

## Babies Prove Sound Learners

by Emily Sohn  
 from *Science News*

1 It can be hard to know what newborns want. They can't talk, walk, or even point at what they're thinking about. Yet babies begin to develop language skills long before they begin speaking, according to recent  
 5 research. And, compared to adults, they develop these skills quickly. People have a tough time learning new languages as they grow older, but infants have the ability to learn any language, even fake<sup>1</sup> ones, easily.

For a long time scientists have struggled to  
 10 explain how such young children can learn the complicated grammatical rules and sounds required to communicate in words. Now, researchers are getting a better idea of what's happening in the brains of society's tiniest language learners. The insights might eventually help  
 15 kids with **learning disabilities** as well as adults who want to learn new languages. The work might even help scientists who are trying to design computers that can communicate like people do. "The brain of the baby is a new frontier,"<sup>2</sup> says Patricia Kuhl, co-director of the University of Washington's **Institute for Learning and Brain Sciences**.

### 20 The Learning Process

For decades scientists have debated how the brains of young children figure out how to communicate using language. With help from new technologies and research strategies, scientists are now finding that babies begin life with the ability to learn any language. By interacting with other  
 25 people and using their superb listening and watching skills, they quickly master the specific languages they hear most often.

"The [baby] brain is really flexible," says Rebecca Gomez, an experimental psychologist at the University of Arizona, Tucson. Babies "can't say much, but they're learning a lot." Kuhl's research, for example,  
 30 suggests that the progression from babbles like "gaga" to actual words like "good morning" begins with the ability to tell the difference between simple sounds, such as "ga," "ba," and "da." Such studies show that, up to



Culture and  
 Language Notes  
 page 144

<sup>1</sup> **fake** not real

<sup>2</sup> **a new frontier** an unexplored area



about six months of age, babies can recognize all the sounds that make up all the languages in the world. “Their ability to do that shows that [babies] are prepared to learn any language,” Kuhl says. “That’s why we call them ‘citizens of the world.’”

About 6,000 sounds make up the languages spoken around the globe, but not every language uses every sound. For example, while the Swedish language distinguishes among 16 vowel sounds, English uses only eight vowel sounds, and Japanese uses just five. Adults can hear only the sounds used in the languages they speak fluently. To a native Japanese speaker, for instance, the letters “R” and “L” sound identical. So, unlike someone whose native language is English, a Japanese speaker cannot tell “row” from “low” or “rake” from “lake.”

Starting at around six months old, Kuhl says, a baby’s brain focuses on the most common sounds it hears. Then, children begin responding only to the sounds of the language they hear the most. In a similar way, Gomez has found, slightly older babies start recognizing the patterns that make up the rules of their native language. In English, for example, kids who are about 18 months old start to figure out that words ending in “-ing” or “-ed” are usually verbs, and that verbs are action words.

### Language on the Brain

Scientists are particularly interested in the brains of people who speak more than one language fluently because that skill is hard to acquire after about age seven. In one of Kuhl’s studies, for example, native Mandarin Chinese speakers spoke Chinese to nine-month-old American babies for twelve sessions over four weeks. Each session lasted about 25 minutes. At the end of the study, the American babies responded to Mandarin sounds just as well as did Chinese babies who had been hearing the language their entire lives. (English-speaking teenagers and adults would not perform nearly as well.)

If a child regularly hears two languages, her brain forms a different pathway for each language. However, once the brain solidifies those **electrical language pathways** by around age seven, it gets harder to form new ones. By then, a baby’s brain has disposed of,<sup>3</sup> or pruned, all the unnecessary connections that the infant was born with. So, if you don’t start studying Spanish or Russian until middle school, you must struggle against years of brain development, and progress can be frustrating. A twelve-year-old’s brain has to work much harder to forge language connections than an infant’s brain does. “We ought to be learning new languages between ages zero and seven, when the brain does it naturally,” Kuhl says.

---

<sup>3</sup> disposed of gotten rid of