowe 2012, Cartmill et al. 2013, Goldin-Meadow et al. 2014). These early disparities in language experience and exposure translate to gaps in language ability that remain stable or widen over time (Walker et al. 1994, Fernald et al. 2013) and are predictive of academic trajectories during elementary and secondary education (Entwisle & Alexander 1999, Burchinal et al. 2002).

Together, these findings amount to a growing national concern at the intersection of education, economics, and social policy that has inspired a number of widespread initiatives designed to set positive language learning trajectories for underprivileged children. Even so, the ways in which SES shapes child development in general, and language ability in particular, are far from straightforward. Although it is widely accepted that childhood SES is correlated with language ability and academic achievement, much less is known about the pathways by which SES exerts its well-established influence. And despite the proliferation of programs and services aimed at improving school readiness and academic outcomes for children from low-SES homes, the evidence base that identifies malleable factors for successful language intervention is quite thin.

Because SES and verbal ability are multidimensional constructs (LARRC 2015), and because many factors that influence language development covary with SES, the causal relations between SES and verbal ability may be difficult to uncover (Hoff et al. 2002b). Not surprisingly, recent research suggests that socioeconomic circumstances may have a more nuanced effect on verbal ability than previously thought (Mol & Neuman 2014, Noble et al. 2015) and that there is wide variability even within socioeconomic strata (Hoff 2013, Hirsh-Pasek et al. 2015a). Contemporary theorists of language socialization have also voiced legitimate concerns about scholarly emphasis on the verbal limitations of children from low-income families without considering areas of strength (Miller & Sperry 2012, Johnson 2015, Sperry et al. 2015), as well as the need for widespread adoption of ethnographic approaches that are sensitive to cultural variation (Ochs & Schieffelin 1984).

In this review, we begin to tease apart the complex relation between SES and verbal ability by integrating two broad and often disparate approaches to the study of development. The first, traditionally psycholinguistic approach considers the processing systems through which linguistic input is translated into language acquisition and development (Crain & Lillo-Martin 1999). The second, bioecological approach focuses primarily on the external social contexts in which a child develops, from proximal (e.g., family, child care, peer groups) to distal influences on outcomes (e.g., culture, history, SES; Bronfenbrenner & Morris 1998). A few notable exceptions have integrated both approaches to address the relation between language development and language environments (Hoff-Ginsberg & Shatz 1982, Gallaway & Richards 1994, Hoff 2006). As both perspectives are increasingly recognized as interdependent, these cited papers represent an important contribution. Even so, much of the empirical research on language development remains rooted within one camp or the other, with little overlap.

To bridge these rich developmental perspectives, we consider three pathways through which SES exerts its influence on verbal ability, beginning with the individual child's characteristics,

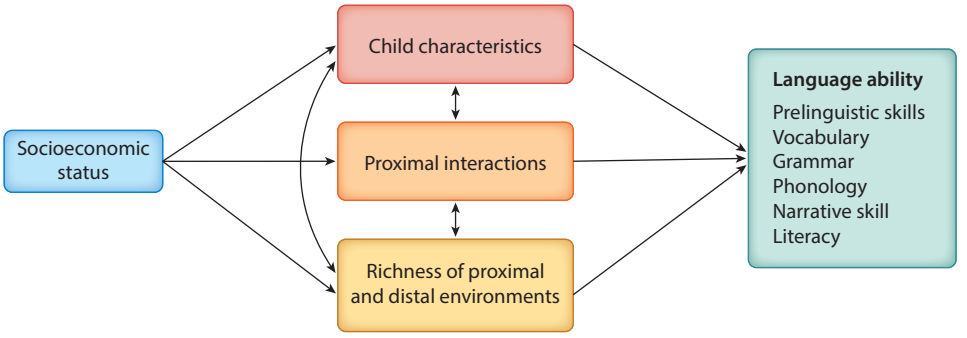

Figure 1

Three possible pathways for the association between socioeconomic status and language development.

progressing to the quantity and quality of parent–child interactions, and ending with the availability of materials for language learning in the home (e.g., books and toys) and informal learning opportunities outside the home (e.g., the quality of day care and visits to places like the zoo or the park) (**Figure 1**). Although we separate these factors into three categories for purposes of discussion, we are aware that they continually interact and are not easily separated. And though this trilogy is far from exhaustive, it provides a framework for disentangling the complex relation between SES and verbal ability throughout early childhood.

This review is organized as follows. First, we consider the definition and measurement of SES and describe the demographics of the children in the United States currently living in low-SES families. Next, we describe dimensions of language that reflect SES differences, taking care to address inconsistencies in the literature by presenting empirical evidence for strengths as well as weaknesses within and across socioeconomic groups. Then, we explore the three aforementioned pathways by which SES might exert some influence on verbal ability within these dimensions and consider evidence from interventions that specifically target language outcomes through these unique pathways, both independently and in concert.

2. SOCIOECONOMIC STATUS: DEFINITION AND MEASUREMENT

SES refers to one's access to financial, educational, and social resources, and the social positioning, privileges, and prestige that are derived from these resources (Mueller & Parcel 1981, Entwisle & Astone 1994, Duncan et al. 2015). Although SES is recognized to be a multidimensional construct that has been measured in various ways (Oakes & Rossi 2003), most contemporary investigations center on parental education, family income, and parental occupation, or some combination of these three indices (Bradley & Corwyn 2002, Ensminger & Fothergill 2003).

Maternal education—usually measured as a categorical variable representing groups with various levels of formal schooling, ranging from no high school education or limited high school education to high school education, some college, or an earned college degree—appears to be the component of SES most strongly related to child development outcomes (Hoff et al. 2002a, Magnuson et al. 2009). Income-based measures of SES—such as annual salary—allow researchers to classify families as above or below the federal poverty threshold (FPT; Taylor et al. 2004), whereas income-to-need ratios reflect the amount of poverty or affluence experienced in comparison to the FPT and therefore may more accurately depict a family's need (Duncan et al. 1994, McLoyd 1998). For instance, a family living at or above the FPT may still experience adversity because income is not commensurate with expenditures.

Although studies examining the relation between SES and verbal ability among young children have yet to reach consensus on the most effective measure of SES (Bornstein & Bradley 2003), as single variables all three of these indices are supported with evidence that validates their application as proxies of SES (Brooks-Gunn & Duncan 1997, McLoyd 1998, Rindermann & Baumeister 2015). Despite uncertainty regarding the optimal index, the association between SES and language development is sufficiently robust that it appears across different measurement approaches. The relation of SES to early language also appears within and across different ethnic groups, suggesting that, although SES and minority-group status are frequently confounded, the effects of SES are not merely ethnic differences in the guise of a socioeconomic construct (Hoff 2006). Although more systematic analyses are needed to uncover the way in which SES appears to operate across different developmental domains and periods (e.g., infancy versus adolescence), this review includes empirical research that relies on multiple variables known to approximate SES.

3. WHO ARE THE CHILDREN FROM LOW-SOCIOECONOMIC-STATUS HOMES?

The statistics for children living in low-income and poor families are appalling. The United States has among the highest levels of childhood poverty outside of the developing world, with one in five of all children—close to 15 million in total—living below the FPL of $24,250 for a family of four in 2015 (Kena et al. 2015). In 2013, 22% of children under age 18 in the United States lived in families with incomes below the FPL (i.e., $23,624 for a family of four), and 44% lived in families with incomes below 200% of the FPL. Furthermore, the percentage of children living in poverty has grown in recent decades, from 16.2% in 2000 to 22% in 2013 (see figure 5 of DeNavas-Walt & Proctor 2015).

Children under age 5 are more vulnerable to poverty than are older children. One in four infants, toddlers, and preschoolers currently live in poor families, compared with only 19% of children between 12 and 17 years. There are also striking racial/ethnic differences in the poverty rate among children. The percentage of low-SES infants and toddlers is twice as high for Black, Hispanic, and American Indian children (more than 60%) than for White and Asian children (31%). Higher levels of parental education and parental employment status are protective factors for childhood poverty. Children whose parents have less than high school education are four times more likely (55% versus 13%) to live in poor families than their peers with at least one parent who has some college or higher education. Seventy-two percent of children with unemployed parents live in poor families. In contrast, only 9% of children with at least one parent who has a full-time job year-round live in poverty (Jiang et al. 2015).

Children living in poverty are exposed to a variety of toxic stressors, such as food insecurity, abuse, and neglect, as well as limited educational resources and opportunities. These children are at higher risk of having physical health problems, such as lead poisoning and low birth weight, and have a higher mortality rate during infancy and childhood than their more affluent peers (Brooks-Gunn & Duncan 1997, Shonkoff 2000). At home, poor children are exposed to more violence, household chaos, separations from family members, and instability (Evans 2004). More than half of low-income mothers with infants have some form of depression, and 11% have severe depression (Vericker et al. 2010). Mothers with higher levels of stress and depression talk less with their children (Lovejoy et al. 2000), and have children with slower vocabulary growth (Pan et al. 2005).

At school, children from low-income families have higher suspension and grade-repetition rates, and are seven times more likely to drop out of high school than their peers from high-income

families (Brooks-Gunn & Duncan 1997, Chapman et al. 2011). Many studies have demonstrated the lifelong negative impacts of poverty on developmental outcomes, including brain structure; physical and mental health; and language, cognitive, behavioral, and emotional development (Blair & Raver 2012, Shonkoff et al. 2012).

4. THE RELATION BETWEEN SOCIOECONOMIC STATUS AND VERBAL ABILITY ACROSS LANGUAGE DOMAINS

Children from low-SES backgrounds, in general, lag behind their more affluent peers on measures of language comprehension and production from infancy through high school (Walker et al. 1994; Bowey 1995; Hart & Risley 1995, 1999; Arriaga et al. 1998; Rodriguez & Tamis-LeMonda 2011; Fernald et al. 2013). Such SES-related language gaps emerge early in life and are closely linked with later academic achievement and school success (Burchinal et al. 2002). Less explored, however, are potential strengths such as narrative or pragmatic aspects of language (Corsaro et al. 2002). Before investigating the factors that influence this complex association, we explore the impact of SES on various domains of language ability in early childhood.

