

Behavioral Plasticity in Response to Environmental Cues in Poison Frog Tadpoles



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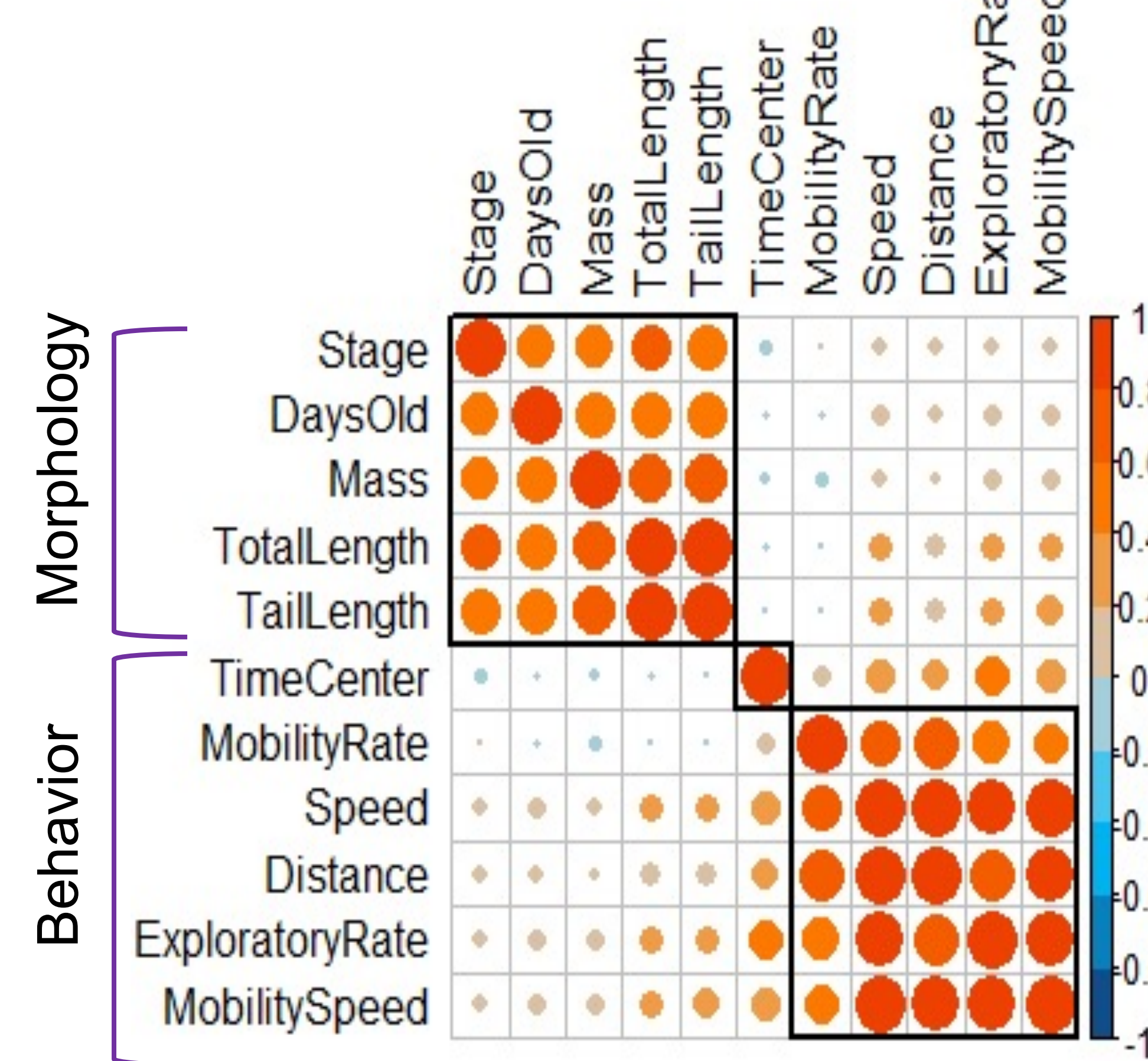
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Introduction

- Behavioral plasticity is the ability of an organism to detect cues in their environment and respond by modifying behavior^{1,2,3}.
- In the wild, dyeing poison frog (*Dendrobates tinctorius*) tadpoles are delivered by their dads to pools that vary in predation risk, resource availability, con- and hetero-specific density.
- Conspecific density is especially important as these tadpoles are aggressive and often cannibalistic^{7,8}.
- Behavioral plasticity in response to environmental cues may help tadpoles to compete for resources and survival^{4,5,6}.

