

Special Article – Family Caregivers

The Family's Role in the Relation between Socioeconomic Status and Early Language Development

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Abstract

Early language ability is fundamental to later school readiness and academic success. By age 3, many children from low socioeconomic backgrounds have fallen behind their more affluent peers in a variety of language skills. Here, we present the rich body of data linking SES to early language outcomes. We further examine three mechanisms through which SES exerts its influence: The quantity of language input, the quality of language interactions, and the availability of learning resources. Finally, we review early interventions designed to enhance low-SES children's language development by targeting the above mentioned mechanisms. Future research must address the enormous heterogeneity within low-SES populations and develop interventions and research methods that adapt to low-SES families' diverse sociocultural contexts and needs.

Keywords: Language development; Parent-child interaction; Learning materials; Early intervention; Socioeconomic status

Introduction

One in five children in the United States is living below the federal poverty line [1]. Early childhood poverty has long-term, adverse impacts on developmental outcomes, including brain development, mental health and cognitive development [2,3]. Language ability, a key predictor of later school readiness and academic success [4,5], is among those competencies compromised for children living in poverty. Research suggests that this has far reaching consequences that set learning trajectories through elementary school and beyond [6,7]. Here we document the rich body of data linking poverty to poor language skills. Doing a deeper dive, we then ask about the mechanisms that yoke particular types of language input to particular language outcomes. Finally, with a strong sense of mechanism, we review targeted interventions designed to foster particular inputs and thus general language outcomes.

Linking SES and Language Development in Early Childhood: The Data

Mountains of research document the positive relationship between SES and language development, both in terms of vocabulary and grammatical development. Hart and Risley [8] shocked the nation when they reported that, by age 3 years; many children raised in lower SES homes have significantly smaller vocabularies than their higher income peers. Recent work shows, however, that SES-related gaps in vocabulary are evident even earlier –at 16 months [9,10], and tend to widen during preschool years [11].

Though some worry that the Hart and Risley [8] research emanated from a mere 40 families, these results have been confirmed through nationally representative samples [12-15]. For example, in the Comprehensive Child Development Program (CCDP), 5-year-old preschoolers from low-income families were 15 months behind the U.S. national norm on receptive vocabulary [14]. Similar findings have been documented repeatedly in other countries, such as the

United Kingdom [12], Chile [13] and Australia [15].

SES is also associated with children's grammatical skills. During parent-child interactions, complexity of speech – using adverbs like *quickly*, prepositional phrases like *in the morning*, or adjunct clauses like *before you go outside* – predicted children's subsequent language growth between 14- and 46-months of age [16]. These interactions revealed systematic variability among children from different socioeconomic backgrounds in the early stages of sentence production [17]. Parent report of children's syntactic development and children's performance on standardized tests of grammatical development also reflects SES differences [18-20]. Again, the magnitude of the SES effect increases during preschool. In Snow's [21] study, children aged 3; 9 from low-SES families had an average mean utterance length (MLU) similar to that of middle-SES children more than a year younger. At age 5; 6, the SES-related gap had become 2.5 years. A more recent work documented a 2 years gap in children's grammatical skills (e.g., understanding of wh-questions and embedded clauses) between preschoolers from low- and middle-SES families [22].

In sum, both vocabulary and grammatical ability appear to reflect differences in SES that emerge within the second year of life and remain relatively stable or become more severe – throughout the preschool years. One critique of these data is that many assessment tools used to measure vocabulary and grammatical development ask questions that themselves require test-taking skills. The tests also include words that children may have never encountered. For example, a preschool child who does not have her own set of crayons may have limited opportunities to practice her color words, but she may have a rich set of vocabulary words that reflect her own experiences and opportunities – words that are not captured on standardized tests of language. More attention must be given to the classroom environment, to teacher expectations, and to the creation of assessment tools so that normative processes do not privilege particular student backgrounds over others.

Mechanisms Linking SES and Early Language Development: The Role of the Family

Knowing that there is a relationship between SES and language outcomes leaves us asking why such a relationship exists. Research suggests that three particular factors drive these SES differences: quantity of the language input, quality of the language interaction, and the availability of learning resources in the child's environment.