4.1. Prelinguistic Development

Although an infant may not produce a single word until on or around her first birthday, the foundation for communication begins to develop even before birth (DeCasper & Fifer 1980, Kisilevsky et al. 2003). Over their first 12 months, infants develop several foundational communication skills that support positive language development and predict later language trajectories, such as gaze following (Brooks & Meltzoff 2005), pointing (Tomasello et al. 2007), and gesturing (Iverson & Goldin-Meadow 2005). Although SES effects on standardized language assessments do not emerge in the child development literature until early in the second year of life, there is evidence for earlier differences in the brain areas that subserve language acquisition as well as the behavioral precursors to language acquisition, such as the proclivity to explore the physical environment, produce gestures, and communicate with nonverbal intentionality.

As infants become mobile, they explore their worlds through sensorimotor experiences of sight, sound, smell, taste, and touch. Between the ages of 6, 9, and 12 months, infants from low-SES families demonstrated reduced overall levels of oral and manual object exploration (Clearfield et al. 2014). Differences in early gesture production, known to predict later language learning (Rowe & Goldin-Meadow 2009a), also reflect SES disparities (Rowe & Goldin-Meadow 2009b). As early as 14 months, children from high-SES families were exposed to and used more gestures during parent–child interaction, compared with their low-SES counterparts. These SES differences in gesture use further predicted differences in vocabulary skills at 54 months (Rowe & Goldin-Meadow 2009b) and appear to be mediated by the parents' use of gesture. Findings from behavioral research have been corroborated by neuroimaging studies that identified significant SES differences in regional brain volume in areas that are associated with language and executive function (Farah et al. 2006, Hackman & Farah 2009, Noble et al. 2012, Hanson et al. 2013).

Perhaps surprisingly, there is limited evidence regarding SES-related differences in children's ability to follow gaze or establish and maintain joint attention within the first year, and existing findings are inconclusive, showing reduced interaction in some mother–child dyads but increased interaction in others (Cohn et al. 1986); still other studies find relatively few significant group differences (Hammer & Weiss 1999). Given the high prevalence of maternal depression in low-SES families (Lyons-Ruth et al. 1990, McCue Horwitz et al. 2007, Turney 2012) and the negative

relation between depressive symptomatology and growth in toddler vocabulary production (Pan et al. 2005), this is a critical area for future research.

4.2. Vocabulary Development

The most striking evidence of SES disparities is observed in children's expressive and receptive vocabulary. As early as 18 months, infants in high-SES families had larger expressive vocabularies compared with their peers in low-SES families (Fernald et al. 2013). By the age of 3 years, children from high-income households already produced twice as many words as did their peers from low-income households, according to well-known research by Hart & Risley (1995). Despite concerns regarding the small sample size, limited geographical scope, and overall generalizability of these data (Dudley-Marling & Lucas 2009, Johnson 2015, Sperry et al. 2015), SES has been positively associated with vocabulary development across a number of subsequent investigations. Recent studies based on standardized tests and nationally representative samples have demonstrated these SES disparities in the global context (Bradbury et al. 2011). For example, an analysis by the Comprehensive Child Development Program (CCDP) suggested that children living in poverty in the United States scored 15 months behind the national norm on a receptive vocabulary test by the age of 5 years (Layzer & Price 2008). Data from the UK Millennium Cohort Study (MCS) showed that preschool children from low-income families were 15 months behind their more affluent peers in expressive vocabulary, and had slower vocabulary growth during preschool years (Blanden & Machin 2010). Similarly, the Longitudinal Study of Australian Children (LSAC) indicated an 8-month gap in children's receptive vocabulary growth between children from low- and high-SES families (Taylor et al. 2013).

These disparities are important not because of the number of words per se but because when children know more words they have more concepts and more ways to categorize their world. Having a smaller vocabulary also impedes children's ability to express their feelings and desires as well as to control their impulses (Roben et al. 2013). However, other researchers have argued that equating language with abstract thinking and knowledge could be problematic (Miller & Sperry 2012). The majority of standardized vocabulary tests are highly structured and deeply embedded in the mainstream, middle-class culture, and might therefore depress the test performance of children from lower-SES backgrounds (Gutierrez-Clellen & Peña 2001). As a result, SES disparities might reflect cultural differences in language socialization, rather than the language deficits of children from lower-SES homes (Miller & Sperry 2012). New assessment tools that are validated for use with culturally and linguistically diverse children will be necessary in order to gain a more accurate examination of their language skills (e.g., dynamic assessment; Gutierrez-Clellen & Peña 2001).

4.3. Grammatical Development

In additional to vocabulary, SES-related differences also exist in grammatical development. SES predicted the complexity and diversity of syntactic structures children produced during mother–child interaction (Vasilyeva et al. 2008, Huttenlocher et al. 2010), as well as children's performance on standardized tests of grammatical development (Morisset et al. 1990, Dollaghan et al. 1999). Recent findings from a normative sample of preschool children tested on a computerized language assessment indicated that children from low-SES homes had syntax comprehension scores at age 5 that were not significantly different from children from higher-SES homes at age 3, revealing a gap of nearly 24 months on test items including *wh*-questions and embedded clauses (Hirsh-Pasek et al. 2015b).

4.4. Phonological Development

Phonological awareness, which refers to children's understanding of the sound structures of words (e.g., the ability to combine 'bat' and 'man' into 'batman,' or say 'bike' without 'k'), provides a crucial foundation for later literacy development (McDowell et al. 2007). Children with low phonological awareness are at risk of having reading difficulties (Lonigan 2003), which further leads to negative attitudes toward reading (Oka & Paris 1986), less engagement in reading practices (Allington 1984), and lower reading comprehension skills (Brown et al. 1986). Children from high-SES backgrounds also showed a higher level of phonological awareness (Bowey 1995, Lonigan et al. 1998, McDowell et al. 2007) than children from low-SES homes.

4.5. Narrative

Compared with children from low-SES homes, those from middle-SES households needed fewer prompts to produce long and informative narratives, referred to temporal and causal relationships more often, and were more likely to organize their narratives logically and chronologically (Peterson 1994). All of these narrative features match the expectations of teachers, and may allow middle-class children to have a smoother transition to school than their disadvantaged peers (Michaels 1991). However, ethnographic research has suggested a rich oral tradition in many low-SES communities (Miller & Sperry 2012). Children from these communities are exposed to and engage in personal storytelling at an early age, thereby developing culture-specific narrative skills (Burger & Miller 1999, Miller et al. 2005). There is evidence that children from low-SES homes engaged in more costorytelling in daily life, produced narratives of higher quality, and had better narrative comprehension than their middle-class counterparts (Burger & Miller 1999, Gardner-Neblett et al. 2012). Unfortunately, low-SES children's strength in narrative skills is often underestimated by teachers, because of the mismatch between home cultures and the mainstream method of instruction in schools (Dyson & Genishi 2009).

4.6. Literacy Development

When children start to read and write, the SES-related disparities in language skills feed into gaps in literacy achievement (Walker et al. 1994, Lee & Burkam 2002). An analysis by the Early Childhood Longitudinal Study Kindergarten Cohort (ECLS-K) showed that, at the time of school entry, children from the lowest SES quintile (20%) were 1.2 standard deviations lower in reading skills than children from the highest SES quintile (Lee & Burkam 2002). Strikingly, more than 80% of children from low-income families cannot read proficiently by the end of third grade (Annie E. Casey Found. 2013). From third to eighth grade, low-SES students also had a higher risk of reading difficulties than did students from middle- or high-SES backgrounds (Kieffer 2010). In a representative sample of the National Educational Longitudinal Survey (NELS), twelfth-grade students from high-SES backgrounds were two to four times more likely to score at the proficient or advanced level on standardized reading tests than were students from low-SES backgrounds (Camara & Schmidt 1999). A similar achievement gap is observed in children's writing skills. In first grade, children from different SES backgrounds already varied in the quality and productivity of their writing (Kim et al. 2015). By the end of high school, students from low-income families scored one standard deviation lower than their peers from middle- or upper-class families in the SAT writing test (CollegeBoard 2013).

Where do these SES disparities in literacy development come from? Although differences in basic language skills such as vocabulary size and language processing partially explain the

variations, Neuman (2001, 2006) argued that knowledge inequality is key to the widening literacy gaps. Children organize their previous language experiences into schemas of knowledge, which further allow them to process and gain new information quickly and easily. One study showed that children's general knowledge at the entrance to kindergarten was a stronger predictor of reading skills at fifth grade than their early reading scores (Grissmer et al. 2010). Similarly, children who are frequently read to develop a concept of "story grammar" (a typical story has a setting, problems, solutions, an ending, etc.), which further helps them to comprehend and remember stories better (Stein & Glenn 1979, Anderson & Pearson 1984). In contrast, the lack of a story grammar schema makes it difficult to process stories and then to remember the important components that are commonly measured on standardized reading assessments.

Additional research suggests that children whose home and school dialects differ are at greater risk for reading difficulties because tasks such as decoding rely heavily on Standard American English (SAE; Brown et al. 2015). Whereas children from middle- and high-SES backgrounds may acquire knowledge that can be transferred to a classroom/test setting seamlessly, children from low-SES backgrounds might experience a mismatch between expectations in their home and classroom environments (Dyson & Genishi 2009). As a result, a Matthew effect occurs (i.e., the rich get richer and the poor get poorer) as high-income children profit more from the same classroom instruction than their low-income peers. Of the many questions for future research, the most pressing are how to measure literacy skill and how to improve classroom literacy instruction in a way that is sensitive to the diversity of preliteracy practices found in different socioeconomically and culturally defined family systems.

5. THREE POTENTIAL SOURCES OF SOCIOECONOMIC-STATUS-RELATED DIFFERENCES IN LANGUAGE DEVELOPMENT

SES-related differences in language learning opportunities, experience, and exposure exert varying levels of influence on language development in childhood, depending on the child's characteristics, the quality and quantity of input available in parent–child interactions, and the provision of age-appropriate materials in the home environment and rich experiences outside the home (**Figure 1**). In this section, we examine this trilogy of factors as potential sources of influence on the association between SES and language.

