

How do changes in guiding cues affect skill learning in pigeons?

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Research Questions

Overall question: How does a learned skill sometimes become autonomous?

Our main question: How do guiding cues combine with practice to produce behavioral autonomy?

How does one learn to complete a task without depending on guiding cues?

Introduction

- Reid et al. (2010) & Rapport et al. (2011):
 - Rats were trained to perform a L-R lever press sequence either using the presence or absence of panel lights over the levers as guiding cues
 - Presence of panel lights exerted more stimulus control over rats' behavior than absence of panel lights did
 - Feature-Positive discrimination bias

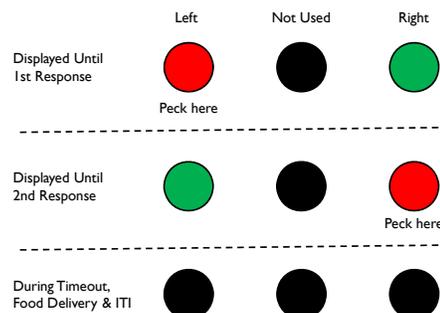
Introduction

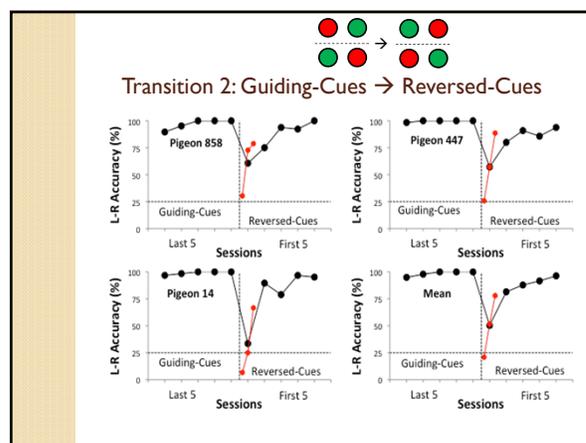
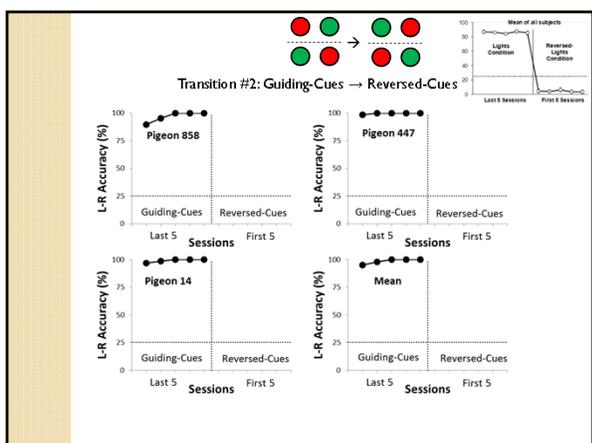
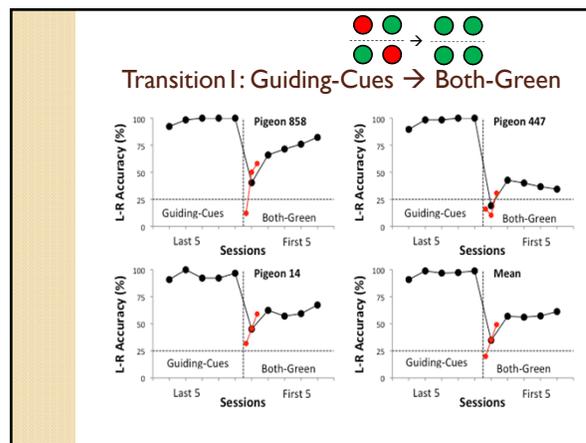
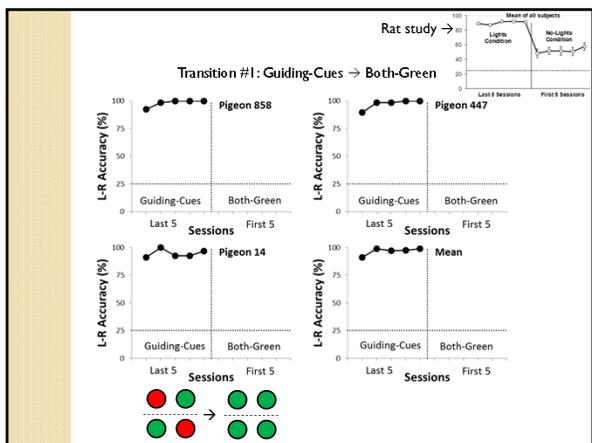
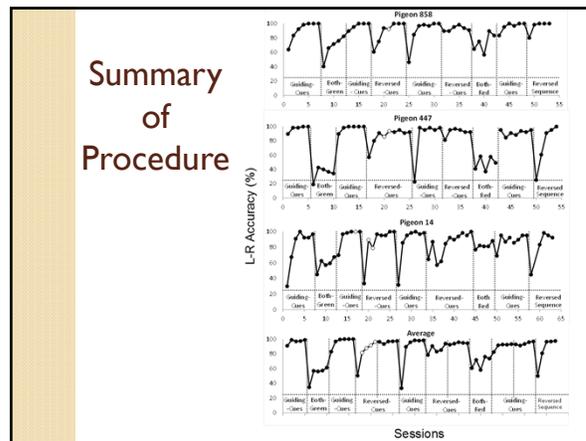
- The current study was modeled after the previous studies using pigeons as subjects
 - Pigeons are very adept at feature discrimination (Nallan et al., 1984)
- The purpose of the current experiment was to assess how changing guiding cues affect stimulus control
- Two sources of cues contribute to learning a skill and becoming autonomous:
 - A) Environmental cues (e.g., lights)
 - B) Cues resulting from the Ss' own behavior (e.g., practice, memory, proprioception, etc.)

