

Bilingual infants lip-read more than monolingual infants

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Credit: Anna Langova/public domain

New research from Northeastern developmental psychologist David J. Lewkowicz shows that infants learning more than one language do more lip-reading than infants learning a single language.

In the study, bilingual and monolingual infants were observed watching a video of a woman speaking in Spanish or Catalan; the infants were

learning one or both of these languages. Lewkowicz and his collaborators found that bilingual infants focused their attention on the mouth at an earlier age and for a longer period of time than monolingual infants. This suggests that bilingual infants pick up on salient audiovisual [speech](#) cues more than their monolingual peers to help them distinguish between the two languages they are learning simultaneously, he said.

"These results provide new insights into the underlying mechanisms of people's ability to acquire more than one [language](#) at the same time early in life," said Lewkowicz, a professor in the Department of Communication Sciences and Disorders in Northeastern's Bouvé College of Health Sciences.

Lewkowicz and his co-authors—Ferran Pons and Laura Bosch, both at the University of Barcelona and the Institute for Brain, Cognition, and Behavior in Spain—report these findings in a forthcoming paper in the journal *Psychological Science*. Lewkowicz said the findings have important implications for understanding how infants acquire speech and language and shed light on how [bilingual infants](#)—despite their neural and behavioral immaturity—manage to learn two different languages as easily as monolingual infants learn one language.

The findings, he said, could also play a role in treating and diagnosing children with communicative and learning disorders like autism. He noted that children with autism are typically diagnosed between 18 and 24 months and tend to look at faces less often than typical children, a factor that significantly reduces their opportunities for experiencing audiovisual speech that Lewkowicz's previous research has shown to be important for young babies. What this means in the context of his research is that identifying infants with particular patterns of selective attention to speech could help diagnose communication and learning disorders earlier than is currently possible.

In this new study, Lewkowicz and his collaborators used eye-tracking technology to measure precisely how much time infants attended to the eyes and mouth—the two critical areas that we focus on during social communication—of a person who could be seen and heard speaking. The infants all lived in Spain and were learning Spanish and/or Catalan.

The researchers found that, regardless of what language the person spoke, 4-month-old monolingual babies looked longer at the eyes than the mouth but that 4-month-old bilingual babies looked equally as long at the eyes and mouth. Similarly, whereas 12-month-old monolingual babies looked equally at the eyes and mouth in response to native speech and more at the mouth in response to non-native speech, 12-month-old [bilingual babies](#) looked longer at the mouth regardless of language and, critically, longer than monolingual infants in both cases.

These findings build upon Lewkowicz's groundbreaking research published in 2012, which showed that babies learn to talk not only by listening to sounds but also by lip-reading. Findings showed that as babies start to babble—at around six months of age—they begin to shift their attention to the mouth of the person speaking. In essence, they begin to lip-read, having discovered how much salient speech information they can learn from watching a person's mouth.

In the previous study, two experiments were conducted with different age groups of monolingual, English-learning infants between 4 and 12 months of age. In these experiments, the infants watched videos of women speaking either English or Spanish. In addition to finding that babies begin to shift their attention to a talker's mouth after 6 months of age, this study showed that 12-month-olds attended to the [mouth](#) longer when the person spoke Spanish than when she spoke English, presumably because what had now become an unfamiliar language was more difficult to understand.

These findings led the researchers to pursue this latest study. Upon learning that combined auditory and visual speech information is very important for speech and language acquisition in infancy, they wondered whether babies growing up in a bilingual environment take even greater advantage of these combined auditory and visual cues and, thus, whether they lip-read even more.

"That's precisely what we found," Lewkowicz said, adding that "These findings shed new light on bilingualism, which happens to be of great interest to researchers studying the effects of early experience as well as policymakers concerned with integrating non-English speaking children into the classroom."

Lewkowicz noted that his team's research offers insight into what kinds of information to expose children to in order to help them acquire two languages more effectively. Babies, he explained, go through an intense period of learning in the first year and during this time they acquire expertise in their native language. Paradoxically, while native-language expertise emerges, [babies'](#) ability to perceive other languages declines—a process known as perceptual narrowing, he said.

"By the end of their first year, infants have narrowed their ability to perceive different languages if they have not had exposure to them," he explained. "This process happens very rapidly and earlier than we thought, though children still retain a great deal of plasticity throughout childhood. But certainly, if you don't get exposed to another language during childhood, you'll have difficulty learning it later on."

"The flip side of this is that exposure to multiple languages in infancy prevents narrowing, and it is now clear that one way in which bilingual [infants](#) manage to accomplish their task is by taking maximum advantage of both audible and visible speech whenever they interact with their social partners."

Provided by Northeastern University

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