5.1. Child Characteristics

Despite consistent milestones in typical development, children bring unique variability to the task of language acquisition. Many child characteristics are important for language development, including physical and mental health, social–emotional skills (e.g., temperament, affect, internalizing and externalizing behavior, self-efficacy), approaches to learning (e.g., openness, curiosity, persistence, attentiveness, cognitive learning style), and executive functioning skills (e.g., working memory, attentional flexibility, inhibitory control, self-regulation). It is outside the purview of this article to explore each factor. Instead, we focus on a potential source of variation that is relatively underexplored in relation to SES, but may have important implications for language development—the child's learning processes.

Language ability can be measured in terms of an individual's knowledge of lexical or grammatical content (product) or in terms of real-time ability to access and apply this knowledge for comprehension and production (process). Comparatively little is known about the ways in which learning processes may influence language development. We borrow a psycholinguistic definition to characterize process-dependent skills as "the mental operations required to manipulate

linguistic units" (Campbell et al. 1997, p. 520) and include two distinct forms of process that have been discussed in the literature. The first form centers on processing efficiency, which refers to the speed and accuracy with which children listen to and comprehend the language input they hear. A child with high processing efficiency, for example, might rapidly understand and respond appropriately to her mother's passing comment, "Look! I see a blue car!", whereas a child with low processing efficiency would miss the opportunity as the car speeds past. The second form includes learning processes, which refer to the strategies with which children acquire new vocabulary words and grammatical structures such as fast mapping (Carey & Bartlett 1978) and syntactic bootstrapping (Naigles 1990), respectively. A young child proficient in fast-mapping skills might hear an unfamiliar word such as *yellow* only once, as in, "The banana is yellow," and demonstrate subsequent comprehension of this color term (Golinkoff & Hirsh-Pasek 2006, Swingley 2009). To date, it is unclear whether SES-related factors exert similar influence on processes and processing in the same way they influence the products of language knowledge.

One body of research suggests that SES may differentially affect the products of language knowledge and the learning processes that support language growth. Undoubtedly, differences in language learning environments shape a child's specific language knowledge. A child who grows up with a pet dog, for example, may learn the word *dog* before a child who has no animals at home. However, the child's capacity to learn the word *dog* may not be affected by his or her linguistic environment (Dollaghan & Campbell 1998, Weismer & Evans 2002). Evidence for this perspective comes from research in which word learning skill (e.g., fast mapping; Carey & Bartlett 1978) in preschool children from low-SES families was not correlated with receptive vocabulary knowledge (i.e., the specific product of language experience; Spencer & Schuele 2012). Additional evidence comes from research that showed no significant differences in children's ability to engage in syntactic bootstrapping on the basis of the dialect they spoke, whether it be SAE or African American English (Johnson & de Villiers 2009). That is, these children were equally good at learning something about a novel verb's meaning from its argument structure when it was used in a sentence. This research suggests that the products of language experience (the words and grammatical structures a child knows) may be distinct from the processes and processing (the strategies and efficiency) that support language acquisition.

Other recent research on this topic, in contrast, suggests that SES-related differences in processing skills may already be present in infancy. Specifically, differences in vocabulary and language processing efficiency between infants from higher- and lower-SES families were evident at 18 months, and by 24 months there was a 6-month gap between SES groups (Fernald et al. 2013). This language gap predicted children's processing speed such that young children who received less language input actually processed incoming speech less efficiently, often taking longer to identify the meaning of a word in the context of sentences and conversations (Fernald et al. 2013). Preliminary findings from a cross-sectional study investigating language products and language learning processes revealed that 5-year-old children from lower-SES backgrounds fast-mapped nouns, adjectives, and verbs in a way that was not significantly different from 3-year-old children from higher-SES homes (A. Pace, G. Morini, R. Luo, R.M. Golinkoff & K. Hirsh-Pasek, manuscript in preparation). Additional research is needed to clarify the relation between a child's language proficiency as measured by standardized tests and the processes a child uses to acquire new vocabulary and grammatical structures.

Together, these findings suggest that probing learning processes will be important to fully understand the impact of SES on verbal ability. Because the majority of the available research is correlational, we do not yet know whether children from lower-SES homes begin with lower levels of processing skill or whether they develop different processing skills due to lesser levels of input, exposure, and experience. Future research that experimentally manipulates the level of

input required to improve children's potential to acquire new vocabulary words and grammatical structures will be essential if we are to accurately characterize the relation between what children know about language and how they learn new language. This research should not only ask how early these SES-related differences become apparent but also investigate the pathways by which they influence language development. Data of this sort will be invaluable for testing hypotheses about experience–outcome relations and about optimal levels of input and language exposure to improve rates of acquisition or at least boost children's language acquisition skills to the levels of their peers.

5.2. Parent–Child Interaction

A second body of research suggests that certain components of SES may influence the ways in which caregivers communicate with their children, which in turn results in variations in children's language development. There is some evidence that the sheer amount of language input affects language growth (Huttenlocher et al. 1991), whereas other studies suggest that the quality of language input, such as the diversity and complexity of vocabulary and grammar (Huttenlocher et al. 2010, Rowe 2012), the contingency of language addressed to children (Bornstein et al. 2008), the use of questions (Aram et al. 2013), and language that goes beyond the here-and-now (decontextualized language; Rowe 2012), is also important. Recent research examining both quantity and quality simultaneously suggested that quality might be the primary predictor of language outcome (Rowe 2012, Hirsh-Pasek et al. 2015a), and different qualitative characteristics might play a role in different developmental periods (Rowe 2012, Tamis-LeMonda et al. 2014). For example, the diversity and sophistication of vocabulary facilitate toddlers' lexical growth, whereas decontextualized language is more beneficial for later vocabulary growth in preschool (Rowe 2012).

Several studies have shown that particular aspects of the language addressed to children accounted for the SES differences in children's verbal outcomes. In a study of middle-SES and high-SES families, Hoff (2003) assessed maternal speech and children's productive vocabulary during mother–child interaction at 21 months and 10 weeks later, and found that the length of maternal utterances in MLU (mean length of utterance) at Time 1 fully mediated the relation between SES and children's vocabulary growth from Time 1 to Time 2. In another study, Huttenlocher et al. (2010) assessed the lexical diversity and syntactic complexity of the speech of caregivers and the speech of children between the ages of 14 and 46 months. They found that the lexical and syntactic diversity of caregivers' speech, such as the number of different words and different combinations of clauses, partially explained the associations between SES and children's lexical and syntactic growth. Together, these findings suggest that SES differences in children's language outcomes are due, in part, to SES-related disparities in language input at home. Therefore, for those low-SES children who hear limited child-directed speech at home, having access to high-quality language outside the home can be especially beneficial. Research has shown that positive caregiver–child language interactions in child care buffered low-SES children from poor language outcomes, and such a buffering effect is especially strong for those children who received limited language input at home (Vernon-Feagans et al. 2013).

In addition to child-directed speech, the quality of parental care in general may contribute to the SES gap in language development. Life stress and unsafe living environments associated with low SES might result in more negative, punitive, and authoritarian parenting, which in turn leads to adverse language and literacy outcomes (Hoff et al. 2002b). Although there is well-documented evidence of the relation between SES and parenting style and between parenting style and child language and cognitive outcomes, only a few studies examined these three constructs simultaneously. In a study based on a National Institute of Child Health and Human Development (NICHD)

sample, Raviv et al. (2004) found that maternal sensitivity (as measured by a composite score of hostility, supportiveness, and respect for autonomy) partially mediated the associations between SES and children's expressive and receptive language skills at age 3 (Raviv et al. 2004). Another study showed that maternal supportiveness (as measured by a composite score of sensitivity, cognitive stimulation, and positive regard) partially explained the association between SES and 3-year-old children's language and cognitive outcomes in both immigrant and native families in the United States (Mistry et al. 2008).

New research has gone beyond the construct of maternal sensitivity to probe the specific features that influence language development. A review of this literature reveals several important qualities of parent–child interaction, including the timing of the parent's response to the child (i.e., temporal contingency) and the relatedness of the parent's response (i.e., semantic contingency) so that actions or language meaningfully build on the child's conversational bid (Tamis-LeMonda et al. 2014). Recent research conducted by Hirsh-Pasek et al. (2015a) demonstrated that three specific features of early parent–child communication at age 2 (i.e., episodes of joint engagement infused with words and gestures, routines and rituals such as book reading, and the back-and-forth fluency and connectedness of conversation) were powerful predictors of expressive language at age 3 and may have served as a buffer against poverty in a sample of low-income families. These findings suggest that there is wide variability in the quality of parent–child interactions even within socioeconomic strata that accounts for significant differences in later language ability.

Complementary research from anthropology and sociolinguistics suggests that it may be important to take a broader view of language learning contexts that include multiparty participation frameworks in which many family members—including siblings, grandparents, and other caregivers—engage with the child (De León 2011, Sperry et al. 2015). Although adults who take turns in interactions with young children, share periods of joint focus, are sensitive and responsive, and express positive affect provide children with the scaffolding needed to facilitate language and cognitive growth (Clarke-Stewart 1973, Bradley et al. 1989, Bronfenbrenner & Morris 1998, Howes 2000, Katz 2000, Landry et al. 2001, Tamis-LeMonda & Bornstein 2002, Hirsh-Pasek & Burchinal 2006), limiting observational studies of joint engagement to the American middle-class model of sustained speech directed to the child in dyadic interaction may not allow full appreciation of the complexity and heterogeneity of family systems in which children are fully capable of developing culturally appropriate communication styles and verbal competence (Vogt & Mastin 2013).

Taken together, these studies suggest that the relation between SES and verbal ability cannot be explained by a simple causal vector through which low SES leads directly to poor language outcomes. In fact, recent research suggests that there is substantial within-SES variability in the quality and quantity of language exposure and that many important features of parent–child interaction modulate the effects of SES on children's language development. Additional research on variation in parenting and language socialization practices will contribute to a more holistic understanding of how high-quality engagement supports language growth across cultures.

