Language and Your Baby's First Year

When a baby is born, he faces a huge learning task – over the next 3 years he will learn how to talk and walk. However, there are some things that your baby won’t have to learn about language. Infants are born with an amazing gift – the ability to perceive every sound in every language. Whether an infant is born in Paris or Pittsburgh, he or she can just as easily distinguish the different sounds found in French as in English. This isn’t something that has to be learned – it is a gift they are born with that if isn’t nurtured, will wither away.

It’s been so long since we ourselves learned to speak, that it’s easy to underestimate the magnitude of the challenge facing the young infant. Amongst the many:

- There are no word boundaries. Unlike text, which contains clear white space between each word, there is no delineation between words in speech. Anyone who has listened to a conversation in an unfamiliar language has felt the disorientation of trying to pick out words in the speech stream. Indeed, if you look at a spectrogram (which is a picture of speech), speech blurs together.

- There are male and female voices, old and young, sick and healthy. Even saying the same word, they all sound different. How does an infant extrapolate? Using complex statistical analysis of the conversations heard all around, an infant begins to group different “b” sounds together, so that “bottle” can be recognized, whether it’s spoken by mom or dad, quickly or slowly, softly or loudly.

These challenges have baffled many a computer scientist. Over twenty years ago we envisioned a computer would be speaking to us intelligently (Hal). Yet here we are in the 21st century and that future is farther off than we could have imagined. Why? Because cracking the language code is no small feat. Yet somehow, with no explicit instruction, your baby will start talking around 12 months.
Babies know important things about language literally from the time they are born, and they learn a great deal about language before they even say a word. In a study by Patricia Kuhl, Ph.D., she found that one-month old American infants listening to English could discriminate every English sound contrast, such as “r” and “l”, and categorize them into groups. Long before your baby can speak, she is learning important things about language.

Infants have an amazing ability to perceive all the sounds of the world’s languages at birth, independent of their native language. However, infants start to lose the ability to perceive these language sounds as they focus on the sounds of their native language. When does this occur?

Patricia Kuhl, Ph.D. studied infants in Japan and found that Japanese and seven-month-olds discriminated “r” and “l” equally well. However, three months later, the two groups of infants were as different as night and day. At ten months, Japanese infants could no longer hear the change from “r” to “l”. American infants not only could do so, but had actually gotten much better at making this distinction.

This study, as well as others, show that the six-to twelve-month time span appears to be the critical time for the perceptual organization of sounds as infants are busily grouping the sounds they hear into the right categories – the categories their particular language uses.
Gift for Life

If infants are exposed to non-native language sounds when they are young, will they still be able to hear those language sounds later in life, especially if they have had no further exposure to the sounds after infancy? Janet Werker and Richard Tees showed in their 1984 study the amazing difference that early introduction to language has on future language learning. Exposure to languages at a young age really is a gift for life.

Werker and Tees tested three groups of native English-speaking adults on their ability to categorize two Hindi sound pairs. The adults in Group 1 had at least 5 years of experience with Hindi and could speak the language. Groups 2 and 3 both consisted of undergraduates that were studying Hindi, however, the students in Group 2 had been introduced to Hindi during their first year or two of life. The students in Group 3 had no previous exposure to Hindi.

The results of the study were remarkable. Both Group 1 and Group 2 were able to distinguish the Hindi sound contrasts. However, Group 3 — the undergraduates learning Hindi for the first time — were unable to distinguish the sounds, even after studying the language for a year. Yet the undergraduates in Group 2 who had been exposed to the language as small children had no trouble at all distinguishing the sound contrasts. Even though they had not been exposed to the language since they were toddlers, they retained the benefit of that early exposure.