

This Means War: Female Choice in Guppies

Nathan Payne, Zac Talbot, Garrett Rydalch, Dr. Kim Sullivan

Introduction

In many organisms, including guppies, females choose with whom they mate. This is called female selection. For our experiment male and female guppies have been isolated from each other and then we tested to see if females preferred similar looking males in a bright environment more than a male in a neutral colored environment. We hypothesized that the female would prefer the male in the brighter colored environment over the males in the neutral colored environment. We predicted that the female would touch the glass on the brighter side more frequently.



Female Guppy



Male Guppies

Results

For this experiment, we conducted a total of 30 trials. Each trial consisted of the initial female preference as well as the side switch. Upon first glance, it appears as if the female guppies prefer the males in the bright environment. However, statistical analysis (paired sample T test) shows the results are not statistically significant ($T=1.19$, $p=.24$). Analysis of the side swap also shows no statistical significance ($T=.132$, $p=.90$).

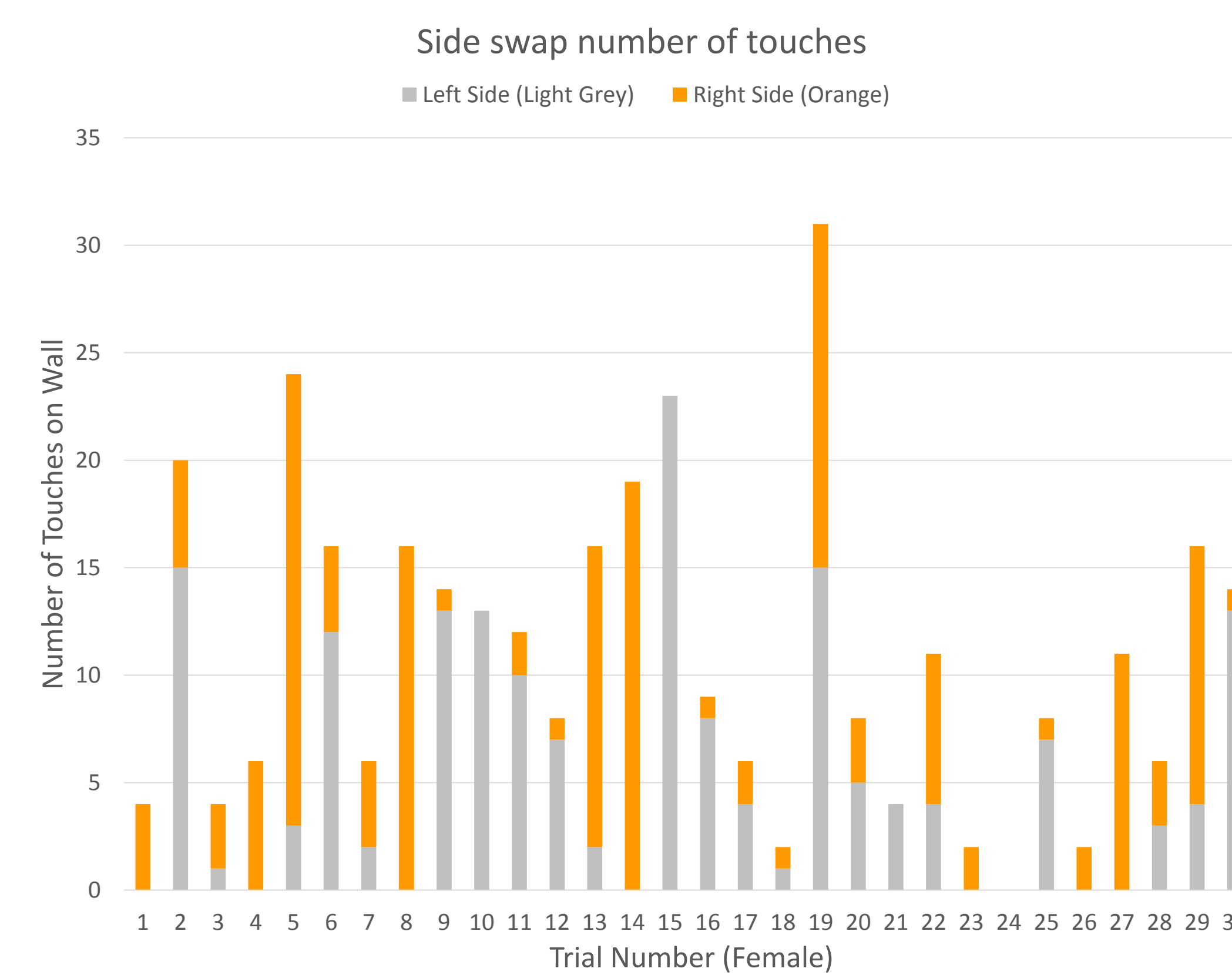
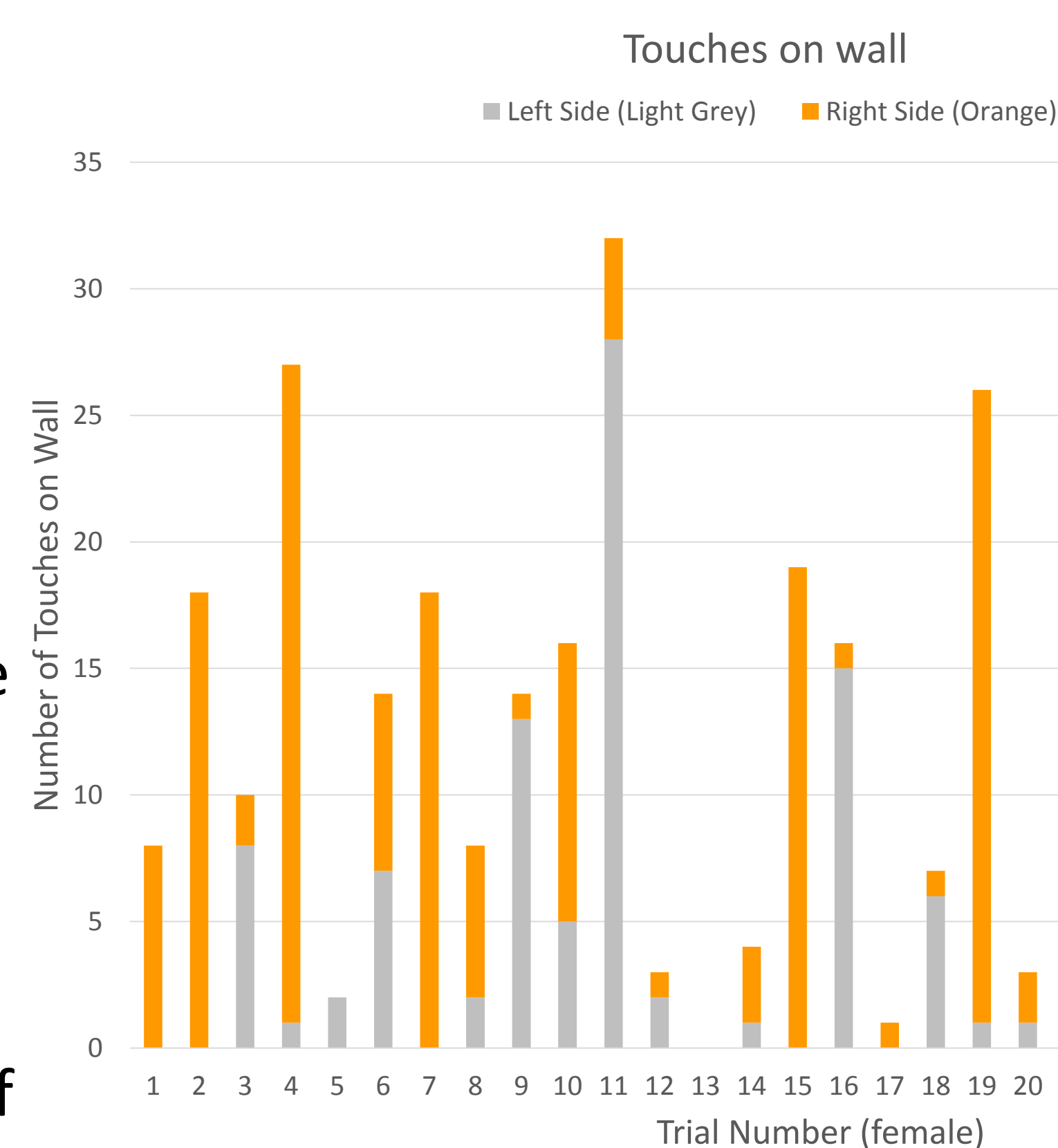
We fail to reject our null hypothesis that there is no difference in the number of glass touches between the two sides.