5.3. Availability of Learning Materials: Resources at Home and in the Community

Another source of variation through which SES influences children's verbal ability is the availability of learning materials—not only within the home, but also in the community at large. Research suggests that, compared with children from middle- or high-SES families, children from low-SES backgrounds are exposed to limited language and cognitive stimulation both in the home and in the community. According to one national study (NICHD), only 25% of 3- to 5-year-old children from low-income families had 10 or more books at home, whereas almost 50% of children from

more affluent households did (Bradley et al. 2001). SES disparities are also seen in the quality and variety of books and the richness of linguistically and cognitively stimulating toys (e.g., crayons, alphabet blocks) that children have at home (McGill-Franzen et al. 2002, Rodriguez et al. 2009, Froiland et al. 2013). Such inequality in children's access to learning materials expands from the home setting to the school and community.

Dangers in children's physical and social environments, such as neighborhood violence and lead exposure, may make it difficult for children from lower-SES communities to play outside (Brooks-Gunn & Duncan 1997) and hinder cognitive development (Caughy et al. 2007). Children from lower-SES families may have limited opportunities to go to zoos, children's museums, high-quality libraries (Pogash 2016), and well-designed parks, all of which spur new vocabulary and language growth (Neuman & Celano 2001). For example, Neuman & Celano (2001) compared children's access to print in middle- and low-SES communities, and found that middle-SES communities had many more locations that sold children's books and magazines, more readable signs on the street, and more public spaces for reading than low-SES communities. There were also striking differences in the availability and quality of books in preschool classrooms that served low- and middle-SES children.

Learning materials, especially literacy resources, allow children to engage in language and literacy activities, which further facilitate a variety of emergent literacy and language skills, including receptive vocabulary, oral language skills, letter-word identification, and concepts about print (Payne et al. 1994, Christian et al. 1998, Park 2008, Farver et al. 2013, Froiland et al. 2013). For example, a national representative study of low-income families suggested that the richness of the literacy environment across the first 3 years of life was associated with children's receptive and expressive language skills at 14, 24, and 36 months (Rodriguez et al. 2009). Access to learning materials also covaries with other aspects of the home learning environment that support language growth. For example, mothers who provided children with rich literacy materials tended to model reading behaviors themselves and had a high level of reading ability (Johnson et al. 2008).

Studies simultaneously assessing SES, learning materials, and children's language and literacy development further support the mediating role of learning materials. For example, an analysis of the ECLS-K showed that SES predicted parents' provision of books and learning materials and involvement in learning activities, which were further linked to children's language and academic skills at age 6 (Gershoff et al. 2007). Research on summer reading loss, the phenomenon that students' reading scores drop after summer vacation, also highlights the role of home literacy resources in SES gaps in children's literacy skill. According to the "faucet theory" (Entwisle et al. 2000), during the school year, access to literacy resources is "turned on" for all children, whereas during summer recess, the school resources faucet is "turned off," and children need to rely on home learning materials. Consequently, the inequalities in home educational resources lead low-income children to engage in reading activities less frequently and experience a greater summer reading loss than their middle-class peers (Kim 2004). Providing book resources for summer is an effective intervention strategy to increase reading activities and promote reading proficiency, especially for children from economically disadvantaged families (Allington et al. 2010).

6. CHANGING LANGUAGE TRAJECTORIES THROUGH EARLY INTERVENTIONS

Emerging consensus suggests that changing language trajectories will require a multitiered model of intervention that provides services at the individual, community, and broader population levels. Current interventions include intensive home-visitation programs for high-risk families, service

delivery in primary-care settings such as pediatricians' offices, high-quality early care and education (ECE) programs, and scaling efforts to community and population levels. Below, we extend our three-part framework to consider recent interventions that take critical steps toward addressing language gaps by targeting children's skills to support language development, as well as external environmental supports that enhance language outcomes.

6.1. Enhancing Skills and Strategies for Language Acquisition: Can Targeting Learning Processes Support Language Growth?

Language begets language. Research suggests that what children know about language, as reflected in the vocabulary words and grammatical structures they use, supports how they learn new language, and vice versa. There is limited evidence, however, that interventions have capitalized upon this reciprocal relation. Whereas many intervention approaches directly target the content to be learned (e.g., a set of vocabulary words or a new syntactical construction), a smaller number have directly targeted the skills and strategies that support language learning, though a few notable exceptions exist (Gershkoff-Stowe & Hahn 2007, Gray & Brinkley 2011). One study asked whether 16- to 18-month-old children who were exposed to a high-practice set of unfamiliar words over 12 weeks would show an increased ability to learn a second set of low-practice words compared with a control group (Gershkoff-Stowe & Hahn 2007). Children in the high-practice group not only learned more words but were essentially "primed" to acquire a second set of less intensely practiced words at a more rapid rate than children who were matched on productive language ability but did not receive extended practice with the first set of words. This suggests that interventions aimed at "boosting" the word learning system with extended practice may support subsequent word learning. This model has not yet been tested on a large scale or with children who vary by SES.

Other important language interventions address the underlying processes that support word learning—in particular, phonological knowledge, working memory, and attention (Alt et al. 2012, 2014). One promising intervention with children from low-SES families found that targeting children's attention skills had a large impact on attention (as measured by event-related potentials) and led to gains in the children's receptive language abilities (Neville et al. 2013). Other studies have addressed the role of phonological or working memory training in word learning (Alt et al. 2012, 2014; Ellis et al. 2015). However, most of the research investigating cognitive contributions to language acquisition involve language-impaired children from middle- and high-SES backgrounds. These models have not yet been extended on a large scale to explore their efficacy or feasibility with children from low-SES families. In light of the evidence for early differences in processing efficiency between low-SES children and their more affluent peers (Fernald et al. 2013), exploring interventions that target skills and strategies that support language acquisition is a critical direction for future research.

6.2. Enhancing the Input: Interventions Targeting the Quantity and Quality of Parent–Child Interaction

Given the mediating role of early language experiences on the associations between SES and language outcomes, other interventions have been devoted to closing the SES-related gap by educating caregivers on the importance of early language input and improving the quality and quantity of language and literacy interactions. For example, preliminary evidence from the Thirty Million Words Initiative (**http://thirtymillionwords.org/**) suggested that instructing parents to talk more and providing parents with feedback on the quantity of child-directed language in daily life effectively increased the number of words and conversational turns they produced during

parent–child interactions at home (Suskind et al. 2013). In another intervention based in the United Kingdom, instructing parents to engage in contingent talk with their infants for 15 minutes a day was shown to affect language development across socioeconomic strata (McGillion et al. 2014). Similarly, shared book-reading and joint writing interventions, in which caregivers engaged in these activities with children several times a week, successfully improved children's vocabulary, language comprehension, and emergent literacy skills (Levin & Aram 2012).

Promising results were also observed in interventions facilitating the quality of parenting practices, such as parental sensitivity, contingency, and responsiveness. For example, in the Play and Learning Strategies intervention (PALS; Landry et al. 2006, 2008), low-income mothers of 6-month-olds were trained to respond to children's communication signals in a sensitive, warm, and contingent manner. Compared with children in the control group, children in the intervention group had greater receptive vocabularies, initiated conversations more often, and produced more words during mother–child interactions (Landry et al. 2006).

Other interventions have focused on the content of parental language input. Dialogic reading, a book-reading technique emphasizing parents' use of open-ended questions, is a widely used approach to improving children's language outcomes (Valdez-Menchaca & Whitehurst 1992, Whitehurst et al. 1994, Lonigan & Whitehurst 1998), although the magnitudes of effect are stronger for European American families than for Latino and African American families (Manz et al. 2010). Training parents on providing elaborative and enriched language input during shared reminiscing also benefits children's narrative skills and language comprehension, especially for children from ethnic minority families (Reese et al. 2010).

Interventions that focus on the quality and quantity of parent–child interactions are also evident at the community and population level. For example, Providence Talks (**http://www.providencetalks.org/**) is a city-wide initiative designed to increase the number of words spoken to children and the number of turns taken during conversations. The Talking Is Teaching multimedia campaign (**http://talkingisteaching.org**) is designed to help parents understand that talking about daily activities is a way to boost vocabulary development. And the Bezos Family Foundation's project VROOM (**http://www.joinvroom.org**) offers brain-building tips and texts that help parents focus on learning with their children. Similarly, the text4baby project (**https://www.text4baby.org**) uses text messages to inform pregnant women and new mothers of ways to support children's learning and growth. Other models, such as the Video Interaction Project, have focused on training parent-guided interactions during pediatric visits that foster positive cognitive, linguistic, and social development (Mendelsohn et al. 2007, Weisleder et al. 2016). Bringing interventions to scale through this type of broad, population-based model is a critical next step if language trajectories are to be changed for the nearly 15 million children living in poverty in the United States today.

6.3. Interventions Targeting Learning Resources

Another factor that hinders children's language development in low-SES families is the lack of learning resources. Providing children and families with greater and easier access to literacy materials has been recognized as an effective strategy to increase children's engagement in language and literacy activities and ultimately foster language outcomes. There is some evidence that a single trip to the library has a significant impact on children's reading experiences. In an intervention, second- and third-graders from low-income families were allowed to explore a public library and check out 10 books, whereas their peers in the control group were able to check out only 1 book from the school library. Children in the intervention group reported reading more and having a more positive attitude toward reading than those in the control group (Ramos & Krashen 1998).

Books and learning materials also make a difference in children's language and literacy experiences in the home and classroom contexts. For example, an intervention study provided children with age-appropriate, high-quality books recommended by early childhood educators and children's literature experts. Allowing children to take one book home every week for 12 weeks significantly increased book-sharing interactions at home (Robinson et al. 1995). Likewise, providing book resources for summer reading resulted in greater engagement in reading activities during the summer months and a higher level of reading proficiency in fall, especially for those children from economically disadvantaged families (Allington et al. 2010).

