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The Brain-Changing Power of Conversation

Interplay between parents and children ignites the brain and boosts its response to language, spurring lasting literacy skills

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For parents, daycare providers, and early educators, new research describes a simple and powerful way to build children's brains: talk with them, early and often.

A study in *Psychological Science* (<http://journals.sagepub.com/doi/full/10.1177/0956797617742725>) shows how conversation — the interplay between a parent or caregiver and a child — ignites the language centers in a child's brain. It's the first study to show a relationship between the words children hear at home and the growth

of their neural processing capacities — showing, in effect, that how parents talk to their children changes children's brains.

Don't just talk to your child; talk with your child. The interaction, more than the number of words a child hears, creates measurable changes in the brain and sets the stage for strong literacy skills in school.

This new work — led by Harvard and MIT Ph.D. student Rachel Romeo (<https://scholar.harvard.edu/rachelromeo>), with coauthors at both of those institutions and the University of Pennsylvania — builds on what researchers have long known about the connections between “home language environment” and children’s cognitive development, literacy and language growth, and verbal ability.

In the wake of a 1995 study (<http://products.brookespublishing.com/Meaningful-Differences-in-the-Everyday-Experience-of-Young-American-Children-P14.aspx>) that found a dramatic gap in the number of words heard by high- and low-income children — the so-called 30 million word gap (<https://www.leadersproject.org/2013/03/17/meaningful-differences-in-the-everyday-experience-of-young-american-children/>) — much attention has been given to efforts to enrich kids’ language exposure. But recent work has added nuance, showing that it’s not so much the quantity of words children hear as the quality (</node/451331>) that matters.

The new findings replicate that behavioral research on quality over quantity and *extend* it by showing the effects in the brain. “Specifically, after we equate for socioeconomic status, we find that the sheer number of words spoken by an adult was not related to children's neural processing of language, but that the number of conversational turns was,” says Romeo. “And that neural response, in turn, predicted children's language skills. It really is the quality of language exposure that matters, over and above the quantity of words dumped onto a child.”

What Parents and Early Educators Should Know

- From infancy, parents should look for chances to have conversations with their child — even if it's just responding to coos or gurgles.
- Conversational interplay between caregiver and child is enough to transform the biology of kids' brains. The quality of these exchanges is more important than the quantity of words children hear.

- Conversation drives literacy skills and cognitive development across all socioeconomic levels, regardless parents' income or education. It's a powerful, actionable, and simple tool for all parents to use.

The Science

Researchers used highly faithful audio recorders — a system called Language Environment Analysis (known as LENA) — to capture every word spoken or heard by 36 4–6 year olds from various socioeconomic backgrounds over two full days. The recordings were analyzed to measure the number of words spoken by each child, the number of words spoken to each child, and the number of conversational turns — back-and-forth exchanges initiated by either adult or child.

Comparing those measurements with brain scans of the individual children, the analysis found that differences in the number of conversational turns accounted for differences in brain physiology, as well as for differences in language skills including vocabulary, grammar, and verbal reasoning.

Read the MIT News story (<http://news.mit.edu/2018/conversation-boost-childrens-brain-response-language-0214>) for a fuller summary of the research. (Authors on the paper include Meredith Rowe (</node/422741>) of the Harvard Graduate School of Education (<http://www.gse.harvard.edu/>), whose behavioral work has shown the importance of parent-child interplay; Martin West (<https://www.gse.harvard.edu/faculty/martin-west>) of HGSE, and senior author John Gabrieli (<https://mcgovern.mit.edu/principal-investigators/john-gabrieli>) of MIT.)

The Takeaways

The “conversational turns” are key here, the researchers say. Conversational interplay — a verbal version of the serve-and-return (<https://www.gse.harvard.edu/news/uk/17/11/how-caregivers-can-boost-young-brains>) caregiving that helps kids thrive — “involves not only a linguistic exchange, but also a social interaction that we know is crucial to cognitive development as well,” Romeo says.

This work suggests how important it is that caregivers “not just talk to your child, but talk with them,” says Romeo. “Even from infancy, we can consider children to be conversational partners. Obviously, a ‘conversation’ looks very different with much younger children: with infants, it might be taking turns exchanging giggles or coos; with toddlers, it might be repeating and expanding their sentences; and with older children, it might be asking ‘who, what, where, and how’ questions.

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Importantly, this research finds effects across all socioeconomic levels. "We found that the brains of children from lower-income families benefitted from conversational interplay just as much as the brains of children from higher income families," says Gabrieli, the Grover Hermann Professor of Health Sciences and Technology at MIT and an investigator at the McGovern Institute for Brain Research (<https://mcgovern.mit.edu/>). Conversing often with one's children is "strikingly helpful" regardless of income and educational background, he says. As Gabrieli told the MIT News Office, "It's almost magical how parental conversation appears to influence the biological growth of the brain."

Gabrieli, Rowe, and other researchers are exploring ways to make these findings — and the actionable takeaways about the importance of conversation — accessible to all families. "Part of this is public health communication (</node/492851>), but I expect that more direct forms of support will be needed to promote this and help parents change conversational habits," Gabrieli says. "It is hard for all of us to change any habit."

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One outstanding example of these findings is PRIME TIME FAMILY READING TIME a program created and supported by The Louisiana Endowment for the Humanities. Children and their caregivers attend one-a-week sessions for six weeks where they discuss high-quality books with each other and with a Storyteller who dramatizes the narrative, and a Scholar who uses a Socratic approach to questioning. The books are free, provided by a generous publishing partner, and the fellowship includes healthy snacks after each session. It's not like school (but maybe it should be), and it supports the idea that parents and children should read together. The program has spread to other states, and the venues include libraries, community colleges, and public spaces.

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