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Susan Greene
University of Montana, Missoula, susan.greene@umontana.edu

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The effect of female priming on male Betta splendens

S. Greene & A.D. Szalda-Petree
Department of Psychology
University of Montana

Results
2(Drug) x 2(Female) ANOVA conducted on Mirror Latency
• Female prime main effect - (F(1,56)= 1.039, p=0.312, ω²= 0.000)
• Drug main effect - (F(1,56)= 9.938, p< 0.001, ω²= 0.239)**
• Drug X Female interaction - (F(1,56)=1.186, p=0.281, ω²= 0.002)

2(Drug) x 2 (Female) ANOVA conducted on Non-Mirror Latency
• Female prime main effect - (F(1,56)= 2.946, p=0.092, ω²= 0.030)*
• Drug main effect - (F(1,56)= 2.810, p= 0.099, ω²= 0.028)
• Drug X Female interaction - (F(1,56)= 1.163, p=0.285, ω²= 0.003)

2(Drug) x 2 (Female) ANOVA conducted on Fight Behavior
• Female prime main effect - (F(1,56)= 6.397, p=0.014, ω²=0.072)**
• Drug main effect - (F(1,56)= 7.793, p= 0.007, ω²= 0.091)**
• Drug X Female interaction - (F(1,56)= 3.303, p=0.075, ω²= 0.031)*

*p < .10, **p < .05, *** p < .01

Introduction

Natural Behavior
• Males are aggressive to gain a territory, build a bubble nest, attract a mate, and raise the fry (Dzieweczynski et al., 2005).

Audience Effects
• The presence of a male or female as an audience to an aggressive encounter between males can manipulate the behavior (Dzieweczynski et al., 2005).

Priming
• The priming effect on male Betta splendens fades after 5 minutes, and leads to a lower latency to engaging in risk behavior such as biting (Bronstein, 1989; Matos et al., 2003).

Fluoxetine Effect
• When exposed to Fluoxetine, a common antidepressant, male directed aggressive behavior is dampened, and motor movement is affected (Dzieweczynski and Hebert, 2012; Eisenreich and Szalda-Petree, 2015).

Hypotheses

1. Subjects in the female primed group will have lower latencies to enter the goal box with the mirror compared to the non-primed group.
2. Subjects in the Fluoxetine group will exhibit less aggressive behavior (gill flaring, lateral displays, tail beating, and biting) toward the mirror compared to the non-Fluoxetine group.
3. Subjects in the Fluoxetine group will exhibit less aggressive behavior (gill flaring, lateral displays, tail beating, and biting) toward the mirror compared to the non-Fluoxetine group.

Methods

Participants & Materials
• 60 male Betta splendens and 9 female Betta splendens served as subjects.
• Each fish received their own tank with brown gravel, a heater, a bubbler, and males received a T-maze.
• A stock solution of 0.5 mmol created using the antidepressant Fluoxetine.

Procedure
• Males were screened prior to testing and randomly assigned to groups while matched on latency to approach toward a mirror and courtship (Bronstein, 1989).
• Males in the drug groups were exposed to the drug solution 3 hours prior to daily trials.

Trials
• To begin trial, the male was exposed to either a female or a blank chamber for 30 seconds.
• After the 30 seconds a guillotine door was lowered blocking the area from view and the second guillotine door was raised allowing the male access to the alleyway.
• The Goal Box at the end of the alleyway was equipped with a mirror or non-mirror (white wall).
• 10 males were collected with 5 trials for each condition.

• Latency to reach the goal box was measured. If the latency reached 150 seconds then the subject was “pushed” into the goal box.
• Once the subject reached the goal box for the mirror condition fight behavior was recorded as either 0, no aggressive responding present, or 1, aggressive responding present.

• The male received 30 seconds in the goal box before the end of the trial.

References