



Out of the mouths of babies – learning the mother tongue



Paul Warren
WATCH YOUR LANGUAGE

A RECENT *Dominion Post* article, *Babies cry in tongue of mum*, (7 Nov 2009) caught my attention. It was a summary of a research report in the scientific journal *Current Biology*.

It reported a claim that, from the first days of their lives, babies cry in the language their parents speak.

Linguists often comment that babies are “born international”. By this we mean that all normally developing babies have the potential to learn any language. They are not genetically programmed to learn their parents’ language, but rather to learn any language, depending on what they are exposed to.

It is a healthy mix of nature (humans are predisposed to learn language) and nurture (they learn the language of their environment). So when a Sri Lankan baby is adopted by an English family, the child will grow up learning English, not Sinhala.

It has been known for some time that babies develop perceptual skills for language at a very early age. From just a few days of age they can work out where a sound is coming from – very important for being able to pay attention to speech.

At around two weeks they can distinguish human voices from other sounds, and soon afterwards they show a preference for their mother’s voice over other voices.

By one month babies are starting to show that they can hear the difference between distinct speech sounds in a way that is sensitive to the language they are hearing.

For instance, the difference between adult “b” and “p” sounds (important for distinguishing “boo” from “poo”, and many other word pairs) is subtly different for English and Spanish. At an early stage, babies growing up in an English-speaking environment are already beginning to hear the English b/p difference better than the Spanish one.

How do we know this? One group of studies measured how hard babies suck on dummies. When they are interested in something they are hearing, babies suck harder.

When they hear the same thing over and over they lose interest and their sucking decreases. The test of whether they hear a new sound as different is whether their sucking increases again when the new sound is played to them.

More recent work with babies shows that they prefer sounds from their parents’ language even while they are still in the womb. We know this from measures of the unborn babies’ heart rates, which again vary according to whether something is more interesting to them. Being in a womb has a filtering effect on the sounds that a baby can hear.

It is a little like hearing a conversation in the next room – the bits you can hear best are the rhythm and melody of the conversation, but not the detail of the sounds.

Not surprisingly, then, the unborn child is most sensitive to the rhythmic patterns and melody of the language surrounding its mother, and shows more interest in speech recordings that have those properties than in recordings of a language with different rhythmic or melodic properties.

Intrigued by the claim that extremely young babies not only perceive but also produce speech patterns that match their parents’ language, I looked out the original *Current Biology* article. As with the pre-natal perception studies, it is the melody of the babies’ speech that is the focus of attention.

While all the babies produced cries with a rising-then-falling melody, babies in a French-speaking environment hit the highest pitch of this melody later than babies in a German-speaking environment.

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The effect of this is that the French melody has a longer rising part than the German melody. This matches some of the main differences between the melodic patterns of adult French and German. Moreover, because the natural pattern is for speech pitch in an utterance to fall as the stream of air coming from the lungs drops in pressure, the conclusion is that the sustained rising part of the French babies' cries is determined by the language, rather than by physiology.

An interesting conjecture is whether Kiwi babies might produce cries with a

melody that has an upwards flick at the end, reflecting the high-rising terminal contour commented on for New Zealand English. New parents – start recording your day-old babies now.

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LANGUAGE QUERIES?

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