The first pathway through which SES exerts its influence on language development is the *quantity of language input*. The stunning finding by Hart and Risley [8] showed that children from low-SES backgrounds hear significantly fewer words than their higher-income peers – indeed projecting from their data base – 30-million fewer words by age 3 [23]. Later studies reaffirm this gap in language input across SES. For example, one study assessing maternal speech during a play session found that the quantity of speech (measured both by number of words and length of utterances) accounted fully for the relationship between SES and the child's productive language growth [24]. While most of the studies on quantity of input have examined maternal or paternal input to the child, the quantity of teacher talk to children has also proven important for later language outcomes [25].

While research suggests that quantity is important, the *quality of the language interaction* also contributes to the relationship between SES and language development. Quality indicators of parent language input, including the complexity and diversity of vocabulary and grammar, are crucial in building strong language skills. For example, the number of different words, constituents (such as adjectives) and clauses parents use in child-directed speech partially mediate the relationship between SES and language development [16,26]. Contingency of the language spoken to children [27,28], the use of questions [29] and decontextualized language (language used to talk about things that are not present as in *We went to the park last week*) [26] can also affect language development. Rowe [26] not only sketches the determinants of quality but demonstrates that different aspects of input quality might be more or less potent at different developmental stages. Recent work further highlights the importance of high-quality interactions between parents and children characterized by global measures of sensitivity and responsiveness, as well as contingent interactions that emphasize the child interests in supporting language development [28,30,31].

Importantly, this is not merely an issue of quality input around spoken language, as researchers find variation in the quality of communication even before the first word is uttered. Rowe and Goldin-Meadow [31] noted a positive relationship between children's use of gesture at 14 months and their language at 54 months. Parental responses to children's gestures mediate this relationship, suggesting that when mothers 'honor' their children's gestures by responding to them with language (e.g., naming objects), children's language is fueled for further growth.

Finally, the third pathway through which SES influences language development is the *availability of learning resources*. Learning materials, especially those related to literacy, facilitate a variety of skills, including expressive and receptive language, letter-word identification, print concepts, and the understanding of narrative

[32-36]. There are SES-related differences in not only the quantity, quality and variety of books in the home, but in the availability of cognitively and linguistically stimulating toys, such as alphabet blocks and crayons [33,37,38]. This inequality in access expands to the child's school and community [39-41]. Differences in children's language growth are compounded in the summer when children's access to learning materials outside the home is cutoff [42,43]. The "summer slide" suggests the importance of learning materials for continued language growth.

Beyond the quantity and quality of input, SES also predicts parents' use of learning materials and their involvement in learning activities, which further relates to children's language skills [44]. However, access to learning materials and use of learning materials covary. For example, mothers who provided their children with more learning materials were more likely to model reading behaviors and to have a higher reading ability themselves [45]. This suggests that while access to learning materials is important to children's language development, parent's use of those materials may be a critical factor.

The bulk of the studies conducted are across SES divides. Several recent studies, however, suggest that these patterns are not necessarily consequences of poverty itself. In fact, there is variation in the quantity and quality of input even *within* low income groups. Hirsh-Pasek et al. [46] examined language variation within a low-income sample found that the quality of the mother-child interaction – including episodes of joint engagement infused with gesture and language, routines and rituals like shared book reading, and the balanced contribution of caregiver and child – predicted children's language growth one year later above and beyond quantity of speech. A study by Cartmill and colleagues [47] examined how well word meaning could be guessed by adults watching muted vignettes from a mother-child interaction. This measure of quality predicted the child's vocabulary size three-years later and was not related to the family's SES [47,48]. Taken together these findings suggest the importance of looking not only across but within SES-strata to better tease apart the complex relationship between SES and language outcomes.

