

Fancy Fish: Mate Choice In Two Breeds Of Guppies

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Mechanisms behind mate choice have been brought under scrutiny in nearly all fields of animal behavior study. Guppies provide a good model for exploring this aspect of biology due to their easily measurable displays during courtship.



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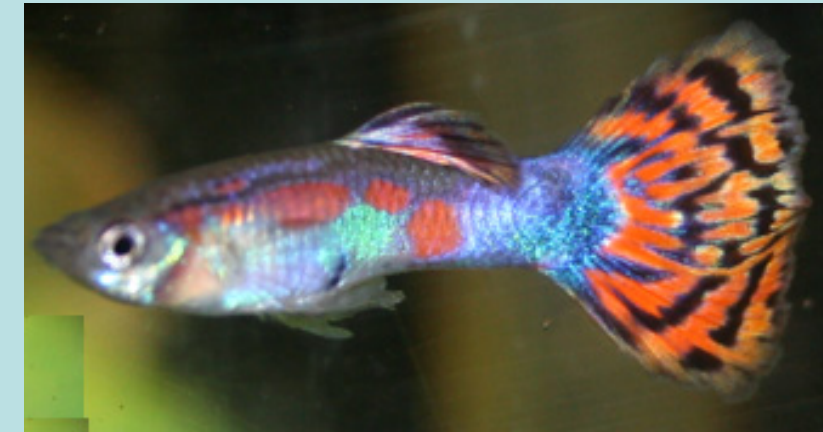


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Poecilia Reticulata

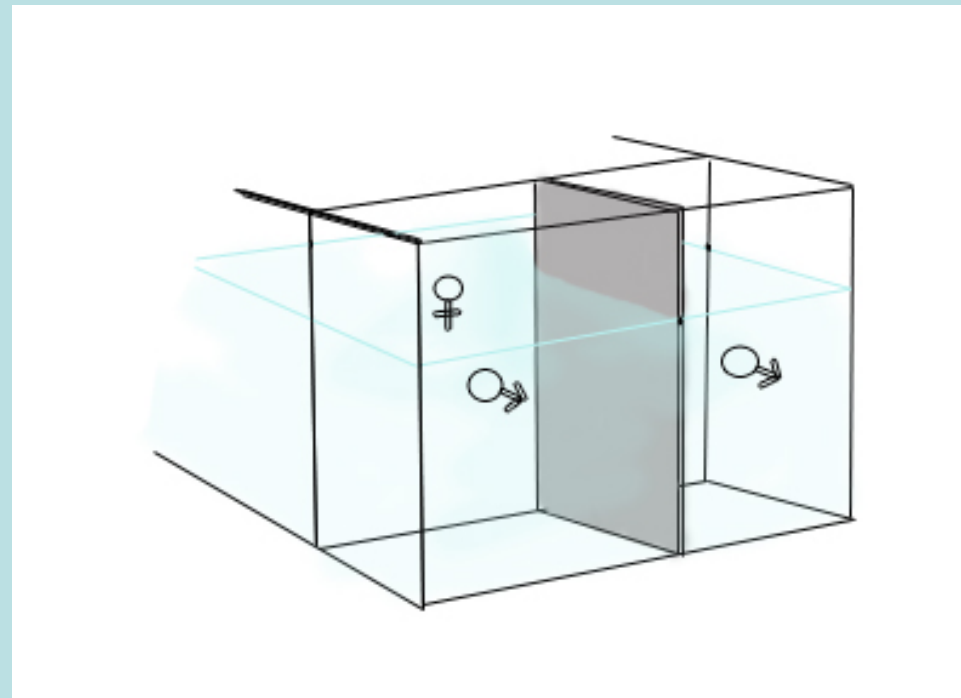
- Females must be choosy as their reproductive costs are higher⁽¹⁾
- Females favor males with more impressive displays⁽²⁾.
- Factors that contribute to male attractiveness can include symmetry, color intensity, and pattern distribution⁽²⁾⁽³⁾

Will a preference for flashiness overcome a preference for a mate of the same breed?

