Pitch of baby cries found to be predictor of vocal pitch at age five

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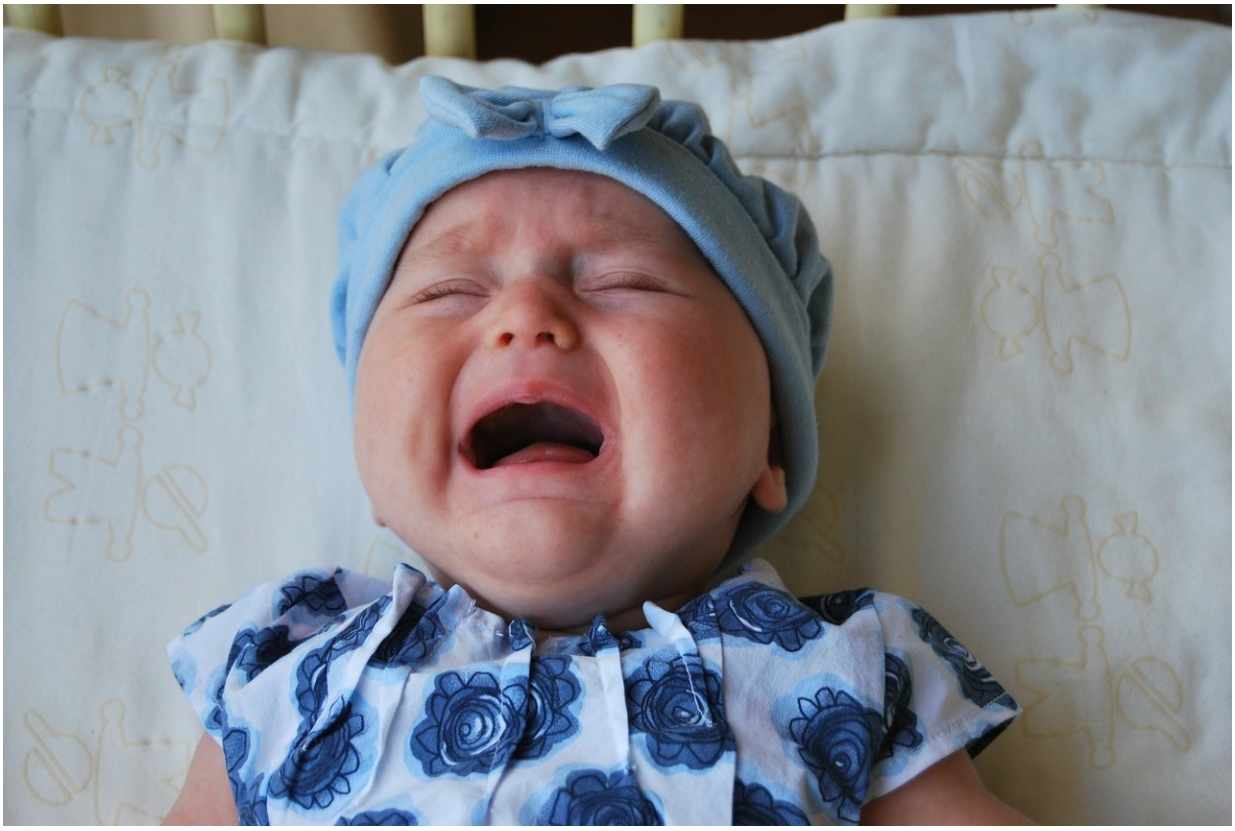

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A combined team of researchers from the University of Lyon/Saint-Etienne in France and the University of Sussex in the U.K. has found that the pitch of a baby's cries can be an indicator of voice pitch at age

five. In their paper published in the journal *Biology Letters*, the group outlines their study and what they found.

The pitch of a person's voice is one of the characteristics by which humans are judged by others. For example, those with a high pitch are often found to be annoying, while those with a low pitch are seen to be commanding. Also, scientists have discovered in recent years that what happens in the womb can have a major impact on personal and physical traits—one of which is voice pitch. In this new effort, the researchers wondered if there might be a connection between the pitch of a baby's cries, and the voice they come into as children. To find out, they pulled voice recordings made during a prior longitudinal study of babies crying and compared them with the same individuals five years later.

The researchers found that the voice pitch of a crying baby could be correlated to speaking pitch five years later. Or put another way, the pitch of a crying baby could be used to predict what that child would sound like as a five-year-old. This finding led them to revisit the findings of another team who had found that right-hand finger ratios could be used to predict pitch in both children and babies. That team had found that if the index finger on the right hand is longer than the ring finger, a baby will likely to grow up to have a high-pitched voice. Conversely, if it is shorter, they will be more likely to have a lower-pitch voice. The researchers note that prior studies suggested this was due to hormone levels present in the womb. And this, they suggest, indicates that such levels are likely the cause of the impact on voice pitch.

The researchers also note that more work will need to be done to better understand the connection between the cries of a baby and how they will sound as children, because they only had 15 volunteer samples in their study.

More information: Florence Levrero et al. The pitch of babies' cries

predicts their voice pitch at age 5, *Biology Letters* (2018). DOI: 10.1098/rsbl.2018.0065

Abstract

Voice pitch (fundamental frequency, F0) is a key dimension of our voice that varies between sexes after puberty, and also among individuals of the same sex both before and after puberty. While a recent longitudinal study indicates that inter-individual differences in voice pitch remain stable in men during adulthood and may even be determined before puberty (Fouquet et al. 2016 R. Soc. open sci. 3, 160395. (DOI: 10.1098/rsos.160395)), whether these differences emerge in infancy remains unknown. Here, using a longitudinal study design, we investigate the hypothesis that inter-individual differences in F0 are already present in the cries of pre-verbal babies. While based on a small sample (n = 15), our results indicate that the F0 of babies' cries at 4 months of age may predict the F0 of their speech utterances at 5 years of age, explaining 41% of the inter-individual variance in voice pitch at that age in our sample. We also found that the right-hand ratio of the length of their index to ring finger (2D : 4D digit ratio), which has been proposed to constitute an index of prenatal testosterone exposure, was positively correlated with F0 at both 4 months and 5 years of age. These findings suggest that a substantial proportion of between-individual differences in voice pitch, which convey important biosocial information about speakers, may partly originate in utero and thus already be present soon after birth.