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TESTING THE PERCEPTUAL SALIENCE OF SPECTRAL CONTENT IN ZEBRA FINCH SONG

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Birds actively adjust the resonance properties of the upper vocal tract during singing, which results in specific harmonic structures of song elements. To what degree upper vocal tract filtering is relevant for the perceptual salience of song is poorly understood. This research utilizes (1) a biologically meaningful technique to alter the harmonic content of zebra finch songs by modifying resonances, placing emphasis on both lower and higher frequencies, and thus altering the spectral composition of songs. These modified songs were then used to (2) test how harmonic content affects preference in females. Playback experiments were performed while recording the heart rate of females to test for preferences. This approach is the first to test the role of upper vocal tract filtering in female perception as well as to test whether or not measuring heart rate changes constitutes a sufficiently sensitives assay for studying female response to song features. Data were obtained for six birds and absolute and relative heart rate changes in response to playback of the 3 different songs were compared as well as the return time to pre-playback heart rate. Although there was a slight tendency for the strongest response to playback of song with the unchanged harmonic emphasis, a two-way analysis of variance showed no significant changes with treatment for any measured variable. To further assess whether or not heart rate response in female zebra finches provides a sensitive assay for song preference, more females need to be tested to increase statistical power.