Early Language Interventions Targeting Parent-Child Interactions and the Home Environment

Once science articulates the features that separate the language environment of low-SES children versus that of their middle-SES peers, it is possible to develop targeted interventions that focus directly on those mechanisms of change. Specifically, interventions are developed to improve 1) the quantity of caregivers' language input; 2) the quality of caregiver-child interactions, and 3) the availability of learning resources, both separately and jointly. For example, the Thirty Million Word Initiative focused on increasing the quantity of language input. Parents were instructed to talk more with their children and were presented with feedback on the quantity of child-directed language they produced in daily life. Preliminary results showed that this intervention successfully increased the number of words and conversational turn parents used during interactions with their children [49]. Likewise, asking parents to frequently engage in shared book-reading or joint writing activities with their children has been found to increase children's vocabulary and language comprehension skills [50].

Other interventions have focused on both quality and quantity of caregiver-child interactions simultaneously. For example, the Play and Learning Strategies intervention trained low-income mothers to provide sensitive, warm, and contingent responses to their 6-month-old infants, and found that infants in the intervention groups outperformed their control group peers in receptive and productive vocabularies (PALS) [51,52]. Likewise, instructing parents to engage in contingent talk (i.e., talk about objects and events in the infant's current focus of attention) with their children 15 minutes a day benefited children's language outcomes [37]. Dialogic-Reading interventions, which encouraged parents to ask open-ended questions such as "What color is it?" during book-reading, also successfully improved children's language skills [53-55]. Another intervention trained parents to provide children with elaborative and enriched language during shared reminiscing, and effectively increased children's narrative skills [56]. Many ongoing interventions are conducted at the community and population level. For example, Providence Talks, a city-wide initiative, is designed to increase the quantity of language children hear and the number of conversational turns children engage in [57]. The Talking is Teaching program uses multimedia resources to help parents foster their children's vocabulary development in daily activities [58].

Helping low-income children and caregivers gain greater and easier access to learning materials is also an effective way to facilitate language and literacy activities and support language development. Providing low-income families with high-quality children's books can enrich children's reading experiences. In one study, preschool children in the intervention group took home one age-appropriate, high-quality book every week for 3 months. Compared to the control group, children in the intervention group engaged in more book-sharing activities at home, and were more likely to read books every day [59]. Book-reading has been found to positively relate to a vocabulary growth, reading comprehension, and oral language skills [60]. Another intervention with school-aged children also suggested that, after visiting a public library and picking 10 books to bring home, children read more and gained a more positive attitude towards reading [61]. Going beyond the small scale interventions, the Reach Out and Read program distributes about 6.5 million books to young children and families across the nation every year and encourages parents to read aloud to their children. This program has been found to effectively promote home literacy activities and improve children's language growth and school readiness [62,63]. Together, these promising findings suggest that there are multiple avenues through which interventions may support children's interactions with their caregivers to promote language development.

Challenges and Future Directions

Early learning experiences and language environments vary greatly from household to household. Although SES is consistently associated with language outcomes in early childhood, families, and especially parents, act as important mediators who can alter language-learning trajectories. And we know from the current crop of studies that this trajectory can be altered and that there is wide variation in language environments – and outcomes – within low SES families. This review explored three pathways through which family members may influence children's language outcomes: the quantity of language input, the quality of caregiver-child interaction, and the availability

of learning materials and resources at home and in the community. Research suggests it is increasingly important to document the wide variability in positive caregiving practices observed both within and between socioeconomic strata in order to identify malleable factors that facilitate language development and buffer children against the negative impact of poverty.

The growing evidence is encouraging, but there is much to be discovered about the pathways through which SES influences language. Additional research is needed to identify risk and protective factors (e.g., access to prenatal care and early intervention services), to investigate mediators that drive this relation (e.g., quality and quantity of language input), and to examine the moderators under which effects are stronger or weaker (e.g., child language outcomes in families with or without maternal depression). Future research must adapt existing interventions for diverse cultural and linguistic subgroups and develop inclusive models that involve fathers as well as mothers and other caregivers including foster parents. Research and interventions must focus on the first years of life – or prenatally if possible – to educate families on the importance of honoring children's preverbal communicative attempts [64,65]. Finally, future research should apply innovative methods of service delivery to scale language interventions to the population level and apply community-based participatory strategies during intervention development to increase ecological validity and maximize positive impact.

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