

# Assessing the Effects of Intrinsic Factors on Behavioral Traits in a Wild Population of Song Sparrows (*Melospiza melodia*)

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### Introduction

- Obtaining food resources is important to fitness<sup>1,2</sup>
- Behavioral traits play a role in the ability to obtain resources<sup>3,4,5</sup>
- Three behavioral traits that may be important are neophobia, boldness, and aggression<sup>3,4,5</sup>
- These traits may be impacted by intrinsic factors such as age, sex, and inbreeding<sup>6,7,8</sup>



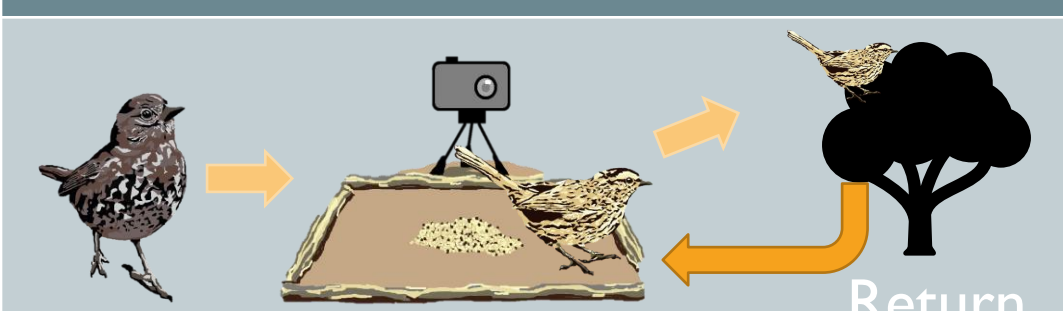

### Objective

Assess whether intrinsic factors, including age, sex, and inbreeding explain variation in neophobia, boldness, and aggression at a novel food resource

### Methods

**Study Site and Species**  
**Mandarte Island**  
 • British Columbia, Canada  
 • ~6ha  
**Song Sparrow**  
 • Individually-marked population has been extensively studied since 1975

**Experimental Design**  
 • Feeding arenas set up in the winter of 2013  
 • Experiment ran for 4 days  
**Analysis:**  
 • Generalized linear models

Behavior	Measured by	N
Neophobia	1st time 	27
Boldness (Predator - Human)	 Return	8
Boldness (Competitor - Fox Sparrow)	 Return	10
Aggression	Winner  Loser	15

