Sexual Preference in Estrus Induced Female Singing Mice Based on Male Song Effort

Raney Sachs, Tracy Burkhard & Steve Phelps, PhD
Department of Psychology, University of Texas at Austin

Introduction

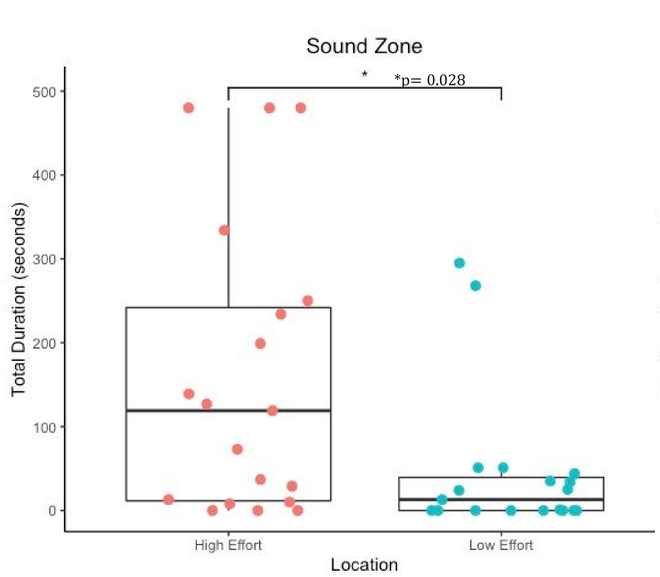
- Males across species often use sexual signals in mate attraction, and females tend to select mates with more elaborate traits (Hamilton & Zuk, 1982).
- Male singing mice use their unusual, elaborate songs as a sexual signal.
- Songs produced by singing mice predict their condition; larger, higher energy, fitter mice produce higher effort songs (Burkhard, Westwick & Phelps, 2018).
- Preliminary evidence suggests females may prefer some songs to others.

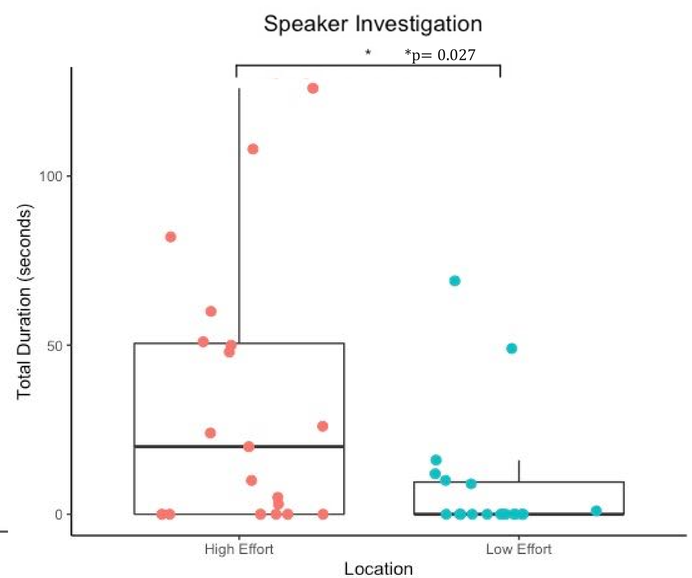
Hypothesis:

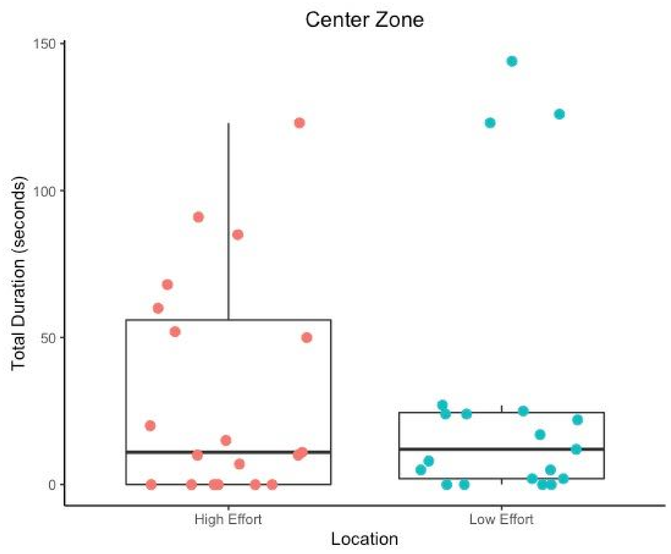
Females prefer high effort males songs because song complexity predicts male quality.

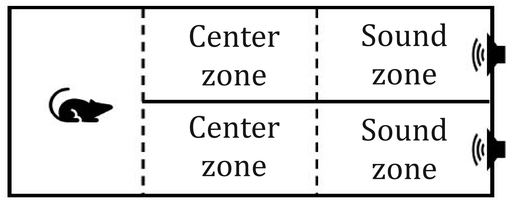
Methods

- Induce estrus, female state of sexual interest, in 20 females using an estradiol benzoate or estradiol benzoate + progesterone injection schedule
- Test females' preference for high or low effort songs within a two-choice apparatus
- Songs broadcasted antiphonally three times each, female response recorded
- Preference is measured by duration within zones and duration of speaker investigation.









Summary of Results

- Females spent significantly more time investigating the high effort sound zone versus the low effort sound zone (p = 0.028).
- Females spent significantly more time investinating the high effort speaker versus the low effort speaker (p = 0.027).
- Duration of stay in the center zone did not differ significantly between song efforts (p = 0.09).

Conclusions

Song effort is determined by factors such as song length, frequency, and frequency modulation. Male song effort is positively correlated with condition.

These results suggest that female singing mice can differentiate between song complexities, and prefer high effort songs. They also suggest that by preferring high effort songs and selecting high effort singers as mates, females could be choosing higher quality mates with superior genes.

References:
Burkhard, Westwick and Phelps. (2018). Adiposity signals predict vocal effort in Alston's singing mice. Proceedings of the Royal Society B 285.

Hamilton, W., & Zuk, M. (1982). Heritable true fitness and bright birds: a role for parasites? Science, 218(4570), 384–387. doi: 10.1126/science.7123238

Acknowledgements:
A huge thank you to Tracy Burkhard, Dr. Phelps, and Dr. Jones for all their patience and help!