In child care centers, exposing children from low-SES homes to high-quality books at a ratio of five books per child resulted in greater language interactions around literacy, longer book-reading time, and more physical access to books, which in turn led to greater receptive vocabulary and better concepts of writing and print in children (Neuman 1999). Notably, other studies have suggested that provision of high-quality books is not sufficient for facilitating children's language outcomes. Rather, access needs to be coupled with training caregivers in how to use these books to be effective (McGill-Franzen et al. 1999).

The last decade has seen a steady increase in the use of digital educational devices, such as electronic books (e-books), tablets, laptops, and smartphones, in both home and school settings. To date, the majority of research examining the effects of digital devices on language development has focused on e-books, and has yielded mixed findings. Some studies suggested that, just like traditional books, e-books can serve as educational tools to support language growth, and they are especially beneficial for low-SES children (Korat & Shamir 2008, Korat et al. 2014). In contrast, other studies showed that the presence of electronic features might distract children's attention and hinder their learning during book-reading interactions (Parish-Morris et al. 2013). It appears that the key factor is not whether learning materials are digital or print based, but whether they successfully elicit high-quality language interactions between children and caregivers to support children's engagement with the learning materials (Gong & Levy 2009, Segal-Drori et al. 2010, Smeets & Bus 2015). Given concerning evidence regarding the growing "digital divide" between those who have access to digital resources and those who do not, understanding how social and economic inequalities extend into the sphere of new technologies is of the utmost importance (Ragnedda & Muschert 2013).

Opportunities to improve the quantity and quality of children's language experiences are not restricted to the home or classroom contexts. Ridge et al. (2015) took an innovative approach to spark parent–child conversations in supermarkets by putting up signs such as "What is your favorite vegetable?" and "Where does the milk come from?" The presence of these signs increased the quantity of talk between caregivers and children in supermarkets located in low-SES neighborhoods, supporting the language experiences for these families (Ridge et al. 2015). Another innovative approach melds the science of learning with architecture to create "puzzle benches" at heavily used bus stops so that families can talk and learn together while waiting for public transportation. Activities that foster storytelling and impulse control are also built into aesthetically pleasing structures that dot the urban landscape. This intervention, called Urban Thinkscape, is currently under way in Philadelphia (B. Hassinger-Das, I. Palti, K. Hirsh-Pasek & R.M. Golinkoff, project in preparation). Taking communities and neighborhoods as a learning canvas, these initiatives are designed to spark language learning every day and everywhere.

7. GENERAL DISCUSSION

SES is strongly associated with language outcomes. This association is robust, appearing across cultures, ethnicities, and home languages. This association is also pervasive, demonstrating links

across multiple domains of language from vocabulary to pragmatics. And this association begins early, revealing language differences from infancy through adolescence and beyond. However, this association is not universal, nor is it impervious to effective intervention. On the contrary, compelling new evidence suggests that in countries where social policies ensure more uniform access to high-quality education and health care (e.g., Australia), the effects of childhood SES on intelligence and academic achievement can be nullified or even reversed (Tucker-Drob & Bates 2015). Complementary research is focusing on understanding the relation of language experience to language development and uncovering additional factors that might modulate the impact of varying socioeconomic circumstances on how children learn to communicate. Future research is needed to identify how early we can observe, and thus protect against, the negative effects of poverty; to refine our methods of language assessment so that they are sensitive to individual differences and unique strengths; to investigate the impact of SES on foundational skills such as joint engagement; and to assess the generalizability of interventions within culturally and linguistically diverse populations.

This review has explored three pathways through which SES may influence children's language development: the child's learning processes, the quantity and quality of caregiver–child interaction, and the broader availability of learning materials and resources at home and in the community. First, typically developing children show incredible individual variability with respect to their learning processes, which in turn influences their language acquisition. Although some of these processing differences may result from variations in language input, they are nonetheless associated with different trajectories of language development. Second, SES is associated with several key features of caregiver–child interactions that facilitate language development, including the quantity and quality of language input, the contingency and reciprocity of interaction, and parental warmth and sensitivity. Third, children from different SES groups vary in their access to books and other literacy resources, as well as in the prevalence of environmental hazards (e.g., lead exposure, violence), which further provide or hinder opportunities for language learning.

A better understanding of the multiple mechanisms underlying SES disparities will help us identify malleable factors that facilitate language development and buffer against poverty. However, to date, studies on these three pathways have typically been separate. Much is unknown about the interactions among these pathways and whether some pathways are more salient during certain developmental periods. In addition, the majority of work in this area is correlational. More research is needed to understand the casual relationships among SES, mediating factors, and language outcomes. Finally, although these pathways have been documented both across SES groups and within SES strata, little is known about the extent to which they are generalizable across different cultural and linguistic contexts.

Language trajectories are malleable. Converging evidence has demonstrated this fact by illustrating how language environment affects language outcomes. Only recently, however, has research begun to pull apart the complex tangle of factors that contribute to the relation between SES and language development and to uncover the underlying mechanisms by which this relation can be changed. Although ongoing research has identified multiple pathways by which SES influences language growth, concerted time, effort, and resources need to be dedicated to developing multitiered interventions at the individual, community, and population levels to target changes that support positive language trajectories for all children in ways that validate the rich and generative language capacities of children from diverse socioeconomic, cultural, and linguistic backgrounds. To accomplish this task, practitioners should adapt interventions for language-minority families; develop inclusive models that involve fathers, mothers, and other caregivers; start early by educating parents and caregivers on the importance of rich language experiences well before children begin to speak; scale language interventions to the population level by using innovative

technologies (e.g., text messaging), delivery methods (e.g., internet training or teletherapy), and community resources (e.g., public spaces); and develop deep community partnerships during all phases of design and implementation to increase ecological validity and maximize positive impact.

DISCLOSURE STATEMENT

The authors are not aware of any affiliations, memberships, funding, or financial holdings that might be perceived as affecting the objectivity of this review.

ACKNOWLEDGMENTS

We thank Josie Tejada, laboratory coordinator at Temple University, for her assistance in outlining this review in its initial stages. This research was supported by a Bezos Family Foundation Early Childhood Research Fellowship and a grant from the William Penn Foundation.

LITERATURE CITED

Allington R. 1984. Content, coverage, and contextual reading in reading groups. *J. Read. Behav.* 16:85–96

Allington R, McGill-Franzen A, Camilli G, Williams L, Graff J, et al. 2010. Addressing summer reading setback among economically disadvantaged elementary students. *Read. Psychol.* 31:411–27

Alt M, Meyers C, Ancharski A. 2012. Using principles of learning to inform language therapy design for children with specific language impairment. *Int. J. Lang. Commun. Disord.* 47:487–98

Alt M, Meyers C, Oglivie T, Nicholas K, Arizmendi G. 2014. Cross-situational statistically based word learning intervention for late-talking toddlers. *J. Commun. Disord.* 52:207–20

Anderson RC, Pearson PD. 1984. A schema-theoretic view of basic processes in reading comprehension. In *Handbook of Reading Research*, ed. PD Pearson, pp. 255–91. Mahwah, NJ: Erlbaum

Annie E. Casey Found. 2013. *Early warning! Why reading by the end of third grade matters*. Special rep., Annie E. Casey Found., Baltimore. **http://www.aecf.org/resources/early-warning-why-reading-by-the-end-of-third-grade-matters/**

Aram D, Fine Y, Ziv M. 2013. Enhancing parent–child shared book-reading interactions: promoting references to the book's plot and socio-cognitive themes. *Early Child. Res. Q.* 28:111–22

Arriaga RI, Fenson L, Cronan T, Pethick SJ. 1998. Scores on the MacArthur Communicative Development Inventory of children from low- and middle-income families. *Appl. Psycholinguist.* 19:209–23

Blair C, Raver CC. 2012. Child development in the context of adversity: experiential canalization of brain and behavior. *Am. Psychol.* 67:309–18

Blanden J, Machin S. 2010. Intergenerational inequality in early years assessments. In *Children of the 21st Century: The First Five Years*, ed. K Hansen, H Joshi, S Dex, pp. 153–68. London: Cent. Longitud. Stud.

Bornstein MH, Bradley RH. 2003. *Socioeconomic Status, Parenting, and Child Development*. Mahwah, NJ: Erlbaum

Bornstein MH, Tamis-LeMonda CS, Hahn CS, Haynes OM. 2008. Maternal responsiveness to young children at three ages: longitudinal analysis of a multidimensional, modular, and specific parenting construct. *Dev. Psychol.* 44:867–74

Bowey JA. 1995. Socioeconomic status differences in preschool phonological sensitivity and first-grade reading achievement. *J. Educ. Psychol.* 87:476–87

Bradbury B, Corak M, Waldfogel J, Washbrook E. 2011. *Inequality during the early years: child outcomes and readiness to learn in Australia, Canada, United Kingdom, and United States*. Discuss. pap. 6120, Inst. Study Labor, Bonn, Ger.

Bradley RH, Caldwell BM, Rock SL, Ramey CT, Barnard KE, et al. 1989. Home environment and cognitive development in the first 3 years of life: a collaborative study involving six sites and three ethnic groups in North America. *Dev. Psychol.* 25:217–35

Bradley RH, Corwyn RF. 2002. Socioeconomic status and child development. *Annu. Rev. Psychol.* 53:371–99

Bradley RH, Corwyn RF, McAdoo HP, García Coll C. 2001. The home environments of children in the United States. Part I: Variations by age, ethnicity, and poverty status. *Child Dev.* 72:1844–67

Bronfenbrenner U, Morris PA. 1998. The ecology of developmental processes. In *Handbook of Child Psychology*, vol. 1: *Theoretical Models of Human Development*, ed. W Damon, RM Lerner, pp. 993–1028. Hoboken, NJ: Wiley. 5th ed.

