

# “Languagizing” Their World

## Why Talking, Reading, and Singing Are So Important

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### Abstract

Language is the single best predictor of later success in school and beyond. Using new findings in the science of learning, this article outlines 6 basic principles that will help parents and caregivers interact with children in ways that grow important language skills. Creating environments that nurture these principles gives every child a chance to thrive.

Too Small to Fail’s *Talk, Read, Sing* campaign<sup>1</sup> has permeated the culture in the U.S. It can be found on baby bath towels in Atlanta, on taxi televisions in New York City, and in supermarkets in Tulsa. Vroom<sup>2</sup> adds “brain building” tips that encourage parents to infuse language into mealtimes and daily routines. “Languagizing” children’s everyday moments helps them become more successful in later schooling and in life. Indeed, the language vocabulary and grammar you have at 3 years old is a strong predictor of the vocabulary and grammar you will have when you enter formal schooling. And that set of language skills you have when you enter elementary school is the single best predictor of your later abilities in language, reading, math, and even social skills (Pace, Alper, Burchinal, Golinkoff, & Hirsh-Pasek, 2017). Early returns show that this investment in “languagizing” children’s worlds might just be working. Reardon, Waldfogel, and Bassok (2016) examined the National Center for Education Statistics data from 1,000 kindergartens across the United States from 1998 to 2010. They found that, for the first time, the gap between low- and higher income children might be narrowing. They hinted that public awareness of early learning might be one factor that sparked this decline. And, more anecdotally, recent data from our lab suggest that the amount of conversation between parents and children in targeted communities was much higher than that in nontargeted communities. By way of example, in a Philadelphia study (Ridge, Weisberg, Ilgaz, Hirsh-Pasek, & Golinkoff, 2015) of language in a supermarket serving a low-income area, a full

47% of the parents used no language with their children as they moved through the aisles. In Tulsa, only 25% of the families were silent: More than 56% had between one and nine conversational turns with their children!

The question is, how do early care and education professionals encourage the less verbal caregivers to become more responsive, sensitive language users who naturally find conversational moments during the course of their everyday activities? This challenge is not only met by the *Talk, Read, Sing* campaign and the Vroom tips but also by scientists who study the development of language in young children. In these scientific studies, researchers have discovered a wealth of information that helps hone in on just what to do to increase opportunities for all children to thrive. In this article, we hope to not only “wow” you with some of these discoveries but also to provide a one-page grid that uses the science to offer parents and caregivers six principles for “languagizing” their child’s world. By distilling the evidence gathered in thousands of studies into six lessons from the field, we offer an anchor for all who are determined to set our nation’s youngest citizens on a trajectory for success.

### The “Wow”

During the last few decades, babies have gotten smarter—or, maybe, the understanding of what they can do has become that much more sophisticated. Here are a few of the shocking revelations.

1 <http://toosmall.org/news/press-releases/bay-area-community-and-business-leaders-join-forces-with-too-small-to-fail-to-launch-talking-is-teaching-talk-read-sing-campaign-in-oakland>

2 [www.joinvroom.org](http://www.joinvroom.org)

1. Newborns just a few hours old can distinguish their mother's voice from another voice (Fifer & Moon, 2008).
2. Newborns can recognize features of their own language (e.g., French) and know that it is different from another unrelated language (e.g., Russian; Gervain & Mehler, 2010).
3. By 6 to 9 months old, babies already know a cadre of familiar words for food items (e.g., *apple*) and body parts (e.g., *nose*; Bergelson & Swingley, 2012).
4. By 9 months old, babies are statisticians who are analyzing the language they hear and noting the patterns of the language that washes over them (Saffran, Aslin, & Newport, 1996).
5. By 10 months old, babies are quite adept at pointing, grunting, and using their eye gaze to command, ask, or tell a parent what they want them to know (Carpenter, Nagell, & Tomasello, 1998).

And all of this usually happens even before they can utter their first words!

## The Six Principles for Enriching Children's Language Growth

If babies are this adept this early, then what can early childhood professionals and caregivers do to optimize opportunities for children's language learning? Scientists have spent lifetimes investigating this very question, and they have a lot of data that

can help parents and practitioners. In fact, the Vroom "brain building" tips and the *Talk, Read, Sing* campaign models hail directly from the halls of scientific discovery into the hands of caregivers who can now use these tips with their children. The vast body of literature that has been built over the last few decades reveals areas of consensus that inform adult behavior and enhance child outcomes. Six principles represent these areas; they are represented in Figure 1. After explaining each principle in turn, we can then ask how we, as parents or practitioners, can put them to use at home, in child care, and even in the community at large.

