

## Novel algorithm reveals birdsong features that may be key for courtship

April 8 2021



Credit: CC0 Public Domain

Researchers have developed a new algorithm capable of identifying features of male zebra finch songs that may underlie the distinction between a short phrase sung during courtship, and the same phrase sung in a non-courtship context. Sarah Woolley of McGill University in Montreal, Canada, and colleagues present these findings in the open-access journal *PLOS Computational Biology*.



Like many animals, male <u>zebra</u> finches adjust their <u>vocal signals</u> for their audience. They may sing the same sequence of syllables during <u>courtship</u> interactions with females as when singing alone, but with subtle modifications. However, humans cannot detect these differences, and it was not clear that female zebra finches could, either.

For the new study, Woolley and colleagues first conducted behavioral experiments demonstrating that female zebra finches are indeed highly adept at discriminating between short segments of males' songs recorded in courtship versus non-courtship settings.

Next, they sought to expand on earlier studies that have focused on just a few specific song features that may underlie the distinction between courtship and non-courtship song. Taking a "bottom-up" approach, the researchers extracted over 5,000 song features from recordings and trained an algorithm to use those features to distinguish between courtship and non-courtship song phrases.

The trained algorithm uncovered features that may be key for <u>song</u> perception, some of which had not been identified previously. It also made predictions about the distinction capabilities of female zebra finches that aligned well with the results of the behavioral experiments.

These findings highlight the potential for bottom-up approaches to reveal acoustic features important for communication and social discrimination.

"As vocal communicators ourselves, we have a tendency to focus on aspects of communication signals that are salient to us," Woolley says. "Using our bottom-up approach, we identified features that might never have been on our radar."

Next, the researchers plan to test whether manipulating the acoustic



features they discovered alters what female finches think about those songs. They also hope to evaluate how well their findings might generalize to courtship and non-courtship songs in other species.

**More information:** Avishek Paul et al, Behavioral discrimination and time-series phenotyping of birdsong performance, *PLOS Computational Biology* (2021). DOI: 10.1371/journal.pcbi.1008820

Provided by Public Library of Science

Citation: Novel algorithm reveals birdsong features that may be key for courtship (2021, April 8) retrieved 24 May 2024 from <u>https://phys.org/news/2021-04-algorithm-reveals-birdsong-features-key.html</u>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.