

Preference for Foster vs. Native Species Females in Cross-reared Bengalese Finch Males

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Introduction

Bengalese finches (BF; *Lonchura striata domestica*) are domesticated Estrildid songbirds. Male BFs learn their song from adult male tutors during a critical period in development, and these songs are used in adulthood to attract potential mates¹. Sexual imprinting is thought to play an important role in not only the identification of and attention to conspecific males for song learning, but also conspecific females for appropriate mating². The present study tests if rearing BFs by heterospecific long-tailed finches (*Poephila acuticauda*; LF) effects their mate choice in adulthood. We predicted that cross-fostered BFs (BFLF) will preferentially approach females of the foster species (LFs), whereas normal-reared BFs (BFBF) will approach female BFs when presented the option between the two species.

Method

Seven male BFBFs and seven male BFLFs were individually placed in a Miller testing cage for a side preference task (Fig. 1). After acclimation (1 h), one female BF and one female LF were pseudo-randomly placed in stimulus cages on either side of the testing cage. The male subject's approach to either side was recorded by infrared sensors placed on the perches in either side of the testing cage. Preference was measured as the proportion of preference time (e.g., not on the center perch) spent near each female. Testing lasted for 30 min, after which the females were switched between their stimulus cages. Male preference in this flipped contingency was also recorded for 30 min. Preference data from both sessions were used in our analyses.

Results

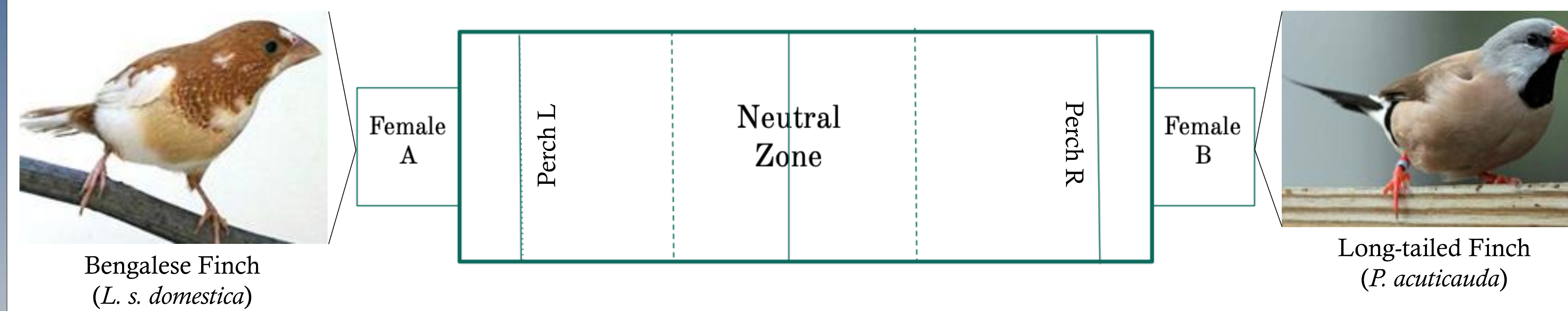


Fig. 1: Diagram of Miller cage used in side preference test (Center). Male BF was able to move freely between the three zones (Left, Neutral, Right). Side perches (L and R) were each equipped with infrared sensors to record male presence. Female stimulus birds were each placed in one of the attached stimulus cages (A or B). BF (Left) and LF (Right) pictured here for visual representation.

