The Importance of Language-Learning Environments to Child Language Outcomes

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A strong foundation in language skills is associated with positive, long-term academic, occupational, and social outcomes. Individual differences in the rate of language development appear early. Approximately 16% of children experience delays in initial phases of language learning; approximately half of those show persistent difficulties that may lead to clinical disorders.[1] Because of the high prevalence of language disorders and lifelong implications of early delays, prevention is of utmost importance. Primary prevention takes place before any problems are detected, preventing the condition from occurring. Secondary prevention takes place after early detection of a disorder, resulting in a mild rather than severe variant. Children learn language from their interactions with caregivers in their environment. An obvious direction for both primary and secondary prevention is improving language-learning environments.

In the study entitled "Parenting Behavior and Child Language: A Meta-analysis" by Madigan et al[2] in this issue of *Pediatrics*, the authors summarize evidence about "2 primary types of parenting" in relation to child language outcomes. Sensitive responsiveness refers to a parent's ability to perceive, interpret, and respond quickly and appropriately to the children's signals. The authors assume that sensitive responsiveness implies contingent responding to foster coordinated communicative exchanges. Warmth refers to caregiver physical affection or positive affect with the child. In the meta-analysis, it was found that sensitive responsiveness and warmth both contributed to child language outcomes. The effect size was greater for sensitivity than warmth and greater in studies of children from low or diverse socioeconomic status (SES) than from high SES.

The authors have performed an excellent service by conducting this meta-analysis and presenting it to a pediatric audience. So important are the features of the learning environment to language development that they have been referred to as "language nutrition."[3] Pediatric clinicians routinely counsel families about food nutrition. We should address language nutrition with similar urgency. Of course, demonstrating the association between parenting qualities and child outcomes, as in the meta-analysis, does not yet imply which, if any, interventions would successfully change the learning environment or improve child outcomes. Data are accumulating that home-based interventions can raise the level of sensitivity and warmth,[4] although the effectiveness of less-intense interventions must be evaluated.

It is worth noting that sensitivity and warmth do not necessarily represent 2 distinct parenting types but rather 2 features of parenting. Definitions of parental sensitivity in other studies include warmth as a feature.[4] Sensitive responsivity can be disentangled from

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qualities specifically related to caregiver-child connections in verbal exchange.[5] Precision in the description of language-learning environments is difficult because a meta-analysis depends on the researchers' characterization.

Sensitivity and warmth do not represent all the critical ingredients of healthy language nutrition. Three other features have been associated with language outcomes. First is the quantity of child-directed speech. Hart and Risley[6] made seminal observations that children of highly educated parents heard many more words than children of less-educated parents and then had better language skills at school entry. Findings that quantity of input is important, irrespective of SES, have been made by using all-day-long audio recordings of the child's language environment in English- and Spanish-speaking children[7] and in children born term and preterm.[8] These studies corroborate the importance of quantity of child-directed speech and collectively form the foundation of public policy efforts to reduce the "30 million word gap" before a child's entering school.[9] Second is the quality of the language input.[10] Quality includes diversity of the vocabulary and complexity of grammar. Third is the nature of the caregiver-child interactions, beyond responsivity and warmth.[5] Important qualitative features include degree of caregiver-child engagement with symbols, such as words or signs; frequency of routines and rituals, such as naming or book-reading; and the connectedness of exchange, reflected in topic maintenance and turn-taking.

The proportion of the various ingredients that comprise language nutrition likely varies as a function of the child's stage of development.[4] Early on, especially in infancy, parental sensitivity and warmth (the focus of the meta-analysis) likely has substantial impact. Once children have begun speaking, cognitive and language features of the input, reflected in quantity and quality of linguistic input and qualitative features of verbal interactions, likely become increasingly impactful.[4] Although features of the environment may be modifiable, promoting stable change and sustainable results may be challenging.[11]

Meta-analyses on the topic of language development are extremely helpful. However, now we also need well-designed treatment studies to inform us about the nature and intensity of interventions to improve language-learning environments and child outcomes. On the basis of the results of the meta-analysis, primary care clinicians should educate caregivers about the importance of their parenting to their children's language development. If families demonstrate limited warmth, responsiveness, or other components of language nutrition, it is imperative to counsel them and refer to community-based programs to educate and support them in improving their children's language-learning environment.

ABBREVIATION

SES: socioeconomic status

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