Brooks-Gunn J, Duncan GJ. 1997. The effects of poverty on children. *J. Child. Poverty* 7:55–71

Brooks R, Meltzoff AN. 2005. The development of gaze following and its relation to language. *Dev. Sci.* 8:535–43

Brown A, Palinscar A, Purcell L. 1986. Poor teachers: Teach, don't label. In *The School Achievement of Minority Children: New Perspectives*, ed. TJ Neisser, pp. 105–43. Hillsdale, NJ: Erlbaum

Brown MC, Sibley DE, Washington JA, Rogers TT, Edwards JR, et al. 2015. Impact of dialect use on a basic component of learning to read. *Front. Psychol.* 6:1–17

Burchinal MR, Pace A, Alper R, Hirsh-Pasek K, Golinkoff RM. 2016. *Early language outshines other predictors of academic and social trajectories in elementary school*. Presented at Assoc. Child. Fam. Conf. (ACF), Washington, DC, July 11–13

Burchinal MR, Peisner-Feinberg E, Pianta R, Howes C. 2002. Development of academic skills from preschool through second grade: family and classroom predictors of developmental trajectories. *J. Sch. Psychol.* 40:415–36

Burger LK, Miller PJ. 1999. Early talk about the past revisited: a comparison of working-class and middle-class families. *J. Child Lang.* 26:1–30

Camara WJ, Schmidt AE. 1999. *Group Differences in Standardized Testing and Social Stratification*. New York: Coll. Board Publ.

Campbell T, Dollaghan C, Needleman H, Janosky J. 1997. Reducing bias in language assessment: processing-dependent measures. *J. Speech Lang. Hear. Res.* 40:519–25

Carey S, Bartlett E. 1978. Acquiring a new single word. *Pap. Rep. Child Lang. Dev.* 15:17–29

Cartmill EA, Armstrong BF, Gleitman LR, Goldin-Meadow S, Medina TN, Trueswell JC. 2013. Quality of early parent input predicts child vocabulary 3 years later. *PNAS* 110:11278–83

Caughy MO, Hayslett-McCall KL, O'Campo PJ. 2007. No neighborhood is an island: incorporating distal neighborhood effects into multilevel studies of child developmental competence. *Health Place* 13:788–98

Chapman C, Laird J, Ifill N, KewalRamani A. 2011. *Trends in high school dropout and completion rates in the United States: 1972–2009*. Compend. rep. 2012-006, Nat. Cent. Educ. Stat., Washington, DC. **http://files.eric.ed.gov/fulltext/ED524955.pdf**

Christian K, Morrison F, Bryant F. 1998. Predicting kindergarten academic skills: interactions among child care, maternal education, and family literacy environments. *Early Child. Res. Q.* 13:501–21

Clarke-Stewart KA. 1973. Interactions between mothers and their young children: characteristics and consequences. *Monogr. Soc. Res. Child Dev.* 38:1–109

Clearfield MW, Bailey LS, Jenne HK, Stanger SB, Tacke N. 2014. Socioeconomic status affects oral and manual exploration across the first year. *Infant Ment. Health J.* 35:63–69

Cohn JF, Matias R, Tronick EZ, Connell D, Lyons-Ruth K. 1986. Face-to-face interactions of depressed mothers and their infants. *New Dir. Child Adolesc. Dev.* 1986:31–45

CollegeBoard. 2013. *2013 college-bound seniors: total group profile report*. Report 002_0_NP_01, Coll. Board, New York City. **http://media.collegeboard.com/digitalServices/pdf/research/2013/TotalGroup-2013.pdf**

Corsaro WA, Molinari L, Rosier KB. 2002. Zena and Carlotta: transition narratives and early education in the United States and Italy. *Hum. Dev.* 45:323–48

Crain S, Lillo-Martin D. 1999. *An Introduction to Linguistic Theory and Language Acquisition*. Oxford, UK: Blackwell

De León L. 2011. Language socialization and multiparty participation frameworks. In *The Handbook of Language Socialization*, ed. A Duranti, E Ochs, BB Schieffelin, pp. 81–111. Oxford, UK: Wiley-Blackwell

DeCasper AJ, Fifer WP. 1980. Of human bonding: Newborns prefer their mothers' voices. *Science* 208:1174–76

DeNavas-Walt C, Proctor BD. 2015. *Income and poverty in the United States: 2014*. Curr. popul. rep. P60-252, US Census Bur., Washington, DC. **https://www.census.gov/hhes/www/poverty/data/incpovhlth/2014/figure5.pdf**

Dollaghan CA, Campbell TF. 1998. Nonword repetition and child language impairment. *J. Speech Lang. Hear. Res.* 41:1136–46

Dollaghan CA, Campbell TF, Paradise JL, Feldman HM, Janosky JE, et al. 1999. Maternal education and measures of early speech and language. *J. Speech Lang. Hear. Res.* 42:1432–43

Dudley-Marling C, Lucas K. 2009. Pathologizing the language and culture of poor children. *Lang. Arts* 86:362–70

Duncan GJ, Brooks-Gunn J, Klebanov PK. 1994. Economic deprivation and early childhood development. *Child Dev*. 65:296–318

Duncan GJ, Magnuson K, Votruba-Drzal E. 2015. Children and socioeconomic status. In *Handbook of Child Psychology and Developmental Science*, ed. RM Lerner, MH Bornstein, T Leventhal, 4:534–73. Hoboken, NJ: Wiley

Dyson AH, Genishi C. 2009. *Children, Language, and Literacy: Diverse Learners in Diverse Times*. New York: Teach. Coll., Columbia Univ.

Ellis EM, Borovsky A, Elman JL, Evans JL. 2015. Novel word learning: an eye-tracking study. Are 18-month-old late talkers really different from their typical peers? *J. Commun. Disord.* 58:43–157

Ensminger ME, Fothergill K. 2003. A decade of measuring SES: what it tells us and where to go from here. In *Socioeconomic Status, Parenting, and Child Development*, ed. MH Bornstein, RH Bradley, pp. 13–27. Mahwah, NJ: Erlbaum

Entwisle DR, Alexander KL. 1999. Early schooling and social stratification. In *The Transition to Kindergarten: Research, Policy, Training, and Practice*, ed. RC Pianta, M Cox, pp. 13–38. Baltimore: Paul H. Brookes

Entwisle DR, Alexander KL, Olson LS. 2000. Summer learning and home environment. In *A Notion at Risk*, ed. RD Kahlenberg, pp. 9–30. New York: Century Found.

Entwisle DR, Astone NM. 1994. Some practical guidelines for measuring youth's race/ethnicity and socioeconomic status. *Child Dev.* 65:1521–40

Evans GW. 2004. The environment of childhood poverty. *Am. Psychol.* 59:77–92

Farah MJ, Shera DM, Savage JH, Betancourt L, Giannetta JM, et al. 2006. Childhood poverty: specific associations with neurocognitive development. *Brain Res.* 1110:166–74

Farver JAM, Xu Y, Lonigan CJ, Eppe S. 2013. The home literacy environment and Latino Head Start children's emergent literacy skills. *Dev. Psychol.* 49:775–91

Fernald A, Marchman V, Weisleder A. 2013. SES differences in language processing skill and vocabulary are evident at 18 months. *Dev. Sci.* 16:234–48

Froiland JM, Powell DR, Diamond KE, Son SHC. 2013. Neighborhood socioeconomic well-being, home literacy, and early literacy skills of at-risk preschoolers. *Psychol. Sch.* 50:755–69

Gallaway C, Richards BJ. 1994. *Input and Interaction in Language Acquisition*. Melbourne: Cambridge Univ. Press

Gardner-Neblett N, Pungello EP, Iruka IU. 2012. Oral narrative skills: implications for the reading development of African American children. *Child Dev. Perspect.* 6:218–24

Gershkoff-Stowe L, Hahn ER. 2007. Fast mapping skills in the developing lexicon. *J. Speech Lang. Hear. Res.* 50:682–97

Gershoff ET, Aber JL, Raver CC, Lennon MC. 2007. Income is not enough: incorporating material hardship into models of income associations with parenting and child development. *Child Dev*. 78:70–95

Ginsborg J. 2006. The effects of socio-economic status on children's language acquisition and use. In *Language and Social Disadvantage: Theory into Practice*, ed. J Clegg, J Ginsborg, pp. 9–27. Hoboken, NJ: Wiley

Goldin-Meadow S, Levine SC, Hedges LV, Huttenlocher J, Raudenbush SW, Small SL. 2014. New evidence about language and cognitive development based on a longitudinal study. *Am. Psychol.* 69:588–99

Golinkoff RM, Hirsh-Pasek K. 2006. Baby wordsmith: from associationist to social sophisticate. *Curr. Dir. Psychol. Sci.* 15:30–33

Gong Z, Levy BA. 2009. Four year old children's acquisition of print knowledge during electronic storybook reading. *Read. Writ.* 22:889–905

Gray S, Brinkley S. 2011. Fast mapping and word learning by preschoolers with specific language impairment in a supported learning context: effect of encoding cues, phonotactic probability, and object familiarity. *J. Speech Lang. Hear. Res.* 54:870–84

Grissmer D, Grimm KJ, Aiyer SM, Murrah WM, Steele JS. 2010. Fine motor skills and early comprehension of the world: two new school readiness indicators. *Dev. Psychol.* 46:1008–17

Gutierrez-Clellen VF, Peña E. 2001. Dynamic assessment of diverse children: a tutorial. *Lang. Speech Hear. Serv. Sch.* 32:212–24

Hackman DA, Farah MJ. 2009. Socioeconomic status and the developing brain. *Trends Cogn. Sci.* 13:65–73

Hammer CS, Weiss AL. 1999. Guiding language development: how African American mothers and their infants structure play interactions. *J. Speech Lang. Hear. Res.* 42:1219–33

Hanson JL, Hair N, Shen DG, Shi F, Gilmore JH, et al. 2013. Family poverty affects the rate of human infant brain growth. *PLOS ONE* 8:e80954

Hart B, Risley TR. 1995. *Meaningful Differences in the Everyday Experience of Young American Children*. Baltimore: Paul H. Brookes

Hart B, Risley TR. 1999. *The Social World of Children: Learning to Talk*. Baltimore: Paul H. Brookes