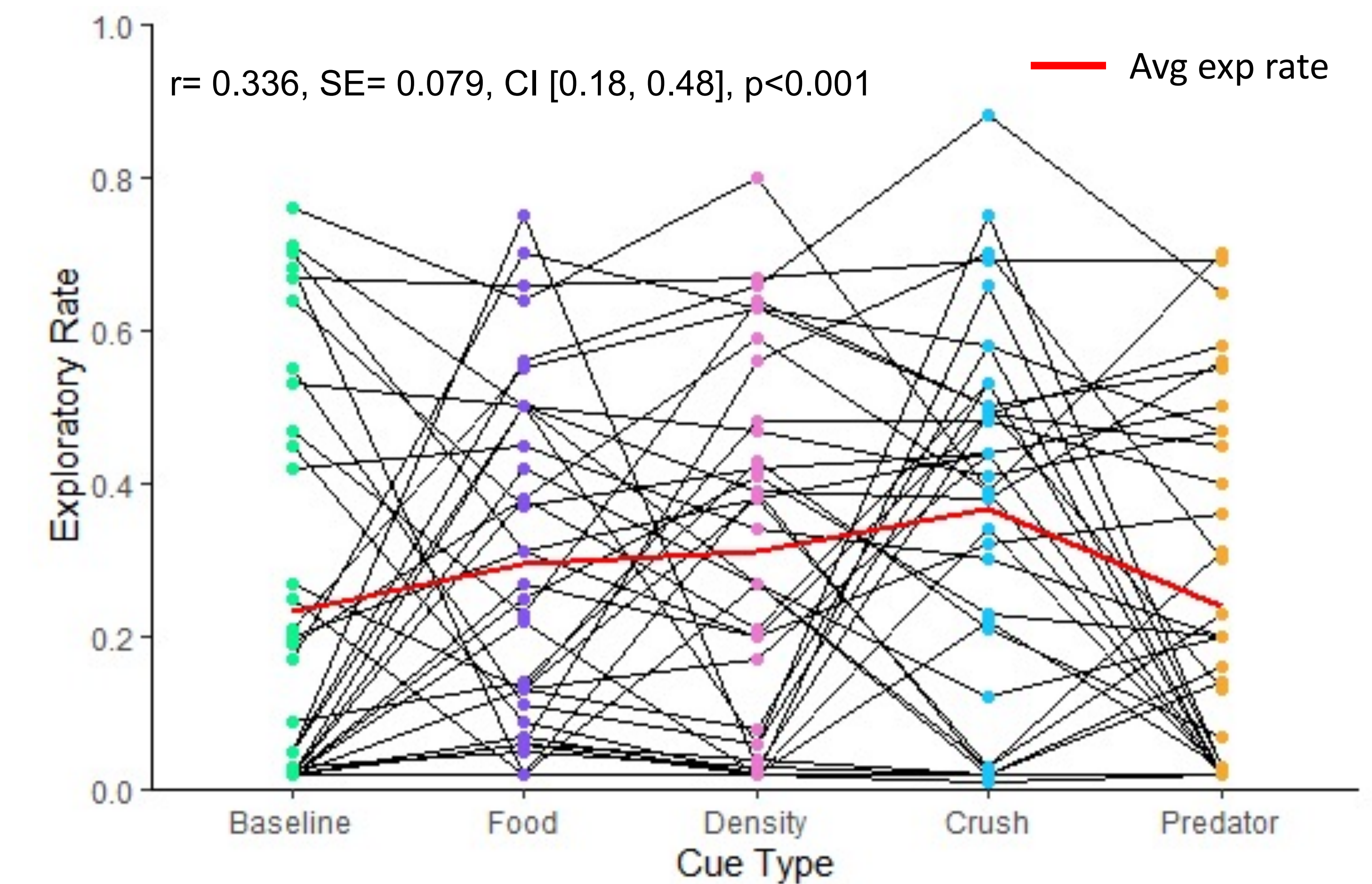
Hypothesis: Tadpoles exhibit behavioral plasticity in response to environmental cues.

