

Effects of Male Color Patterns on Female Mate Preference in Guppies

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Introduction

Sexual selection plays a large role in the development and exhibition of different colors/patterns in male guppies^[1]

Bright colors and patterns are exclusive to males and show variable heritability, while females are typically larger and less brightly colored. A variety of factors affect female mate choice including persistence in courtship, flashiness, and color(s)/pattern. ^[2] This experiment focuses only on color pattern, examples of which are shown below.

Purpose: To determine whether female *Poecilia reticulata* show a preference for any of three phenotypic variations in male color pattern

No Black on Body Black Body Spotted Body

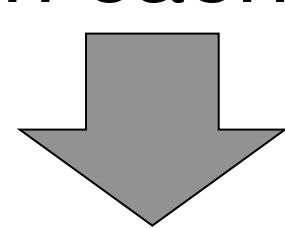


Methods

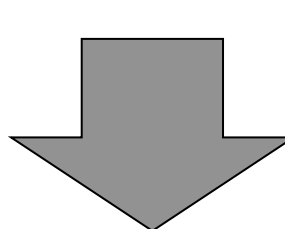
Female mate choice was analyzed by placing two males with differing color patterns in opposite sides of a three section fish tank and a female in the center.

Male pairings: Black/No Black, No Black/Spots, Spots/Black

One male placed in each of the side sections



Female placed in center section



90 Second Observation

Five pairs of each male combination were used. For each pair of males, 5 females and their mate choices were observed.

Results

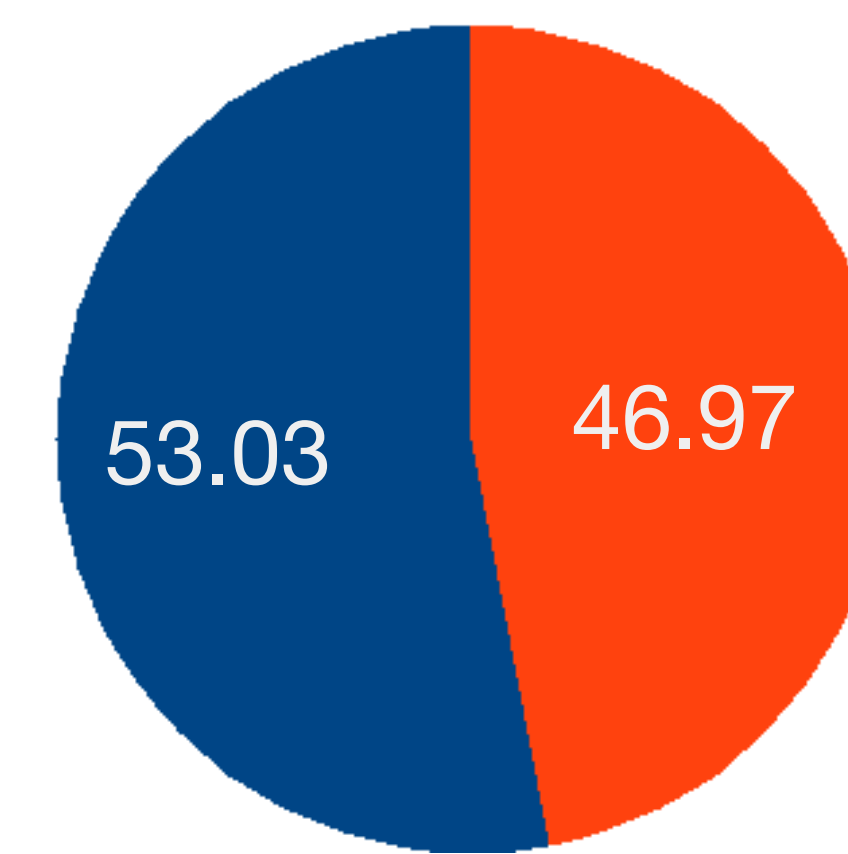


Fig 1. Percentage of time female guppies spent with spotted (blue) and no black (orange) males. Results not statistically significant ($t=0.6777, p=0.5012$).