Hirsh-Pasek K, Adamson LB, Bakeman R, Owen MT, Golinkoff RM, et al. 2015a. The contribution of early communication quality to low-income children's language success. *Psychol. Sci.* 26:1071–83

Hirsh-Pasek K, Burchinal M. 2006. Mother and caregiver sensitivity over time: predicting language and academic outcomes with variable-and person-centered approaches. *Merrill-Palmer Q.* 52:449–85

Hirsh-Pasek K, Pace A, Yust P, Levine D. 2015b. *More than a word gap: socioeconomic differences in language processes*. Presented at 2015 Bienn. Meet. Soc. Res. Child Dev., Philadelphia, March 19–21

Hoff E. 2003. The specificity of environmental influence: Socioeconomic status affects early vocabulary development via maternal speech. *Child Dev.* 74:1368–78

Hoff E. 2006. How social contexts support and shape language development. *Dev. Rev.* 26:55–88

Hoff E. 2013. Interpreting the early language trajectories of children from low-SES and language minority homes: implications for closing achievement gaps. *Dev. Psychol.* 49:4–14

Hoff E, Laursen B, Bridges K. 2002a. Measurement and model building in studying the influence of socioeconomic status on child development. In *A Developmental Environmental Measurement Handbook*, ed. M Lewis, L Mayes, pp. 590–606. New York: Cambridge Univ. Press

Hoff E, Laursen B, Tardif T. 2002b. Socioeconomic status and parenting. In *Handbook of Parenting*, vol. 2: *Biology and Ecology of Parenting*, ed. MS Bornstein, pp. 231–52. Mahwah, NJ: Erlbaum

Hoff-Ginsberg E, Shatz M. 1982. Linguistic input and the child's acquisition of language. *Psychol. Bull.* 92:3–26

Howes C. 2000. Social–emotional classroom climate in child care, child–teacher relationships and children's second grade peer relations. *Soc. Dev.* 9:191–204

Huttenlocher J, Haight W, Bryk A, Seltzer M, Lyons T. 1991. Early vocabulary growth: relation to language input and gender. *Dev. Psychol.* 27:236–48

Huttenlocher J, Waterfall H, Vasilyeva M, Vevea J, Hedges LV. 2010. Sources of variability in children's language growth. *Cogn. Psychol.* 61:343–65

Iverson JM, Goldin-Meadow S. 2005. Gesture paves the way for language development. *Psychol. Sci.* 16:367–71

Jiang Y, Ekono M, Skinner C. 2015. *Basic facts about low-income children: children 12 through 17 years, 2013*. Fact sheet, Nat. Cent. Child Poverty, New York. **http://www.nccp.org/publications/pub_1096.html**

Johnson AD, Martin A, Brooks-Gunn J, Petrill SA. 2008. Order in the house! Associations among household chaos, the home literacy environment, maternal reading ability, and children's early reading. *Merrill-Palmer Q.* 54:445–72

Johnson EJ. 2015. Debunking the "language gap." *J. Multicult. Educ.* 9:42–50

Johnson VE, de Villiers JG. 2009. Syntactic frames in fast mapping verbs: effect of age, dialect, and clinical status. *J. Speech Lang. Hear. Res.* 52:610–22

Katz JR. 2000. *Young children's verbalizations of relationship: a measurement pilot*. Qualif. pap., Harvard Grad. Sch. Educ., Cambridge, MA

Kena G, Musu-Gillette L, Robinson J, Wang X, Rathbun A, et al. 2015. *The condition of education 2015*. Report 2015–144, Nat. Cent. Educ. Stat., Washington, DC. **http://nces.ed.gov/pubs2015/2015144.pdf**

Kieffer MJ. 2010. Socioeconomic status, English proficiency, and late-emerging reading difficulties. *Educ. Res.* 39:484–86

Kim J. 2004. Summer reading and the ethnic achievement gap. *J. Educ. Stud. Placed Risk* 9:169–88

Kim YS, Puranik C, Al Otaiba S. 2015. Developmental trajectories of writing skills in first grade. *Elem. Sch. J.* 115:593–613

Kisilevsky BS, Hains SMJ, Lee K, Xie X, Huang H, et al. 2003. Effects of experience on fetal voice recognition. *Psychol. Sci.* 14:220–24

Korat O, Shamir A. 2008. The educational electronic book as a tool for supporting children's emergent literacy in low versus middle SES groups. *Comp. Educ.* 50:110–24

Korat O, Shamir A, Segal-Drori O. 2014. E-books as a support for young children's language and literacy: the case of Hebrew-speaking children. *Early Child Dev. Care* 184:998–1016

Landry SH, Smith KE, Swank PR. 2006. Responsive parenting: establishing early foundations for social, communication, and independent problem-solving skills. *Dev. Psychol.* 42:627–42

Landry SH, Smith KE, Swank PR, Assel MA, Vellet S. 2001. Does early responsive parenting have a special importance for children's development or is consistency across early childhood necessary? *Dev. Psychol.* 37:387–403

Landry SH, Smith KE, Swank PR, Guttentag C. 2008. A responsive parenting intervention: the optimal timing across early childhood for impacting maternal behaviors and child outcomes. *Dev. Psychol.* 44:1335–53

LARRC (Lang. Read. Res. Consort.). 2015. The dimensionality of language ability in young children. *Child Dev.* 86:1948–65

Layzer J, Price C. 2008. *Closing the gap in the school readiness of low-income children*. Work. pap., presented at Working Meeting on Recent School Readiness Research: Guiding the Synthesis of Early Childhood Research, US Dep. Health Hum. Serv., Washington, DC. **https://aspe.hhs.gov/legacy-page/appendix-d-closing-gap-school-readiness-low-income-children-143451**

Lee VE, Burkam DT. 2002. *Inequality at the Starting Gate: Social Background Differences in Achievement as Children Begin School*. Washington, DC: Econ. Policy Inst.

Levin I, Aram D. 2012. Mother–child joint writing and storybook reading and their effects on kindergartners' literacy: an intervention study. *Read. Writ.* 25:217–49

Lonigan CJ. 2003. Development and promotion of emergent literacy skills in preschool children at-risk of reading difficulties. In *Preventing and Remediating Reading Difficulties: Bringing Science to Scale*, ed. B Foorman, pp. 23–50. Timonium, MD: York

Lonigan CJ, Burgess SR, Anthony JL, Barker TA. 1998. Development of phonological sensitivity in 2- to 5-year-old children. *J. Educ. Psychol.* 90:294–311

Lonigan CJ, Whitehurst GJ. 1998. Relative efficacy of parent and teacher involvement in a shared-reading intervention for preschool children from low-income backgrounds. *Early Child. Res. Q.* 13:263–90

Lovejoy MC, Graczyk PA, O'Hare E, Newman G. 2000. Maternal depression and parenting behavior: a meta-analytic review. *Clin. Psychol. Rev.* 20:561–92

Lyons-Ruth K, Connell DB, Grunebaum HU, Botein S. 1990. Infants at social risk: maternal depression and family support services as mediators of infant development and security of attachment. *Child Dev.* 61:85–98

Magnuson KA, Sexton HR, Davis-Kean PE, Huston AC. 2009. Increases in maternal education and young children's language skills. *Merrill-Palmer Q.* 55:319–50

Manz PH, Hughes C, Barnabas E, Bracaliello C, Ginsburg-Block M. 2010. A descriptive review and meta-analysis of family-based emergent literacy interventions: To what extent is the research applicable to low-income, ethnic-minority or linguistically-diverse young children? *Early Child. Res. Q.* 25:409–31

McCue Horwitz S, Briggs-Gowan MJ, Storfer-Isser A, Carter AS. 2007. Prevalence, correlates, and persistence of maternal depression. *J. Women's Health* 16:678–91

McDowell KD, Lonigan CJ, Goldstein H. 2007. Relations among socioeconomic status, age, and predictors of phonological awareness. *J. Speech Lang. Hear. Res.* 50:1079–92

McGill-Franzen A, Allington RL, Yokoi L, Brooks G. 1999. Putting books in the classroom seems necessary but not sufficient. *J. Educ. Res.* 93:67–74

McGill-Franzen A, Lanford C, Adams E. 2002. Learning to be literate: a comparison of five urban early childhood programs. *J. Educ. Psychol.* 94:443–64

McGillion M, Herbert J, Pine J, Matthews D. 2014. *The relation between caregiver contingent talk, SES and language learning: an intervention study*. Presented at Int. Conf. Infant Stud., 14th, Berlin

McLoyd VC. 1998. Socioeconomic disadvantage and child development. *Am. Psychol.* 53:185–204

Mendelsohn AL, Valdez PT, Flynn V, Foley GM, Berkule SB, et al. 2007. Use of videotaped interactions during pediatric well-child care: impact at 33 months on parenting and on child development. *J. Dev. Behav. Pediatr.* 28:206–12

Michaels S. 1991. The dismantling of narrative. In *Developing Narrative Structure*, ed. A McCabe, C Peterson, pp. 303–51. Hillsdale, NJ: Erlbaum

Miller PJ, Cho GE, Bracey JR. 2005. Working-class children's experience through the prism of personal storytelling. *Hum. Dev.* 48:115–35

Miller PJ, Sperry DE. 2012. Déjà vu: the continuing misrecognition of low-income children's verbal abilities. In *Facing Social Class: How Societal Rank Influences Interaction*, ed. ST Fiske, HR Markuspp, pp. 109–30. New York: Russell Sage Found.