### Principle 1: Children Learn What They Hear Most

This principle is best illustrated by the now classic Hart and Risley (1995) finding that children from low-income families tend to hear fewer words than their middle-income peers. In this study, the numbers were staggering. The number of heard words projected per hour were 616 for what the authors termed the "welfare group," 1,251 for the "working class group," and 2,153 for the "professional group." Even though these terms are hardly appealing—and even though the study had a mere 40 participants overall—the finding has largely been replicated (Hoff, 2006, 2013), and the significance of the finding is undeniable. By 3 years old, children in the professional group spoke roughly 1,116 words, whereas those from the welfare group had but 525 words. These vocabulary words predicted their later reading scores and the number of vocabulary scores up to 9 years old!

Figure 1. The Six Principles of Language Learning



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Children learn words for things and events that interest them.

Why might quantity of language matter? Several studies begin to shed light on these findings. One by Weisleder and Fernald (2013) suggested that when a child hears less talk, he fails to prime his language system, and it literally operates more slowly. This means his processing efficiency is not as good, and it literally takes him longer to understand a sentence. Stretch out the speech (or even the type, as we did above), and you will quickly see how difficult it is to connect the beginning of the sentence with the end.

Another brilliant finding fleshes out the claim that statistical learning is already in place when children are but 9 months old. Saffran et al. (1996) offered 8-month-olds a string of artificial speech—literally, syllables that meant nothing but that were strung together (e.g., *bidakupadotigolabubidaku*). But hidden within these strings are words that appear with some predictability. Did you notice the *bidaku* portion of the string? Saffran and colleagues wondered whether babies only 8 months old would notice this, too, and whether they might prefer the whole words to part words like *kupa*—words that were available but that did not hang together as predictably. The answer? Yes. Babies could follow the statistical patterns. This means that if children hear enough input—back to the principle of quantity matters—then they will pull out the words in the language. If, on the contrary, they do not hear enough input, that job becomes harder, and fewer words will be learned.

### Principle 2: Children Learn Words for Things and Events That Interest Them

It is no surprise that infants are more likely to label things in the environment that they find interesting than things that do not capture their attention. A massive quantity of work also supports this principle. Lois Bloom (2000), one of the founders in the field of language development, called this the *principle of relevance*. Our own research (Hollich, Hirsh-Pasek, & Golinkoff, 2000) demonstrated this effect when we presented young children from 10 to 24 months old an “interesting”

novel object (a glitter stick) and a “boring” novel object (a bottle opener). Twelve-month-olds always assumed that we were labeling the interesting object—even when our gaze was clearly fixed on the boring object. By 24 months, however, sophisticated word learners might have thought that we were crazy for labeling that boring object, but they knew that our new word *danu* was clearly meant for the boring and not the interesting referent.

Michele McGillion and colleagues (McGillion, Pine, Herbert, & Matthews, 2017), capitalized on the child interest piece and on a large body of work (Dunham, Dunham, & Curwin, 1993; Tomasello & Farrar, 1986) suggesting that if adults look at what the child is looking at—and comment on it—they will learn. In this most recent work, McGillion and colleagues (2017) tried an intervention by suggesting that parents “lean in” and notice what their child is seeing to help build language.

### Principle 3: Interactive and Responsive Environments Build Language Learning

McGillion pointed out that merely looking where the child is looking will not breed language growth. As many have also pointed out, the adult must engage in a conversation, and that conversation must follow the learner with something that is both meaningful and temporally connected. That is, if a parent waits for 30 seconds before answering a child, she might rightly assume that you were not engaged with what she was saying. This timing aspect comes to haunt adults when they are using a GPS (i.e., “interacting” with computer voices) or speaking with automated railway agents who are just digital proxies of a human rather than the real thing. Jessa Reed and colleagues (2016) called this kind of situation (i.e., delayed timing, lack of meaningfulness) “adaptive contingency” in that conversations do not proceed well if there is not a meaningful ebb and flow. Tamis-LeMonda, Kuchirko, and Song (2014) also wrote about these twin component pieces that make conversation work. A number of researchers offered multiple reviews of how strong conversation that preserves adaptive contingency yields better language scores over time (see, e.g., Reed et al., 2016; Tamis-LeMonda et al., 2014). In fact, in one study, we looked *within* low-income families and found that the families who used more adaptive contingency—what we came to call the “conversational duet”—had children with stronger language skills (Cartmill et al., 2013; Hirsh-Pasek et al., 2015).