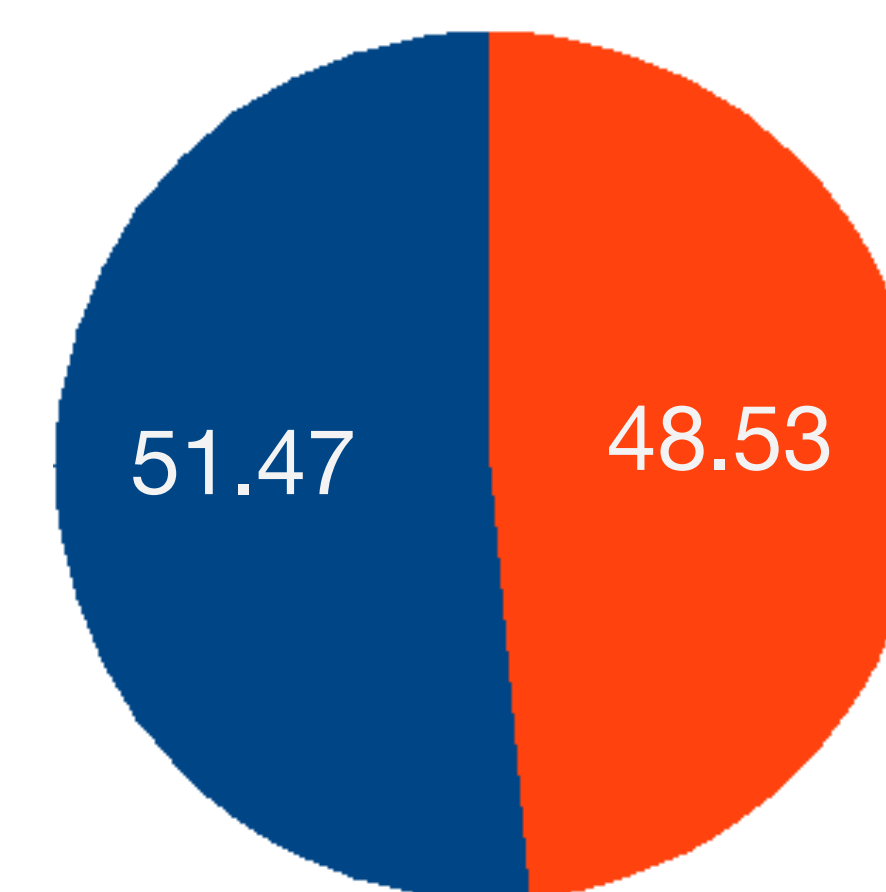


Fig 2. Percentage of time female guppies spent with black (blue) and no black (orange) males. Results not statistically significant ($t=0.4341, p=0.6660$).

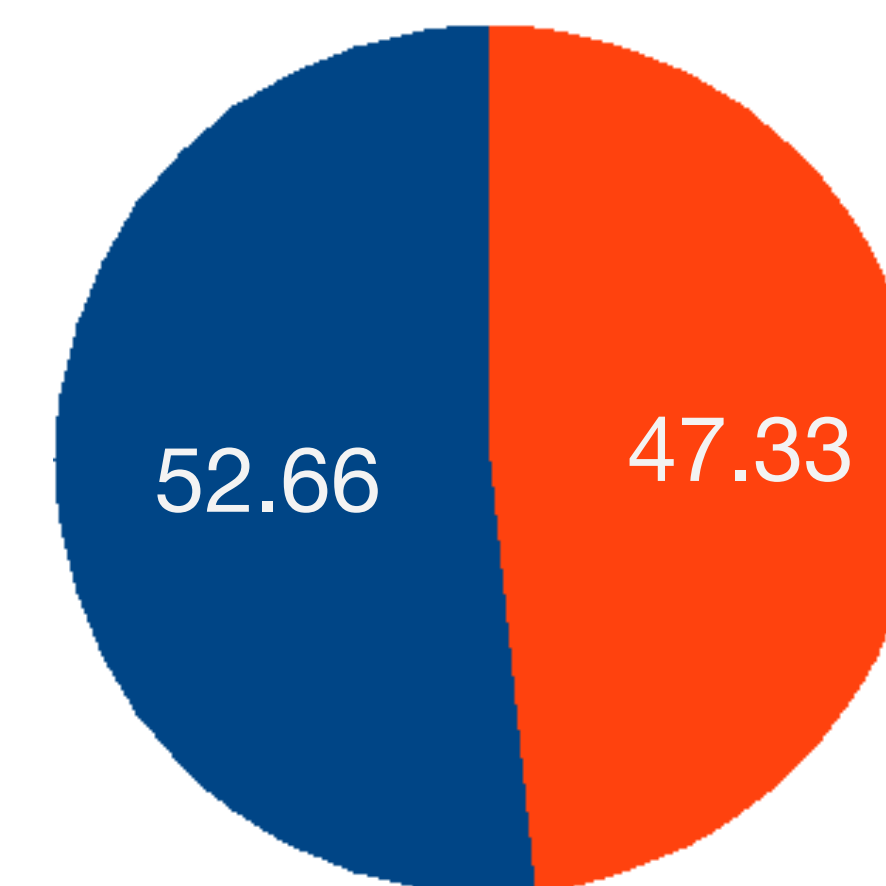


Fig 3. Percentage of time female guppies spent with black (blue) and no spotted (orange) males. Results not statistically significant ($t=0.4506, p=0.6543$).

Results were analyzed using an unpaired t-test.

Discussion

Results Summary:

- Females did not demonstrate a strong preference for any male color pattern in any of the combinations below:
- Black Body vs. No Black
- Spotted vs. No Black
- Black Body vs. Spotted

Future Research

- Continued research is necessary to determine if female guppies show a significant preference for male color patterns.



A female guppy

Acknowledgements

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References

- [1] Kodric-Brown, A. (n.d.). Female preference and sexual selection for male coloration in the guppy (*Poecilia reticulata*). *Behavioral Ecology and Sociobiology* 199-205.
- [2] Houde, A. (1997). Sex, color, and mate choice in guppies. Princeton, N.J.: Princeton University Press.