Mistry RS, Biesanz JC, Chien N, Howes C, Benner AD. 2008. Socioeconomic status, parental investments, and the cognitive and behavioral outcomes of low-income children from immigrant and native households. *Early Child. Res. Q.* 23:193–212

Mol SE, Neuman SB. 2014. Sharing information books with kindergartners: the role of parents' extra-textual talk and socioeconomic status. *Early Child. Res. Q.* 29:399–410

Morisset CE, Barnard KE, Greenberg MT, Booth CL, Spieker SJ. 1990. Environmental influences on early language development: the context of social risk. *Dev. Psychopathol.* 2:127–49

Mueller CW, Parcel TL. 1981. Measures of socioeconomic status: alternatives and recommendations. *Child Dev.* 52:13–30

Naigles L. 1990. Children use syntax to learn verb meanings. *J. Child Lang.* 17:357–74

Neuman SB. 1999. Books make a difference: a study of access to literacy. *Read. Res. Q.* 34:286–311

Neuman SB. 2001. The role of knowledge in early literacy. *Read. Res. Q.* 36:468–75

Neuman SB. 2006. The knowledge gap: implications for early education. In *Handbook of Early Literacy Research*, ed. DK Dickinson, SB Neuman, 2:29–40. New York: Guilford

Neuman SB, Celano D. 2001. Access to print in low-income and middle-income communities: an ecological study of four neighborhoods. *Read. Res. Q.* 36:8–26

Neville HJ, Stevens C, Pakulak E, Bell TA, Fanning J, et al. 2013. Family-based training program improves brain function, cognition, and behavior in lower socioeconomic status preschoolers. *PNAS* 110:12138–43

Noble KG, Engelhardt LE, Brito NH, Mack LJ, Nail EJ, et al. 2015. Socioeconomic disparities in neurocognitive development in the first two years of life. *Dev. Psychobiol.* 57:535–51

Noble KG, Houston SM, Kan E, Sowell ER. 2012. Neural correlates of socioeconomic status in the developing human brain. *Dev. Sci.* 15:516–27

Oakes JM, Rossi PH. 2003. The measurement of SES in health research: current practice and steps toward a new approach. *Soc. Sci. Med.* 56:769–84

Ochs E, Schieffelin BB. 1984. Language acquisition and socialization: three developmental stories and their implications. In *Cultural Theory: Essays on Mind, Self, and Emotion*, ed. RA Shweder, RA LeVine, pp. 263–301. Cambridge, UK: Cambridge Univ. Press

Oka E, Paris S. 1986. Patterns of motivation and reading skills in underachieving children. In *Handbook of Cognitive, Social, and Neuropsychological Aspects of Learning Disabilities*, ed. S Cecipp, pp. 115–46. Hillsdale, NJ: Erlbaum

Pan BA, Rowe ML, Singer JD, Snow CE. 2005. Maternal correlates of growth in toddler vocabulary production in low-income families. *Child Dev.* 76:763–82

Parish-Morris J, Mahajan N, Hirsh-Pasek K, Golinkoff RM, Collins MF. 2013. Once upon a time: parent–child dialogue and storybook reading in the electronic era. *Mind Brain Educ.* 7:200–11

Park H. 2008. Home literacy environments and children's reading performance: a comparative study of 25 countries. *Educ. Res. Eval.* 14:489–505

Payne AC, Whitehurst GJ, Angell AL. 1994. The role of the home literacy environment in the development of language ability in preschool children from low-income families. *Early Child. Res. Q.* 9:427–40

Peterson C. 1994. Narrative skills and social class. *Can. J. Educ.* 19:251–69

Pogash C. 2016. In San Jose, poor find doors to library closed. *New York Times*, March 31, p. A13. **http://www.nytimes.com/2016/03/31/us/in-san-jose-poor-find-doors-to-library-closed.html?_r=1**

Ragnedda M, Muschert GW. 2013. *The Digital Divide: The Internet and Social Inequality in International Perspective*. New York: Routledge

Ramos F, Krashen S. 1998. The impact of one trip to the public library: Making books available may be the best incentive for reading. *Read. Teach.* 51:614–15

Raviv T, Kessenich M, Morrison FJ. 2004. A mediational model of the association between socioeconomic status and three-year-old language abilities: the role of parenting factors. *Early Child. Res. Q.* 19:528–47

Reese E, Leyva D, Sparks A, Grolnick W. 2010. Maternal elaborative reminiscing increases low-income children's narrative skills relative to dialogic reading. *Early Educ. Dev.* 21:318–42

Ridge KE, Weisberg DS, Ilgaz H, Hirsh-Pasek KA, Golinkoff RM. 2015. Supermarket speak: increasing talk among low-socioeconomic status families. *Mind Brain Educ.* 9:127–35

Rindermann H, Baumeister AE. 2015. Parents' SES versus parental educational behavior and children's development: a reanalysis of the Hart and Risley study. *Learn. Individ. Differ.* 37:133–38

Roben CK, Cole PM, Armstrong LM. 2013. Longitudinal relations among language skills, anger expression, and regulatory strategies in early childhood. *Child Dev.* 84:891–905

Robinson CC, Larsen JM, Haupt JH. 1995. Picture book reading at home: a comparison of Head Start and middle-class preschoolers. *Early Educ. Dev.* 6:241–52

Rodriguez ET, Tamis-LeMonda CS. 2011. Trajectories of the home learning environment across the first 5 years: associations with children's vocabulary and literacy skills at prekindergarten. *Child Dev.* 82:1058–75

Rodriguez ET, Tamis-LeMonda CS, Spellmann ME, Pan BA, Raikes H, et al. 2009. The formative role of home literacy experiences across the first three years of life in children from low-income families. *J. Appl. Dev. Psychol.* 30:677–94

Rowe ML. 2012. A longitudinal investigation of the role of quantity and quality of child-directed speech in vocabulary development. *Child Dev.* 83:1762–74

Rowe ML, Goldin-Meadow S. 2009a. Early gesture selectively predicts later language learning. *Dev. Sci.* 12:182–87

Rowe ML, Goldin-Meadow S. 2009b. Differences in early gesture explain SES disparities in child vocabulary size at school entry. *Science* 323:951–53

Segal-Drori O, Korat O, Shamir A, Klein PS. 2010. Reading electronic and printed books with and without adult instruction: effects on emergent reading. *Read. Writ.* 23:913–30

Shonkoff JP. 2000. Science, policy, and practice: three cultures in search of a shared mission. *Child Dev.* 71:181–87

Shonkoff JP, Garner AS, Siegel BS, Dobbins MI, Earls MF, et al. 2012. The lifelong effects of early childhood adversity and toxic stress. *Pediatrics* 129:e232–46

Smeets DJH, Bus AG. 2015. The interactive animated e-book as a word learning device for kindergartners. *Appl. Psycholinguist.* 36:899–920

Spencer EJ, Schuele CM. 2012. An examination of fast mapping skills in preschool children from families with low socioeconomic status. *Clin. Linguist. Phon.* 26:845–62

Sperry DE, Miller PJ, Sperry L. 2015. *Is there really a word gap?* Presented at Annu. Meet. Am. Anthropol. Assoc., 114th, Denver, CO

Stein CL, Glenn C. 1979. An analysis of story comprehension in elementary school children. In *New Directions in Discourse Processing*, ed. RO Freedle, 2:53–120. Norwood, NJ: Ablex

Suskind D, Leffel KR, Hernandez MW, Sapolich SG, Suskind E, et al. 2013. An exploratory study of "quantitative linguistic feedback": effect of LENA feedback on adult language production. *Commun. Disord. Q.* 34:199–209

Swingley D. 2009. Contributions of infant word learning to language development. *Philos. Trans. R. Soc. Lond. B* 364:3617–32

Taylor BA, Dearing E, McCartney K. 2004. Incomes and outcomes in early childhood. *J. Hum. Resour.* 39:980–1007

Taylor CL, Christensen D, Lawrence D, Mitrou F, Zubrick SR. 2013. Risk factors for children's receptive vocabulary development from four to eight years in the longitudinal study of Australian children. *PLOS ONE* 8:e73046

Tamis-LeMonda CS, Bornstein MH. 2002. Maternal responsiveness and early language acquisition. *Adv. Child Dev. Behav.* 29:89–127

Tamis-LeMonda CS, Kuchirko Y, Song L. 2014. Why is infant language learning facilitated by parental responsiveness? *Curr. Dir. Psychol. Sci.* 23:121–26

Tomasello M, Carpenter M, Liszkowski U. 2007. A new look at infant pointing. *Child Dev.* 78:705–22

Tucker-Drob EM, Bates TC. 2015. Large cross-national differences in gene × socioeconomic status interaction on intelligence. *Psychol. Sci.* 27:138–49

Turney K. 2012. Prevalence and correlates of stability and change in maternal depression: evidence from the fragile families and child wellbeing study. *PLOS ONE* 7:e45709

Valdez-Menchaca MC, Whitehurst GJ. 1992. Accelerating language development through picture book reading: a systematic extension to Mexican day care. *Dev. Psychol.* 28:1106–14

Vasilyeva M, Waterfall H, Huttenlocher J. 2008. Emergence of syntax: commonalities and differences across children. *Dev. Sci.* 11:84–97

Vernon-Feagans L, Bratsch-Hines ME, Fam. Life Proj. Key Investig. 2013. Caregiver–child verbal interactions in child care: a buffer against poor language outcomes when maternal language input is less. *Early Child. Res. Q.* 28:858–73

Vericker T, Macomber J, Golden OA. 2010. *Infants of depressed mothers living in poverty: opportunities to identify and serve*. Report, Urban Inst., Washington, DC. **http://www.urban.org/research/publication/infants-depressed-mothers-living-poverty-opportunities-identify-and-serve**

Vogt P, Mastin JD. 2013. Anchoring social symbol grounding in children's interactions. *Künstl. Intell.* 27:145–51

Walker D, Greenwood C, Hart B, Carta J. 1994. Prediction of school outcomes based on early language production and socioeconomic factors. *Child Dev.* 65:606–21

Weisleder A, Cates CB, Dreyer BP, Johnson SB, Huberman HS, et al. 2016. Promotion of positive parenting and prevention of socioemotional disparities. *Pediatrics* 137:1–9

Weismer SE, Evans JL. 2002. The role of processing limitations in early identification of specific language impairment. *Top. Lang. Disord.* 22:15–29

Whitehurst GJ, Arnold DS, Epstein JN, Angell AL, Smith M, Fischel JE. 1994. A picture book reading intervention in day care and home for children from low-income families. *Dev. Psychol.* 30:679–89