Methods

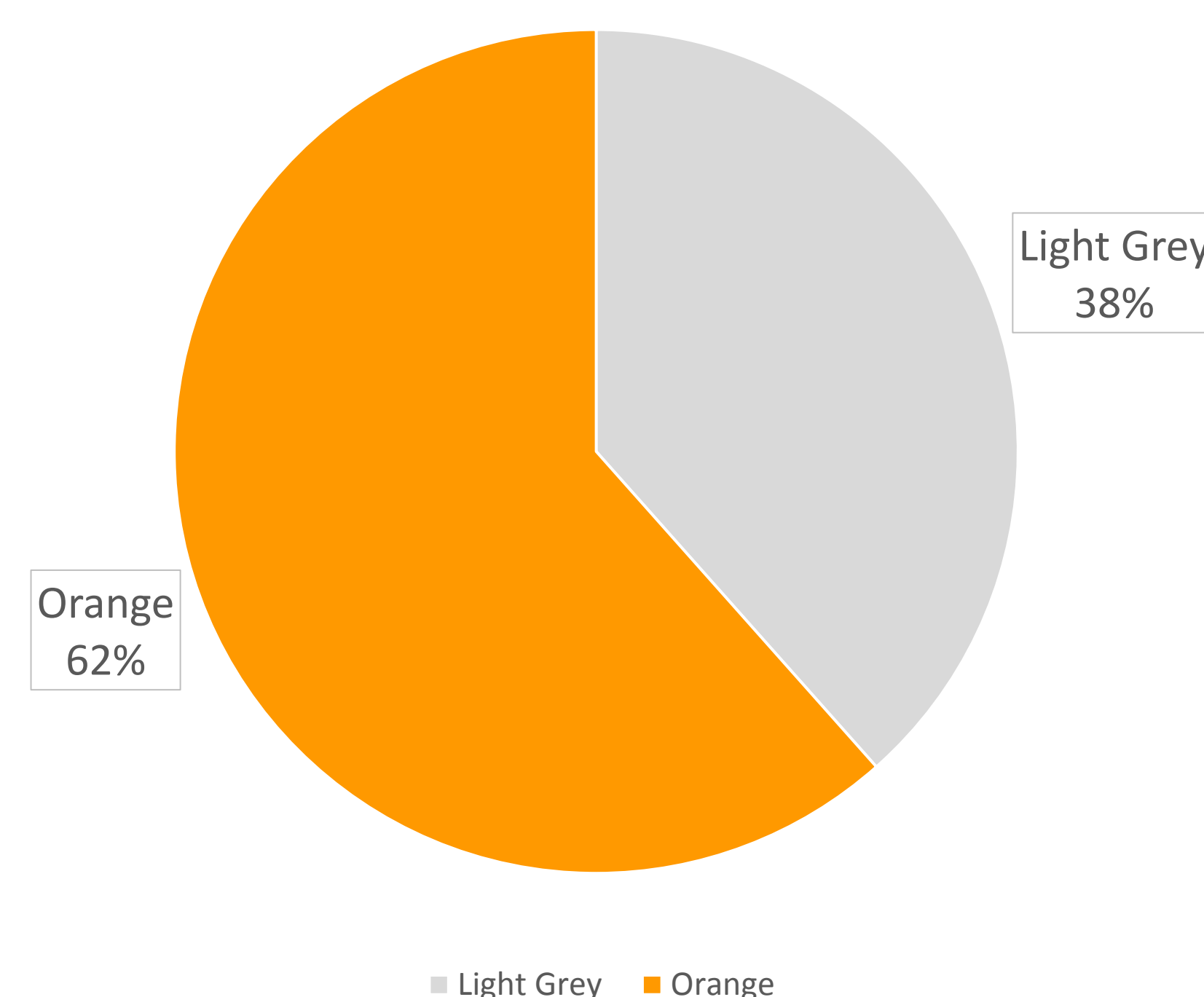
Using a focal animal analysis method we separated gravel as well as orange cardstock creating a bright colored environment on that side. The other side of the tank contained light grey gravel and cardstock, creating a neutral color environment. Once we placed the guppies into the water, a 2 gallon fish tank into 3 sections using glass plates. We placed 1 female guppy in the middle section and 2 similar looking males in the outer sections. One side of the tank contained bright orange we waited 5 seconds for them to adjust, and then began the experiment. We



