Talk, Read, Sing: Early Language Exposure As an Overlooked Social Determinant of Health

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I took note of my senior resident's polished words and facial expressions as we stood in the newborn nursery. Anxious parents consumed every word of her discharge education. They laughed as she reassured them that spit-up is normal and solemnly absorbed all the ways they could minimize the risk of sudden infant death syndrome. "Everything make sense?" she asked me later in the work room. "As the third-year medical student, it will be your responsibility to do the discharge education on this rotation."

She carefully ran through the 10-point discharge list and neatly paired each education point with supporting evidence and significance. However, the final piece of advice, "Talk, read, and sing to your infant," was not mentioned. I wondered if her omission came with an implicit prioritization. Not talking, reading, or singing to a newborn is, admittedly, less life-threatening than most recommendations on the newborn discharge list. But as I have since learned, the quantity and quality of parent–child interactions (how much and how often caregivers talk, read, and sing to their children) are key in shaping healthy brain development during the first few years of life.[1–3]

The first 1000 days of life are a critical time for brain development. Early experiences, transmitted via rich language and responsive interactions with a nurturing caregiver, fuel the development of neuronal connections at a rate of 1 million per second.[4] This rate of brain growth, which is linked to skill formation in language, literacy, math, spatial reasoning, and self-regulation, will never be matched again.[4] The more input a child receives, the stronger the neuronal connections grow, building a solid foundation for all future learning. Conversely, in the absence of such interactions, the vast neuroplasticity of the developing brain remains underused, and learning and intellectual growth are severely curtailed.[1–4]

In their seminal research, Hart and Risley[1] demonstrated that children from backgrounds of low socioeconomic status (SES) heard significantly fewer words by their fourth birthday than did children from high-SES backgrounds. Additional SES-related disparities that were found include the number of conversational turns and encouragements children experienced as well as the complexity of language used by their parents. Further research reveals that cognitive disparities emerge far earlier than previously expected: infants who are born into poverty score lower on cognitive development measures

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as early as 9 months old when compared with their more affluent peers.[5] This gap grows exponentially in the early years, such that by age 5 years, less than half of children growing up in low-income families are ready for school compared with 75% of children raised in higher-income families.[6] Over the long-term, cognitive disparities have been found to impact educational attainment, health, and occupational status.[1,7,8]

Recent neuroimaging studies have added significantly to this body of research. The importance of conversation with children in their early years is now linked to the brain activation of the Broca area and areas of the brain that are related to narrative comprehension.[9] Importantly, this research reveals that after controlling for SES, the quantity and quality of parental input is the key driver of language outcomes. Fortunately, parental behavior can be supported and enhanced through appropriate education.

Recognizing the tremendous impact of early adult–child interactions for all children, the American Academy of Pediatrics (AAP) made early brain development a part of the AAP "Agenda for Children."[10] Specifically, the AAP identifies pediatricians as having a pivotal role in creating and implementing evidence-based strategies to promote parent–child interaction and reducing toxic stress.[11] Through this role, pediatricians can leverage the intimate relationships they form with families to impact and ultimately prevent enduring disparities in learning, behavior, and school readiness.[12] They can empower parents with knowledge of early cognitive development and how their words and interactions influence their children's healthy brain development. In a 2016 Policy Statement, the AAP recommends that pediatricians support parents "to provide a rich and responsive language environment."[12]

Frequently, however, parents do not receive this guidance. A recent survey of parents in Chicago-area Federally Qualified Health Centers revealed that conversations at the 1-month well-child visit tended to be focused on traditional preventive topics, such as feeding (85%) and the infant's weight (72%). Significantly fewer parents reported receiving information about brain growth (26%), how infants learn (13%), and learning to talk (9%).[13] This discrepancy in parent education influences the public's perception of the importance of early cognitive development. In a 2012 Technical Report, the AAP echoed this need for increased public awareness, stating, "The time has come to expand the public's understanding of brain development and shine a bright light on its relation to the early childhood roots of adult disease."[11]

As patient advocacy initiatives are expanded in pediatric residencies, trainees are uniquely equipped to push forward a public health approach of increasing awareness and impacting parent behavior. With long-term outcomes at stake for children, those in pediatric residency training need to more intentionally address the critical role that parents play in optimizing foundational brain development and encourage the use of evidence-based strategies and tools to educate parents.

A key first step in this regard is educating residents on the mechanisms of healthy brain development. A recent survey of pediatric trainees revealed that those who received dedicated curricula covering early learning and cognitive development had significantly more knowledge of both topics.[14] Perhaps more importantly, pediatric trainees who scored higher on knowledge assessments reported talking to patients about cognitive development more frequently and initiated these conversations earlier in a child's life.[14] To further support the priorities set forth by the AAP, we need to emphasize the importance of this topic in our formal curricula and certifying examinations.

Providing more opportunities for pediatric residents to learn effective parent-education skills via bedside clinical teaching is another critical step in intentionally embedding cognitive development into resident education. The relative absence of conversations about early cognitive development in the clinical setting perpetuates the exclusion of these topics and limits learning by example. Effective teaching involves more than telling parents, "Go talk, read, and sing to your child." Pediatric trainees must learn how to share evidence-based strategies with parents that can lead to behavior change, such as the following:

1. Reach Out and Read, in which pediatricians use books to model optimal interactions;
2. TMW Center for Early Learning and Public Health, where parents and practitioners are taught the strategies of "tune in, talk more, and take turns" (the 3 T's) to build a child's brain;
3. Too Small To Fail, in which how best to talk, read, and sing to an infant are emphasized; and
4. Vroom, Mind in the Making, in which professionals and families are provided with everyday tools to inspire learning.

Ultimately, this guidance must be used to engage parents in a conversation about brain development and how they influence it. Witnessing these conversations allows pediatric trainees to see best practices in action.

By elevating the importance of foundational brain development as a public health issue that impacts all children, pediatric trainees can help shape parent investment and

work together toward preventing cognitive disparities from the start. In her *Journal of the American Medical Association Pediatrics* editorial, "Poverty's Most Insidious Damage: The Developing Brain," Luby[15] eloquently places this issue in perspective: "Because the brain is the organ from which all cognition and emotion originates, healthy human brain development represents the foundation of our civilization. Accordingly, there is perhaps nothing more important that a society must do than foster and protect the brain development of our children."[15] By elevating "talk, read, and sing" to the top of the newborn discharge list, future pediatricians will be ensuring that healthy brain development is the standard of care for all children.

ABBREVIATIONS

AAP: American Academy of Pediatrics
SES: socioeconomic status

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