# Age and sex influence behavioral traits, while inbreeding does not

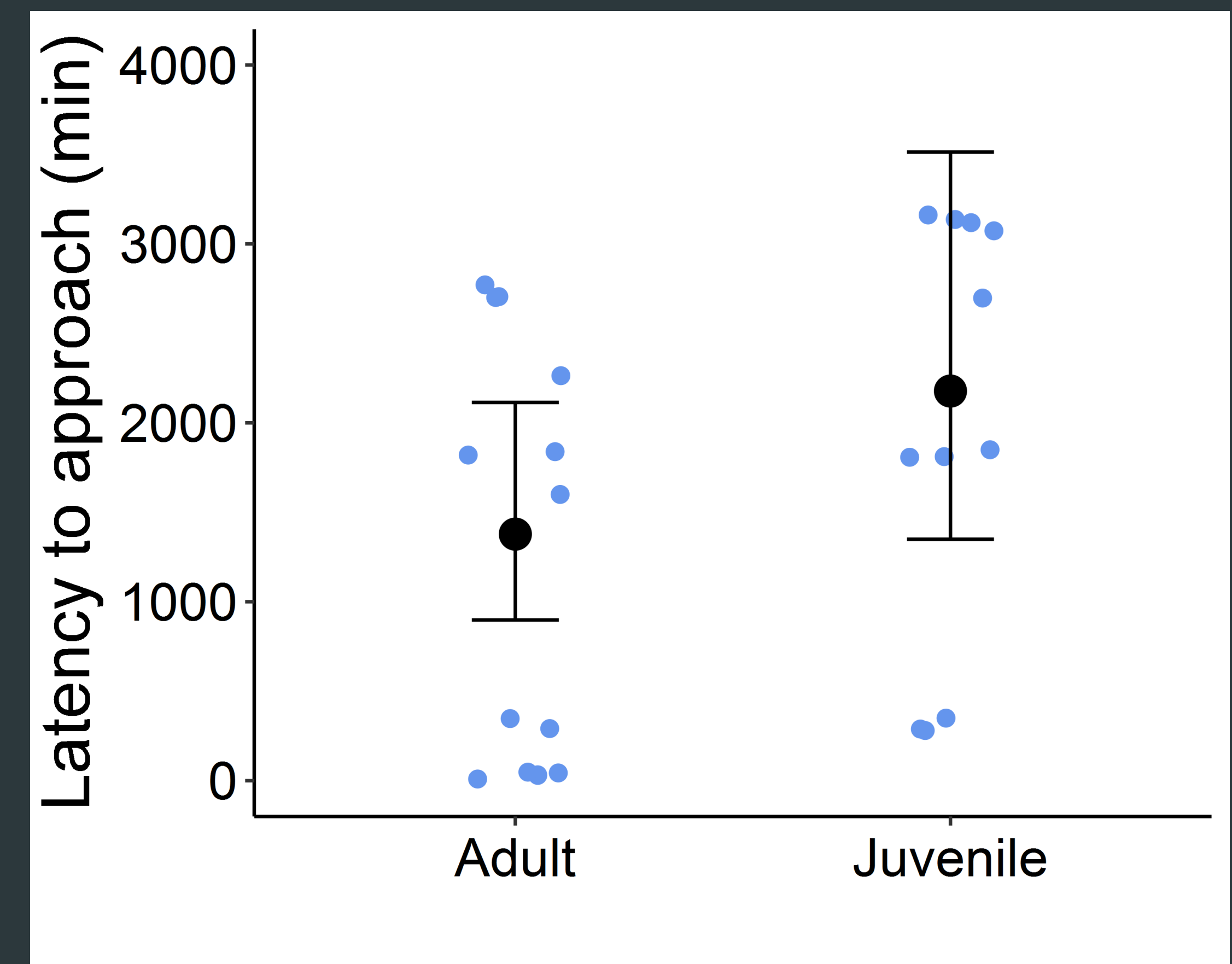


Fig 1. Adults are less neophobic; they approach the food sooner than juveniles (p-value=0.18)