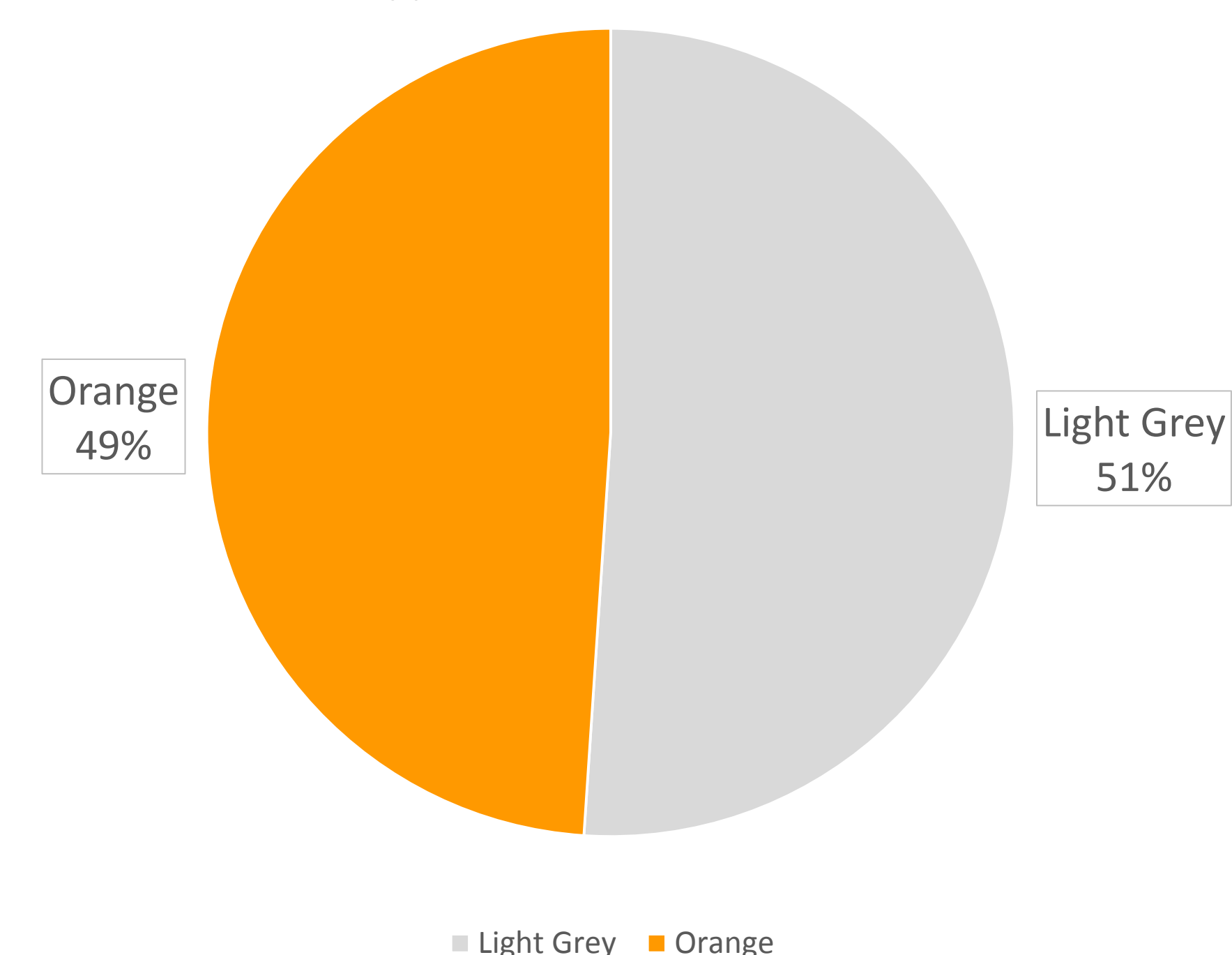
counted the number of times the female would touch the glass with her head on each side of the tank in a two minute time period. We then would switch the sides of the males to eliminate side bias and performed the experiment again. After having switched sides, we would swap out the females and would swap out the males after every 3 trials.



Mean Number of Touches



Side swapped Mean Number of Touches



Conclusion

Our results provided no conclusive evidence that females prefer males in brighter environments over males in neutral environments. This is manifested in both the statistical analysis of both the initial setting and the side-swap setting. In future research, a larger number of trials could be utilized and different color schemes could be tested for further understanding of female choice in various environments.

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