Title:	Understanding the Effects of Antibiotics on Vocal Learning and Vocalization in Zebra Finches
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Abstract:	Zebra finches were used to understand the effects of antibiotic administration on vocal development and vocalizations during early development when this species of birds learned their vocalizations. Since zebra finch song learning and human speech development share several common features, zebra finches are used as an excellent model for studying vocal learning during a sensitive period. A cocktail of antibiotics was fed orally to one of a pair of young zebra finch male siblings. In contrast, the other was provided the vehicle during the sensorimotor phase of song learning. Songs of both sets of birds were recorded during and after antibiotic treatment and were analyzed at motif levels, using the Sound Analysis Pro (SAP) software. We found that there were significant changes overall in the spectral and temporal features of antibiotic-treated birds versus controls. There was an overall decrease in inter-syllable intervals, small decreases in pitch, and an increase in entropy of antibiotic-treated birds compared to the control birds. It is possible that the antibiotics may have affected the microbiome of juvenile finches during early development, and this may have resulted in changes in their vocalization patterns and affected neural circuits in the zebra finch brain underlying vocal learning and production.
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