Our lab has done several studies that speak to the interactive and responsive nature of the interaction and why it is so critical. The first highlights why little children do not learn much from watching television but are very good at learning from someone live (Kuhl, Tsao, & Liu, 2003). Roseberry, Hirsh-Pasek, and Golinkoff (2013) asked what the difference was between live and televised. One notable difference is that television screens are two-dimensional and people are three-dimensional. And, at the time, many in the field of language development were talking about the *television deficit hypothesis* (Anderson &

Pempek, 2005). Another difference is that live people preserve adaptive contingency, whereas television programs violate this contingency. One way to test the hypothesis was to ask whether children could learn the same two words if they heard them over video chat—a format that maintains the contingency within the screen limits. Do children learn the words (via interacting with someone live) or do they fail to learn the words (via watching television)? Thirty-six 2-year-olds later, we had the answer—the results of learning via video chat were indistinguishable from the results of learning live (Roseberry et al., 2013).

Preserving contingency allows for learning and offers a sufficient condition for our claim that language learning requires what we later termed conversational duets. To address whether preserving contingency is a necessary condition, one might ask what happens when you violate or interrupt the contingency. Here, we turned to a great natural experiment—the use of mobile phones, where ring tones and text messages are constantly interrupting the flow of everyday interactions. Reed and colleagues (2017) carried out the research in a within-subject design with 2-year-olds who were taught exactly the same two words that had been used in the experiments mentioned previously. Parents came into the lab and were asked to teach their children the words. They were also informed that we would give them a cell phone call at some point during the experiment and that they were to answer the call. Half the parents would be interrupted during Word 1, and half would be interrupted during Word 2. We hypothesized that even though parents would spend exactly the same amount of time teaching the interrupted word and the uninterrupted word, the interruption itself would derail learning. That is precisely what happened. Bottom line—the conversation is key to language learning. Socially interactive and responsive environments matter.

#### Principle 4: Children Learn Best in Meaningful Contexts

“Strategies that introduce young children to new words and entice them to engage in meaningful contexts through semantically related activities are much needed” (Neuman & Dwyer, 2009, p. 384). This insight is in line with research on memory: Adults retain information long term when it is presented in integrated contexts rather than as a set of isolated facts (Bartlett, 1932; Bransford & Johnson, 1972).

For several years, our lab has been presenting the merits of playful learning—environments in which children lead discovery in a fun and meaningful way (Golinkoff & Hirsh-Pasek, 2016; Hirsh-Pasek & Golinkoff, 2003). When material is fun and engaging, children tend to focus on it for longer periods of time and to link the vocabulary that they learn into the rich and growing mental dictionaries. A number of our research projects join others in testing this hypothesis, which to date has yielded positive results (Fisher, Hirsh-Pasek, Newcombe, & Golinkoff, 2013; Han, Moore, Vukelich, & Buell, 2011; Weisberg, Zosh, Hirsh-Pasek, & Golinkoff, 2013). Further,



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#### Interactive and responsive environments build language learning.

a considerable body of research demonstrates how words that we learn in the context of play can transfer to the context of education, thus helping us learn mathematics and spatial knowledge. For example, when playing with blocks, adults are more likely to use terms like *around*, *through*, *under*, and *on*—terms that build science, technology, engineering, and math (STEM) competence (Ferrara, Hirsh-Pasek, Newcombe, Golinkoff, & Lam, 2011). And research suggests that games that promote more use of number terms in the input also prepare children for later mathematical competence (Gunderson & Levine, 2011; Purpura, Napoli, Wehrspann, & Gold, 2017).

#### Principle 5: Children Need to Hear Diverse Examples of Language Words and Structure

Here, too, there is a tremendous amount of evidence. Just as amount of language matters, so too does the quality of the language that children hear. Part of the quality discussion has taken place around conversational duets and the nature of the social input. But, diversity of language inputs represents yet another type of quality—one that has been well studied by scientists such as Meredith Rowe (2012). She and others have found that the number and types of words that adults use with children—the sheer variability—help children become better language users. And, indeed, this complexity also correlates with later academic achievement (see also Gámez, Shimpi, Waterfall, & Huttenlocher, 2009; Shimpi, Gámez, Huttenlocher, & Vasilyeva, 2007).

#### Principle 6: Vocabulary and Grammatical Development Are Reciprocal Processes

Somewhere along the line, researchers came to believe that vocabulary was king and that how many words a child knows was a better indicator of language success than was the packaging that the words came in—the grammar—the glue that strings those words together so that the child can say



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Children need to hear diverse examples of words and language structures.

more complex things. Yet, studies illustrate that vocabulary and grammar develop simultaneously (Dionne, Dale, Boivin, & Plomin, 2003). The relationship between vocabulary and grammar has been researched in children between 16 and 30 months old ( $N = 1,461$ ) through use of the MacArthur Communicative Development Inventories (Fenson et al., 1994) vocabulary and grammatical complexity scores.