Experimental Design

Female preference is typically measured by the amount of time she spends interacting with each male

Hypothesis: Females of both types will prefer a mate of their own breed

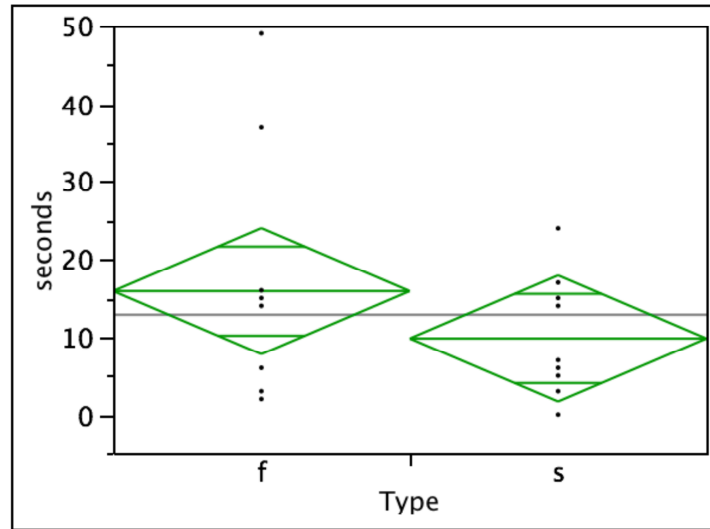


Females were presented with a male of each type for which to demonstrate a preference over the course of a 10 minute trial. Males were separated from the female by a clear plexiglass barrier, and from each other by an opaque barrier. Stock supplies of both genders were separated in holding tanks for the duration of the experiment. Five minutes of female inactivity prompted a dismissal of the trial. In total, 7 trials were eliminated, leaving 15 viable trials.

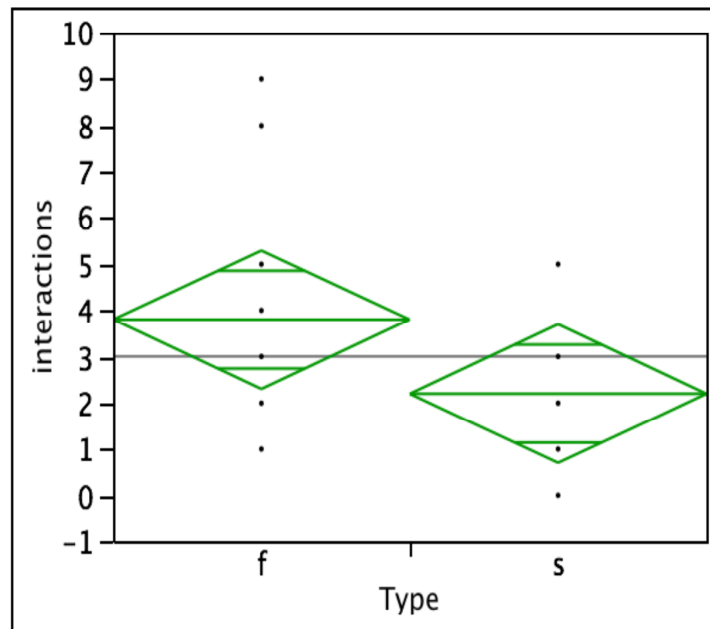
Figure 1: The experimental setup consisted of a testing tank separated into chambers for males of each type and a larger chamber from which the female could view either male. Subjects were acclimated to the experimental tank for two minutes prior to recorded observation.

