Zebra finches are sensitive to emotional cues in human speech

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Zebra finches pick up on prosodic cues in human speech which can empahsise meaning or emotion. Credit: Kilayla Pilon

A study in *Proceedings of the Royal Society B* shows that zebra finches can pick up on the features in human language that express emphasis and emotion.

Humans are skilled at detecting prosody in speech, like changes in pitch, amplitude or duration, and use these cues to express emphasis, meaning and feeling. Other animals, like song birds, use changes in amplitude and speed in their own vocalisations but whether they can also spot these subtle clues in human speech was, until now, unclear.

The scientists behind this study trained eight zebra finches to respond to certain patterns of prosodic cues in recordings of spoken syllables. The team recorded simple syllables and manipulated the pitch, amplitude and duration to stitch together a series of four syllables with a prosodic, emphasised, syllable either at the beginning or the end. The sounds were played to the finches which were trained to peck at a sensor when they heard prosodic emphasis at the beginning of a clip and not to respond when the emphasis was on the last syllable.

The team tested the birds by subtly switching the emphasis in the recordings. The clips which initially had emphasis at the beginning were manipulated to have emphasis at the end and the recordings with stressed last syllables were adjusted to have emphasis on the first. But the birds weren't fooled and continued to pick out the recordings with prosody at the start of the phrase. Even when the syllables were changed for different sounds completely the birds could still spot the prosodic cues showing they could generalise the simple rules they had been trained with and apply them to different sounds.

In similar tests using these stimuli humans sometimes responded to the syntactic elements, the actual syllables of the speech, instead of the prosodic features. These results show that not only are zebra finches sensitive to prosody in human communication but that they respond more strongly than people do.

This sensitivity in finches and in humans either has a shared ancestral route or evolved independently but along similar lines in both birds and in humans, say the researchers. They add that this study could give clues that our use of prosody came before our use of distinct words. 'One of the hypotheses concerning the evolution of human language is that it was proceeded by a prosodic protolanguage... it might have its origins in a pre-existing sensitivity to meaningful variation in non-speech sounds present in our ancestors'.

More information: Michelle J. Spierings and Carel ten Cate, "Zebra finches are sensitive to prosodic features of human speech." *Proc. R. Soc. B* July 22, 2014 281 1787 20140480; DOI: 10.1098/rspb.2014.0480 1471-2954