Results demonstrated that expressive vocabulary predicted grammar knowledge, suggesting that the two are “developing in synchrony across the first few years of life” (Dixon & Marchman, 2007, p. 209).

The reciprocity between vocabulary and grammar can be understood in two ways. First, by noting the linguistic context in which words appear, children gain information about a word’s part of speech (Imai et al., 2008). For example, the sentence “Sally borked John” suggests a different meaning for “bork” than the sentence “Sally has a bork.” The former suggests that “bork” is a verb, whereas the latter implies that “bork” must be a noun. Indeed, when one teaches contextual cues as part of a word learning intervention, second language learners are better at mastering novel vocabulary items (Carlo et al., 2004). Meaning emerges from how words are used in linguistic contexts. Grammatical and morphological cues can signal parts of speech and can be used as *tools* for further vocabulary learning. Second, once a word is known, children can detect the nuances in a word’s meaning by observing the word’s use in diverse linguistic contexts (Gillette, Gleitman, Gleitman, & Lederer, 1999; Yu & Smith, 2012).

The relationship between grammar and vocabulary learning is also observed in research involving children learning two languages. Toddlers’ English vocabulary size predicted their English grammar abilities, and their Spanish vocabulary size predicted their Spanish grammar abilities—thus supporting the theoretical perspective that “learning in the lexical and grammatical domains of language is continuous and utilizes common mechanisms” (Conboy & Thal, 2006, p. 728). Vocabulary and grammar development in bilingual children proceed in the same manner as in monolingual children of

each language (Conboy & Thal, 2006; Marchman, Martinez-Sussman, & Dale, 2004).

### Putting It All Together: Edible Science

Six principles. One article. Thousands of papers distilled into (we hope) bite-sized and usable chunks. So, how can one apply these six principles in daily life? In 2009, the Foundation for Child Development wrote a lovely piece titled “How do families matter?” (Foundation for Child Development, 2010). The introduction invites readers to consider the story of “three mothers and an eggplant.” Riffing on that theme, you can imagine what it would be like to be in a grocery store where a child points to the eggplant and asks, “Was dat?” Mother 1 responds, “You won’t like it” and moves on. Mother 2 glorifies the interesting purple vegetable, identifying it by name and exclaiming, “It’s an eggplant!” and walks on. Finally, Mother 3 implicitly embraces the child’s interest and the vegetable’s potential meaningfulness, launching into a conversation: “That’s an eggplant. Would you like to buy it?” The child responds, “Yes.” Mother 3 continues, “Let’s weigh it. Wow—what a beautiful vegetable. We can make eggplant parmigiana.” (This is the conversational duet discussed earlier.) Their conversation goes on for three more turns.

The job of educators, parents, and child care workers is to try to model Mother 3 rather than Mother 1. And our work as scientists is to see whether we can prompt more Mother 3–like behavior en route to “languagizing” the environment for children. Whether we put signs in supermarkets to bring out fun and engaging language (Ridge et al., 2015) or envision digital media—as we are doing in what we call the Duet project—our goal is to talk, read, and sing just a little bit more. And, if we are more conscious of the six principles as we move throughout our day, the languagizing will come for free. Adults just need to sing one more song, talk just a little more at the market, and put the cell phones away for just 2 minutes to engage with a child. All adults can do this—and when they do, they will send children on a more positive trajectory in life.

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**Roberta Michnick Golinkoff, PhD**, at the University of Delaware, has received numerous awards for her contributions to developmental science. She has held the John Simon Guggenheim Fellowship, the James McKeen Cattell sabbatical award, and the American Psychological Association's

Distinguished Service Award as well as the Urie Bronfenbrenner Award for Lifetime Contribution to Developmental Psychology in the Service of Science and Society. In 2015, she accepted the James McKeen Cattell Fellow Award from the Association for Psychological Science for "a lifetime of outstanding contributions to applied psychological research." She was also named Distinguished Scientific Lecturer by the American Psychological Association and won the highest faculty award at the University of Delaware, the Francis Alison Scholar Award. In 2017, she was awarded the Society for Research in Child Development's Distinguished Scientific Contributions to Child Development Award. Funded by federal agencies, she has written 16 books and monographs and many research articles. Passionate about dissemination of psychological science, she wrote *How Babies Talk* (with K. Hirsh-Pasek). Their latest book, *Becoming Brilliant: What Science Tells Us About Raising Successful Children*, reached *The New York Times* bestseller list.

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