Results

Fancy Females



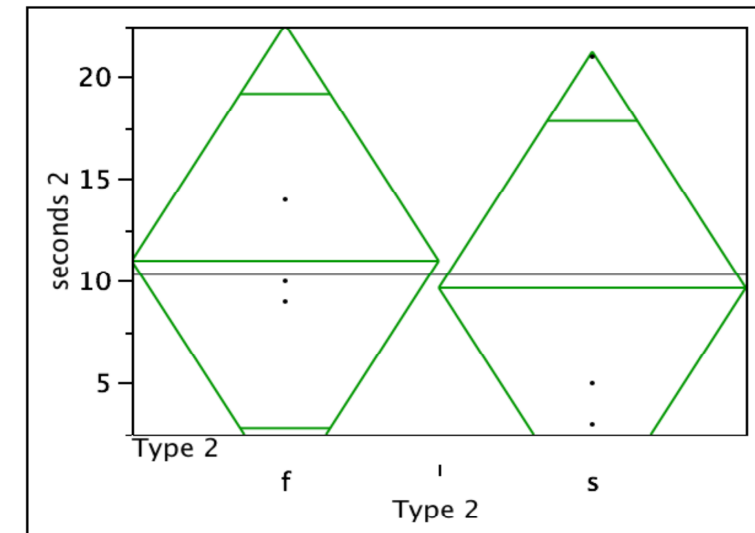
Seconds



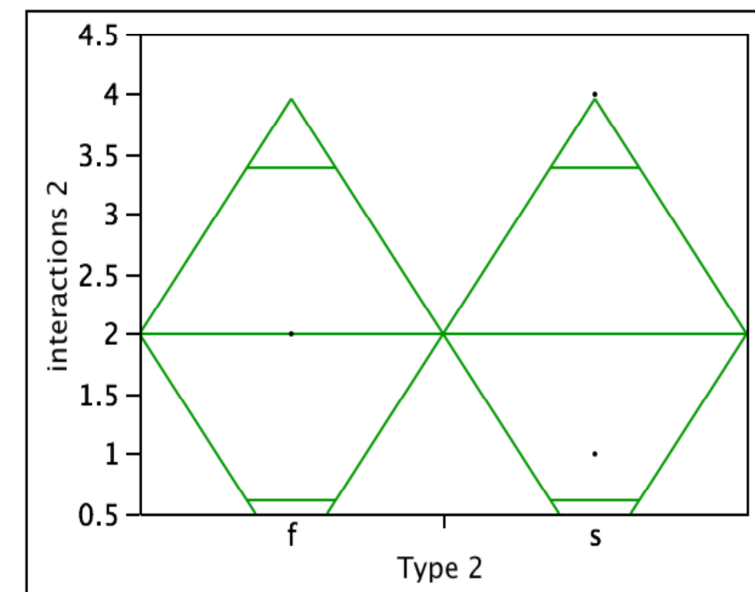
Interactions

Based on an ANOVA, neither average time spent viewing a male ($p=0.2792$ for fancy females and $p=0.8322$ for std. females), nor the number of interactions with a male ($p=0.1294$ for fancy females and $p=1.0000$ for std. females) were conclusive in determining a preference.

Standard Females



Seconds



Interactions

We Conclude that:

Females did not definitively prefer either type of male.

Based on our data, our hypothesis was incorrect. Though it is noteworthy that females did not prefer their own breed, we cannot safely say that they preferred the other.

Future Directions:

While our results were not conclusive either way, it is important to note that females were not as responsive to males as we had assumed they would be. There were only 4 standard female trials that were not omitted due to inactivity. This, and the fact that we were unable to draw any concrete conclusions, may suggest that our preconceptions of the mechanisms behind mate choice-- particularly, how females demonstrate their preferences--are not as reliable as we may have hoped. Further experimentation into mating choice paradigms may be required to truly explore this phenomenon.

References:

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- (2) Lens, L., Van Dongen, S., Kark, S., and Matthysen, E. (2002) Fluctuating asymmetry as an indicator of fitness: can we bridge the gap between studies? *Biol Rev.* **77**:27-38.
- (3) Gross, M.R., Suk, Y.Y., Robertson, C.T. 2007 Courtship and genetic quality: asymmetric males show their best side. *Proc. R. Soc. B*

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