- Morphology does not predict behavior
- Behaviors are correlated (except time in center)

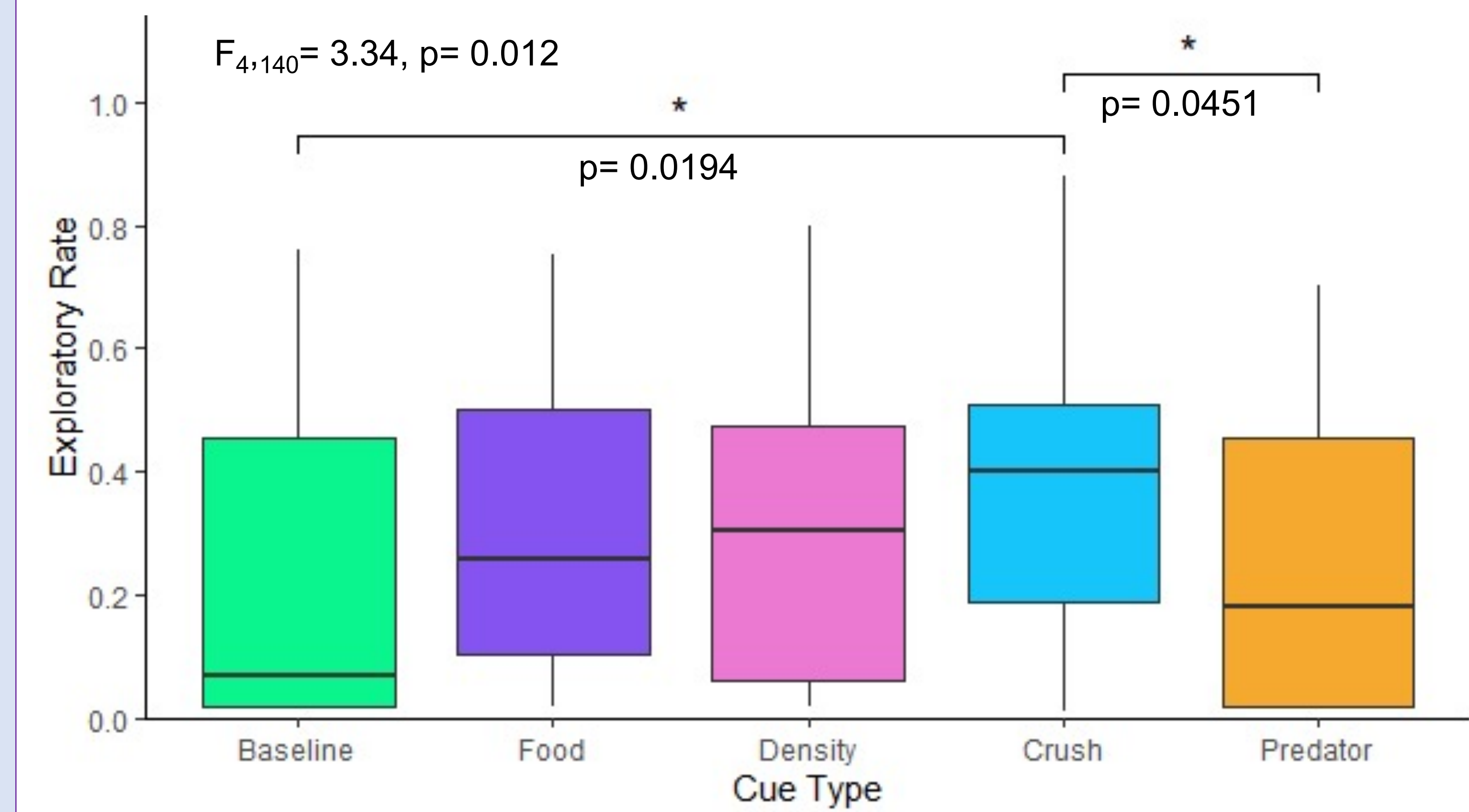


Results & Conclusions

- Behavior is repeatable (except for time in center)