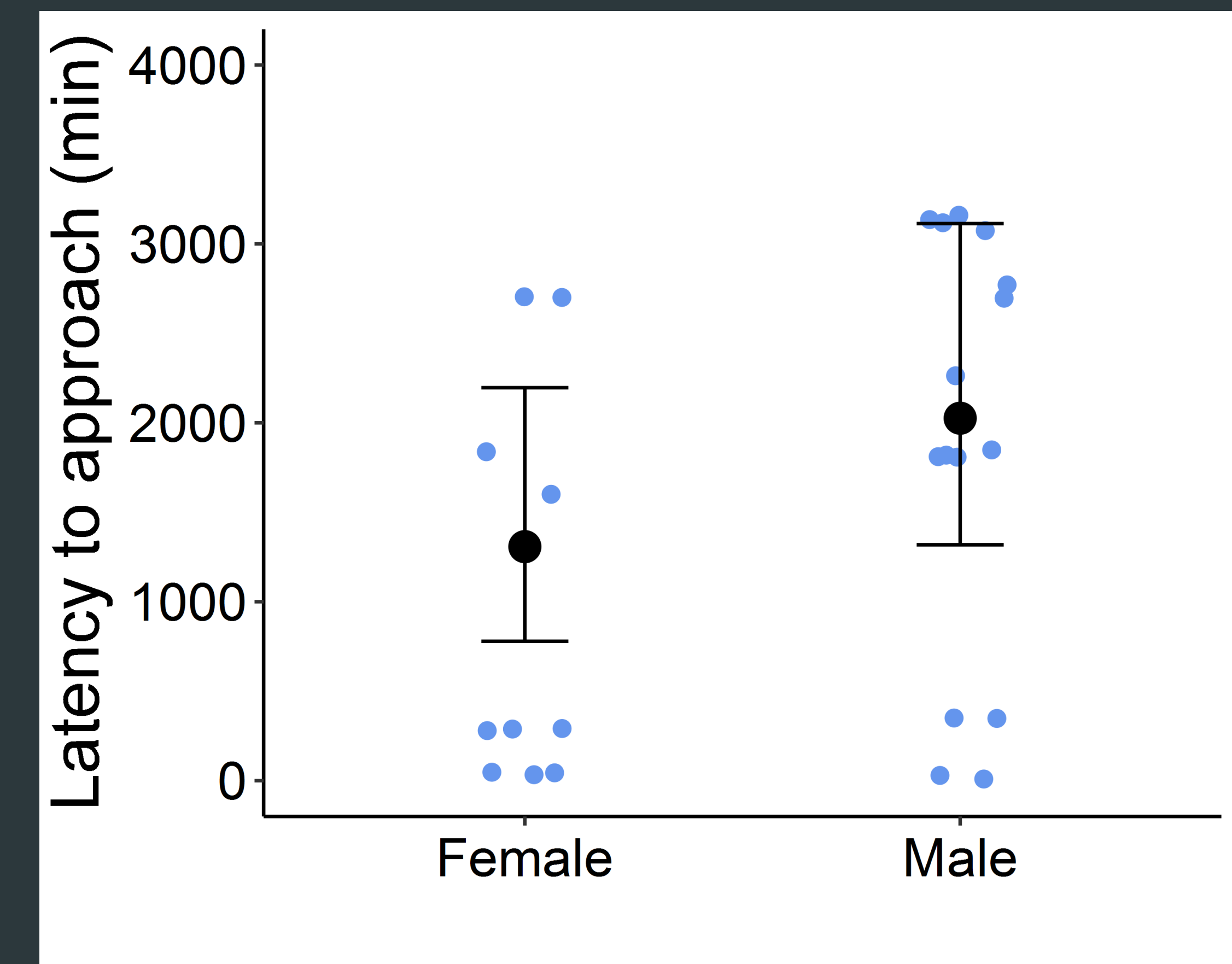


Fig 2. Females are less neophobic; they approach the food sooner than males (p-value=0.22)