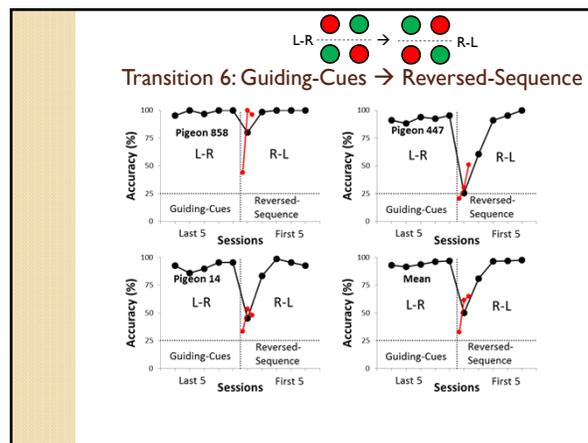
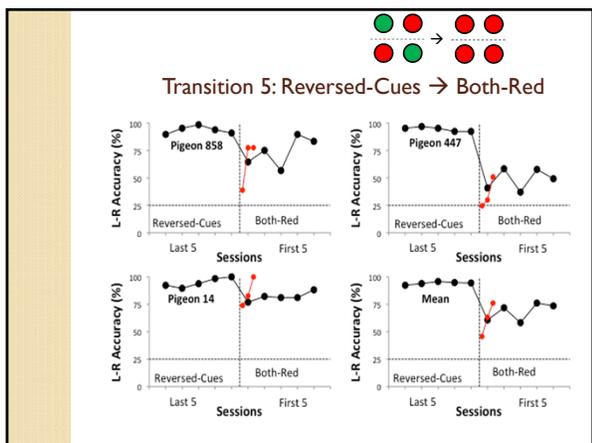
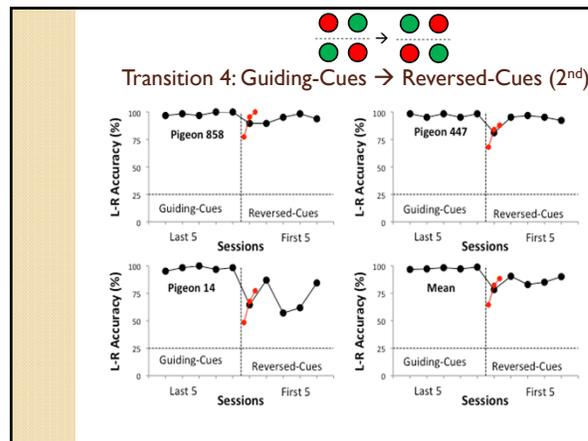
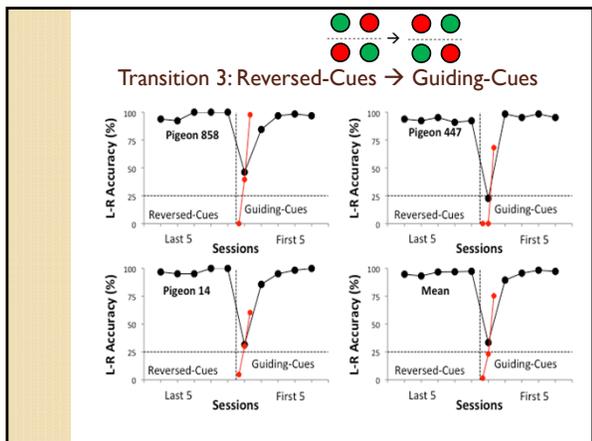
The Task and Guiding Cues

- **The skill:** Pigeons were trained to perform a Left-Right key peck sequence.
 - This task was the same in all conditions, with the exception of the final condition.
- **The Guiding Cues:** We manipulated the color of the keys
 - These conditions varied across conditions

Guiding-Cues Condition







Discussion

- Why do pigeons differ from rats?
 - Feature-positive discrimination bias
 - Sensitivity to position cues
 - Greater capacity to do reversal procedures
- Take home message:
 - Cues from the environment exert more control over the pigeons' behavior than cues from the pigeons' own behavior (practice effects)

Acknowledgement

- Dr. Alliston K. Reid
- Michael Carper

Future Studies

- Extinction Procedure
- Transition 6
 - Instead of guiding cues in both conditions, Both-Green in reversed sequence condition
 - If L-R sequence persists, we can say the pigeons developed some behavioral autonomy
 - If L-R sequence does not persist, we can say the pigeons were dependent on the lights as guiding cues and are very adept at reversal procedures
- Use feature-positive and feature-negative cues in training
 - Replicate the Reid et al. and Rapport et al. studies