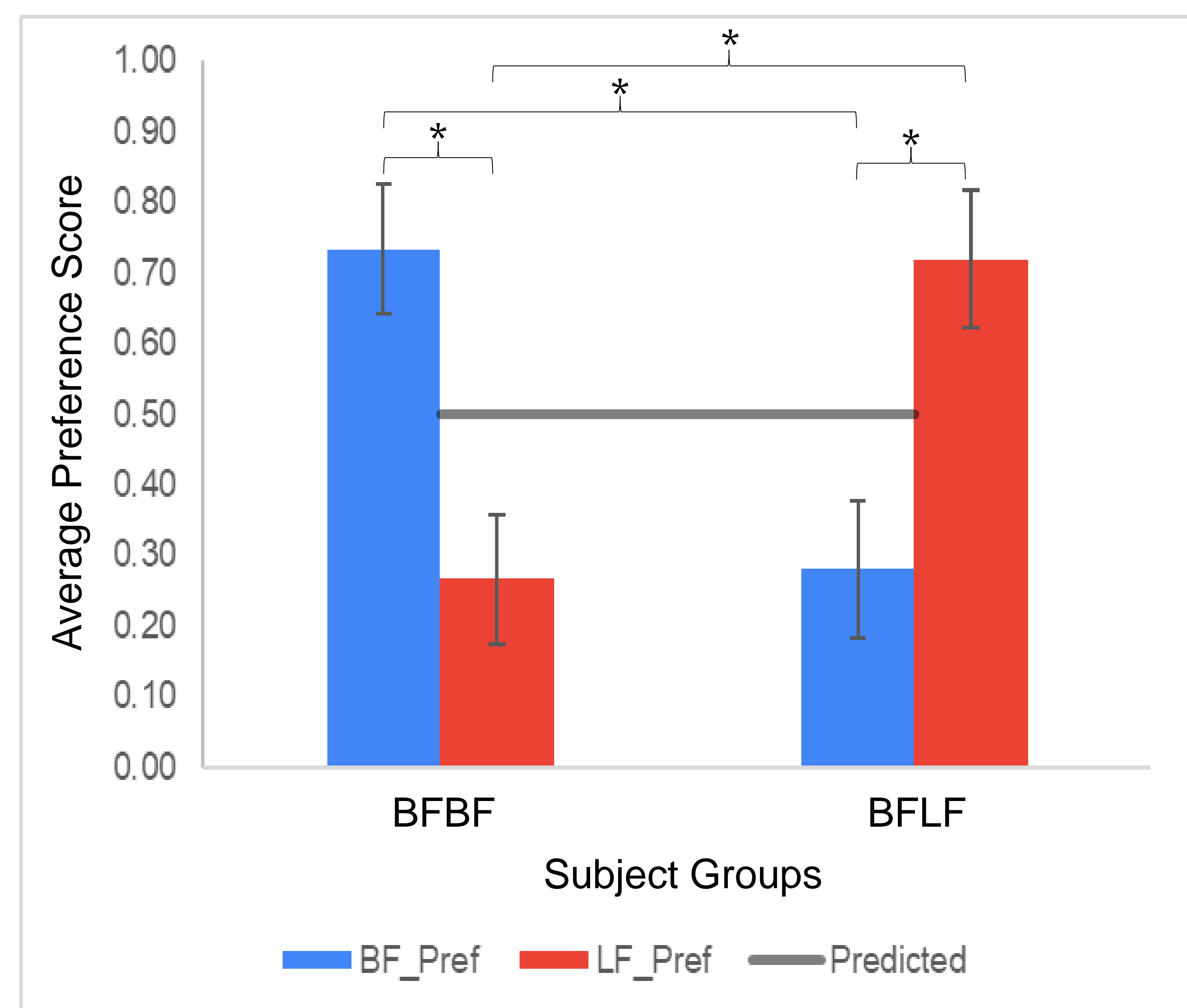


Fig. 2: Mean (± 1 SEM) preference scores for BF (blue) and LF (red) females by BFBF and BFLF males. A 2×2 Mixed ANOVA with Subject Group (BFBF vs. BFLF) as the between-groups factor and Female Preference (BF vs. LF) as the within-subjects factor was conducted. Results from the ANOVA suggest a significant interaction between Subject Group and Female Preference, $F(1, 12) = 11.596$, $p = .005$, $\eta_p^2 = .491$. Specifically, BFBF males preferred BF ($M = 0.734$, $SD = 0.241$) over LF ($M = 0.266$, $SD = 0.241$) females. Conversely, BFLF males preferred LF ($M = 0.719$, $SD = 0.257$) over BF ($M = 0.2806$, $SD = 0.257$) females. Finally, there is greater preference for BF females by BFBFs than BFLFs, and a greater preference for LF females by BFLFs than BFBFs. Two-tailed z-tests for means were conducted to determine whether preference scores differed significantly from chance responding ($\mu = 0.500$; grey line). On average, BFBFs preferred BF females above chance ($z = 2.572$, $p = .010$), and LF females below chance ($z = -2.572$, $p = .010$). Conversely, BFLFs on average preferred LF females above chance ($z = 2.258$, $p = .024$), and BF females below chance ($z = -2.258$, $p = .024$). Asterisks denote statistically significant comparisons.

Conclusions

Our data suggest that adult mate choice is influenced by rearing condition as opposed to innate preference. Bengalese finch males cross-fostered by long-tailed finches spent significantly more time near females of the foster species (i.e., LF) than females of the native species (i.e., BF). Importantly, BFLF preference scores were significantly above (for LF) or below (for BF) chance, suggesting a real effect of rearing condition on mate preference score. Improper sexual imprinting and mate choice is disadvantageous to species survival. Hybridization may also be deleterious to progeny and the survival of the parents' genetic lines². Future studies should test a more comprehensive suite of courtship behaviors (e.g., directed singing, copulation attempts) to support the assumption of mate choice over simple social association in our results of preferential approach.

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