- Exploratory rate and mobility rate vary based on environmental cues



Acknowledgments

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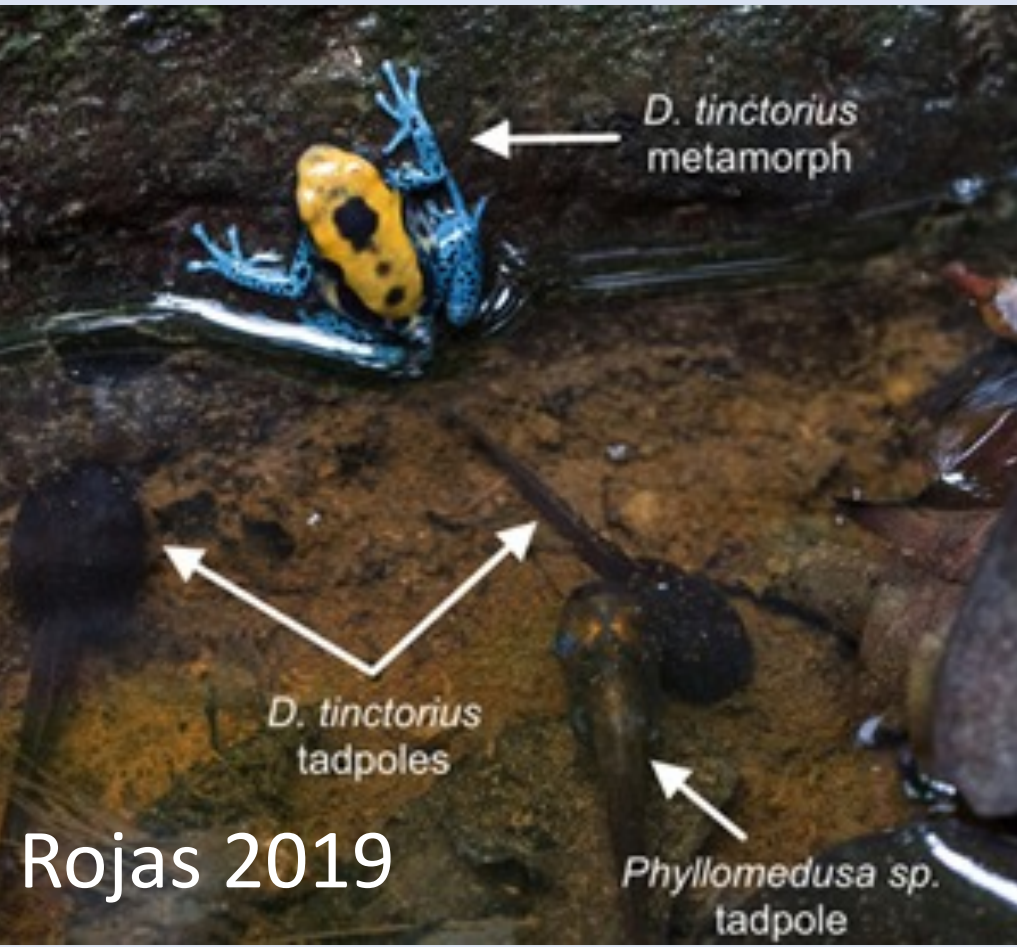


Figure 1: Example of tadpole pool

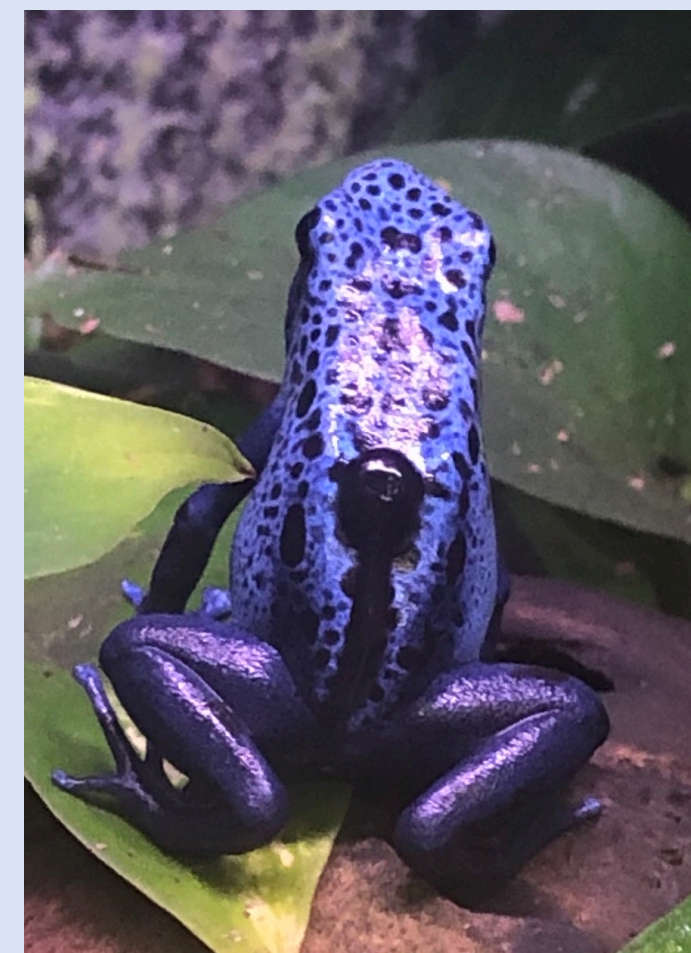
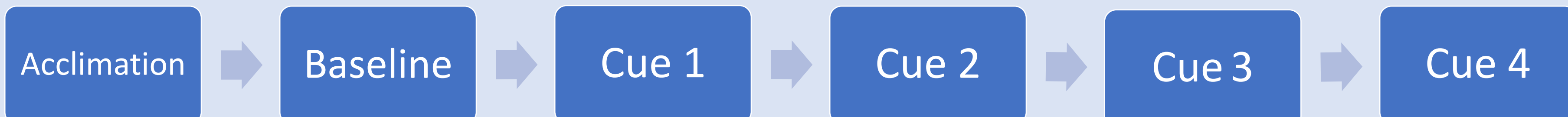