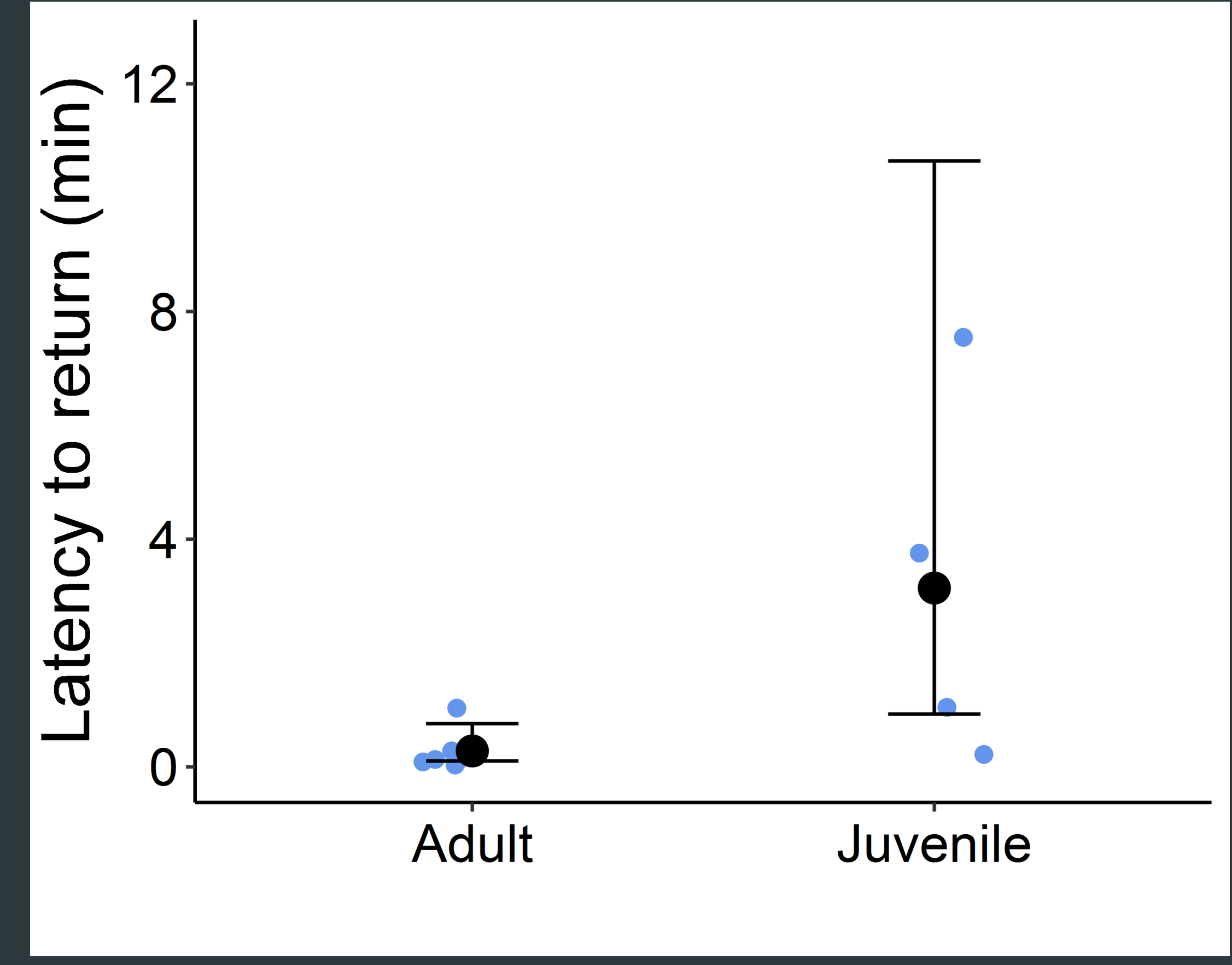


Fig 3. Adults are bolder; they return to the food sooner after being displaced by a competitor than juveniles (p-value=0.02)

