“Babies’ brains are equipped to handle more than one language”

Interview by Sabine Gysi
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Language learning begins much earlier than one might think, and numerous factors play an essential role in that process. Janet Werker has spent years investigating how children acquire language.

Sabine Gysi: How early in a child’s life does language learning begin?

Janet Werker: Language development starts long before the first words are spoken. Already at birth, babies show a preference for the voices and even the language that they heard in utero. The speech processing system is already becoming attuned to the properties of the native language. Listening, in early infancy, is essential for acquiring the syntax, sounds, and other aspects of language, enabling the child to understand and ultimately to speak.

SG: There is a widespread belief that a toddler needs to hear as many words as possible. Is this the most important aspect of language acquisition?

JW: Certainly babies can’t learn their native language if they don’t hear it. We’re born ready to learn a language, but we have to be exposed to it.

Many people do indeed focus on the number of words that children hear. There is a lot of research on the 30 million word gap and the need to ensure that babies hear enough words to build a vocabulary that will enable them to succeed in society.

But that approach to language acquisition has two limitations. First, vocabulary is only a part of language; sentence structure and rhythm are also important, and many other things have to be in place before babies can acquire a vocabulary. Second, there is now a lot of research showing that it’s not just about the number of words that babies and young children hear, but about whether they hear them in contingent interactions. When parents are attentive, engaged, and label that which the baby is looking at (or first draw their attention to it) in a contingent fashion, that is when babies best learn words.

Those are moments best suited to word learning. Just inundating a child with a large number of words is not going to give them vocabulary. Seeing when and how language is used, understanding the meaning of words in context, and experiencing the power of being able to communicate with someone – these are the factors that really support language acquisition in general, and vocabulary development in particular.

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SG: Are there things parents can do wrong?

JW: The biggest mistake would be not talking to babies, based on the assumption that they’re not yet learning language.

But besides that, I don’t think parents need to worry about doing something completely wrong. Talking to babies, interacting with them when they’re very young, face-to-face interactions between mom and baby, or dad and baby, or somebody else and baby – at those moments, babies are not only hearing language, they’re also seeing it being spoken. They get a lot of information from the speaker’s face, and they learn about rhythm and turn-taking. All of this is extremely valuable.

SG: When we read about critical periods in development, or windows of opportunity, we get the impression that after a certain age, the child has missed the chance to learn anything at all. True?

JW: There are multiple critical periods for language acquisition, and some of them are more time-delimited than others. But very few have a clearly defined end point. Maturation or chronological age may dictate when a window can open. But experience is required before it closes, so if the child doesn’t have much exposure to language during that period, the window can stay open a bit longer. Nonetheless, research shows it is important to ensure infants experience language as early as possible to ensure acquisition unfolds as optimally as possible.

The value of defining critical periods is that it helps us understand that the developing language system prepares the child to acquire different aspects of language at different times. So the baby is not flooded with the incredibly complex signals of a language. At first, babies are very sensitive to rhythm and melody, and a little later, they’re sensitive to the characteristics of individual speech sounds, on top of the rhythm and the melody.

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The sequential opening of these periods allows the language system to organize on the basis of simpler information and then build from that. Assume, for example, that you and I want to learn a new language. At our age, it is much harder to learn the grammar of an unfamiliar language. The period when grammar is easily learned has closed. But we can still memorize many vocabulary items.

SG: What happens in the brain of a child who grows up with two languages?

JW: The fascinating thing about babies who are growing up with two languages simultaneously is that they don’t confuse the two languages. Newborn babies who have been exposed to two languages in utero prefer both of those languages over an unfamiliar language, and yet they can already discriminate between them!

There is a lot of evidence to show that bilingual learning infants start tracking the properties of each language separately. Sometimes the speech sound categories might overlap for a period of time, but then they separate again. Babies’ brains seem to be set up to acquire more than one language just as naturally as a single language.
And when these babies start speaking, the way they talk is consistent with the environment that they're living in. So if you’re bilingual and you are speaking English in one environment and German in another environment, your child will be likely to do the same.

SG: You also want to help children who are at risk for developmental delays. How can risk factors be identified early on?

JW: It is a challenge to detect risk factors early on in language development, because there is so much variability. There are children who are speaking at ten months, and other children who do not speak until they reach the age of two, and most of this is just normal variability. This is why it is difficult to detect language delay until after age two.

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But the more we learn about the milestones in development that precede more complex language acquisition, the better situated we are for early detection. Some things we already know: If babies don’t orient to their mother’s voice, or if they don’t show preference for speech directed toward them, or if they don’t respond to their own name by around four months, they are at greater risk of having a language delay. But it remains a challenge because there is so much variability, particularly among little boys.

SG: What do you think about robots and virtual peers as teaching assistants to help children learn a language?

JW: In the case of typically developing children, there’s enormous resistance to this idea in society, although some cultures are more resistant than others. There’s the worry that these robots will eliminate important parts of social emotional learning that come with real language interaction. As I mentioned before, principles like contingency and turn-taking are important in language learning. If a robot can’t teach those things, it will not be a good language teacher.

But some of the earliest exciting research with robots has been done with kids who are on the autism spectrum. These children often don’t like looking at faces and watching a person’s eyes, so they really don’t like the typical conversations that are so important in supporting language acquisition. Robots can be of help for these children because they’re less invasive.

Some groups are also considering the use of robot-aided instruction in areas where children lack the language skills, upon school entry, to optimally benefit from school, and where there may also be a shortage of adequately trained teachers. Robots are being introduced as a way to help children who are lagging behind and who perhaps haven’t had enough opportunities to learn a language.

Thus, it’s probably not correct to say, across the board, that you one should not use robots or artificial peers; in some situations they can be very valuable.

Janet F. Werker is a researcher in the field of developmental psychology. She studies monolingual and bilingual infant language acquisition in infants at the University of British Columbia’s Infant Studies Centre. She has identified a number of milestones in early infancy in the process of language learning.

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