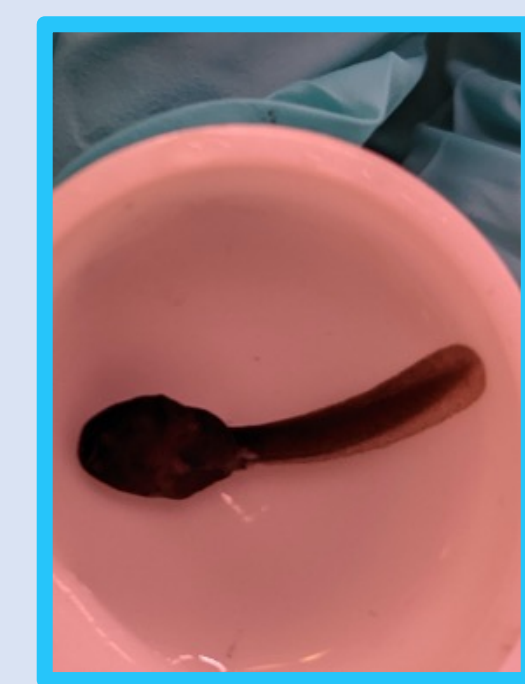
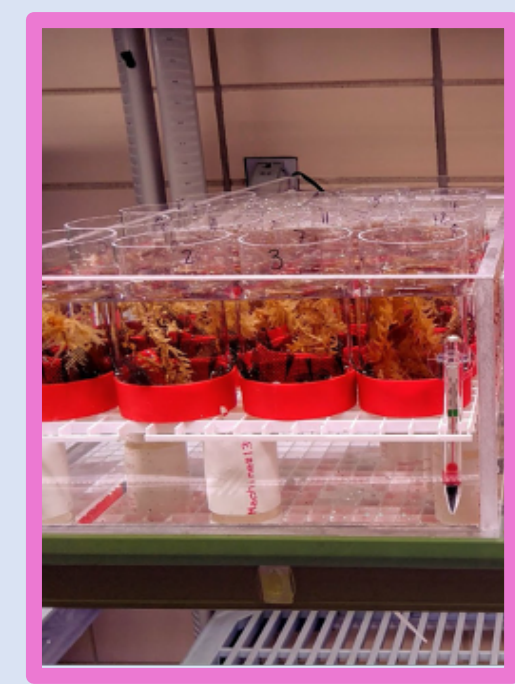
Figure 2: Dad carrying tadpole

Methods

Open field test – organisms are put in an arena and activity, boldness, and stimulus responses are tracked in a standardized way⁹



Tadpole: Dt. 0144 (45)
Date: 6.17.21
Test:



Each tadpole experienced all cues in a randomized order



Variables measured: Stage, Days Old, Mass, Total Length, Tail Length

Behaviors measured: Time in Center, Mobility Rate, Speed, Distance, Exploratory Rate, Mobility Speed

Future Work

- Test tadpoles in different concentrations of cues
- Examine additive effects of cues
- Explore the effects of environmental cues on social and cannibalistic behavior
- Further study the disconnect between time in center and open field behaviors