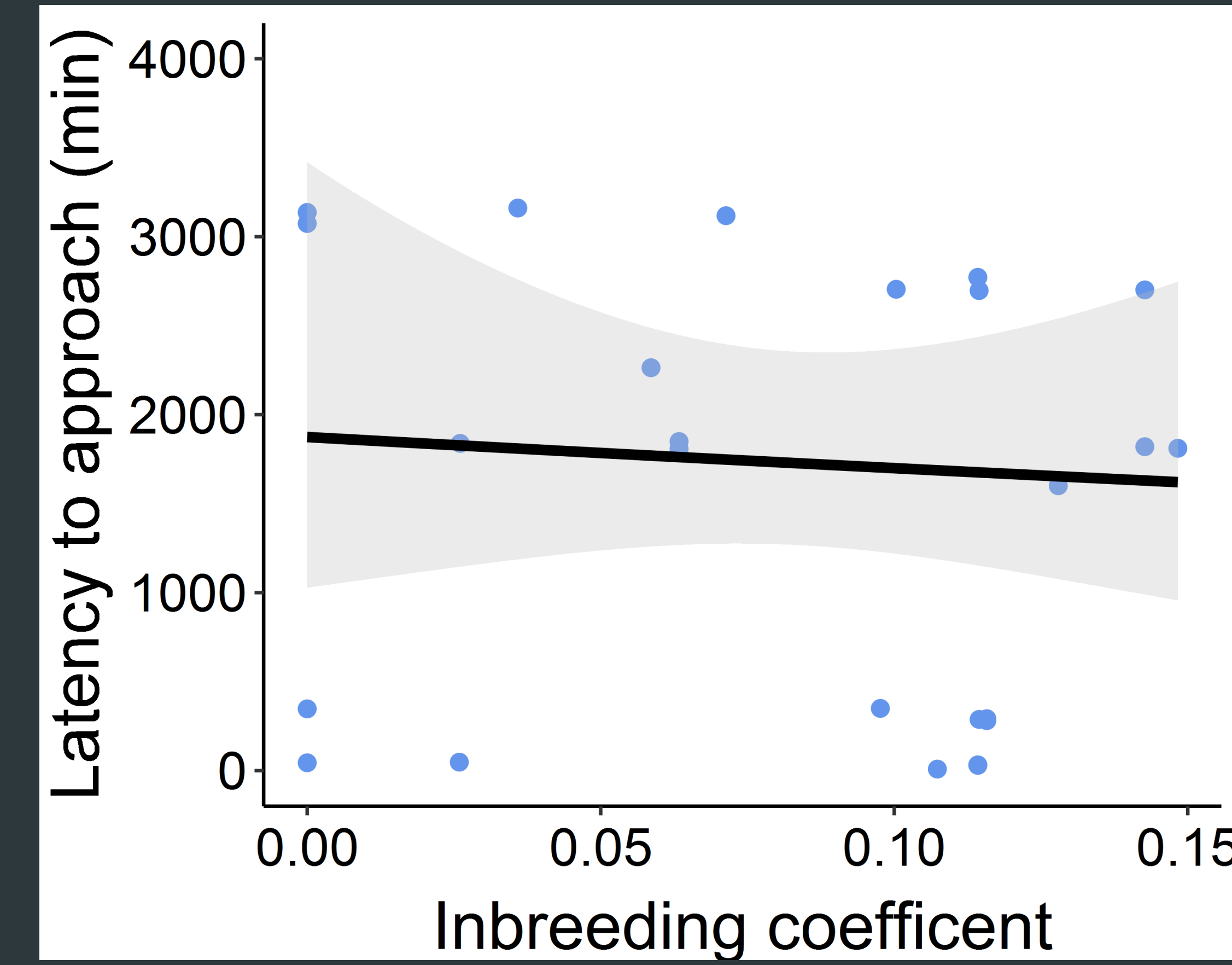


Fig 4. Inbreeding does not explain variation in neophobia (p-value=0.77)

### Results

- Neophobia: Age (Fig. 1) and sex (Fig. 2) marginally influence how quickly individuals first approach a novel food resource.
- Boldness (predator): Age, sex, and inbreeding do not influence response.
- Boldness (competitor): Age influenced how quickly individuals returned to food resource after being displaced by a fox sparrow.
- Aggression: Age, sex, and inbreeding do not influence response.

### Discussion

- Adults were bolder and less neophobic; this suggests that adults may be able to find and obtain more food resources than juveniles, potentially owing to their increased experience.
- Previous work on Mandarte found that fox sparrows reduce juvenile survival, whereas they do not impact adult survival. Our work suggests one mechanism may be a reduced ability of juveniles to obtain food resources in the presence of fox sparrows, compared to adult song sparrows.
- Inbreeding in song sparrows has been linked to decreased survival during extreme winters. Given we did not find inbreeding influenced winter foraging behaviors, the decline in survival may be due to other factors, such as microsite habitat selection.
- Despite small sample sizes, our results suggest that adults and females may be more capable of taking advantage of resources, but more work needs to be done on how variation in this small population compares to larger populations



### References

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