# Does the complexity of guiding cues influence the development of autonomous motor skills?

Psych 300: Learning & Adaptive Behavior

Faculty Advisor: Dr. Alliston Reid

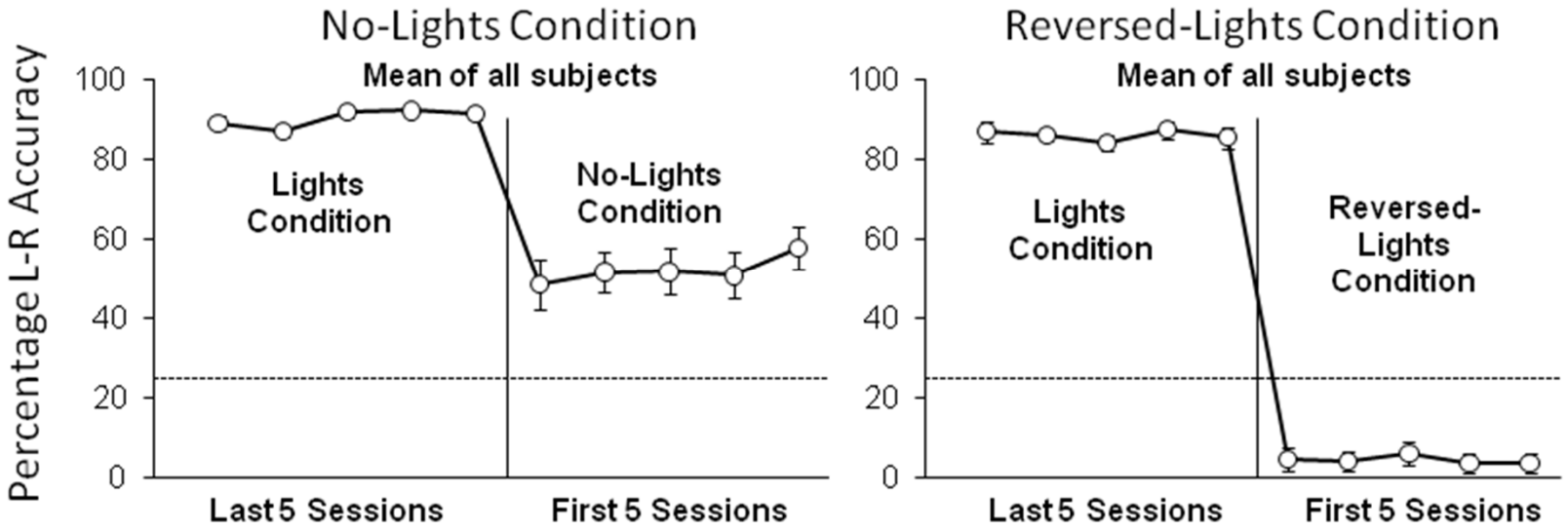
Grace DeMarco & Kelsey Smith

# Previous Experiments

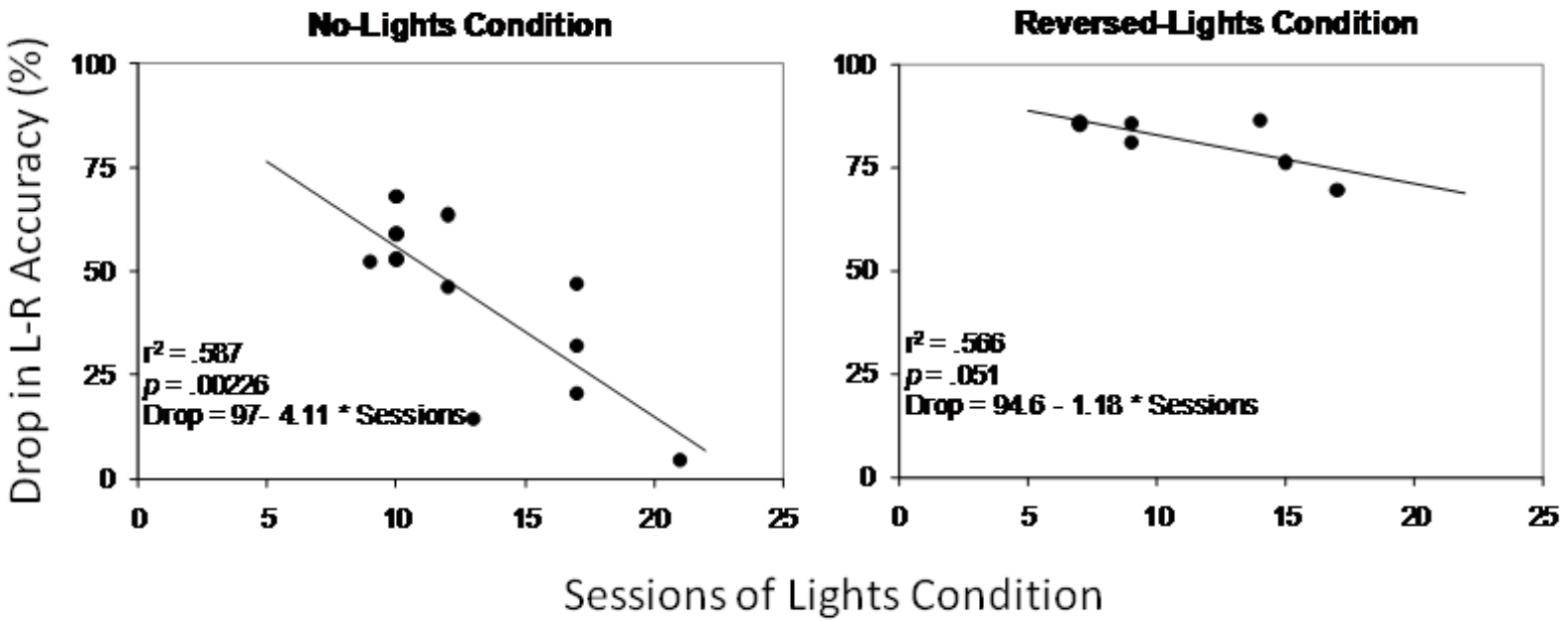
Reid, Nill, & Getz, 2010

- Measured interaction between practice cues and guiding cues in rats
- Discovered practice effect, with more practice in the Lights Condition, better performance in the No-Lights condition (without guiding cues)

# Accuracy with the Removal of Guiding Cues

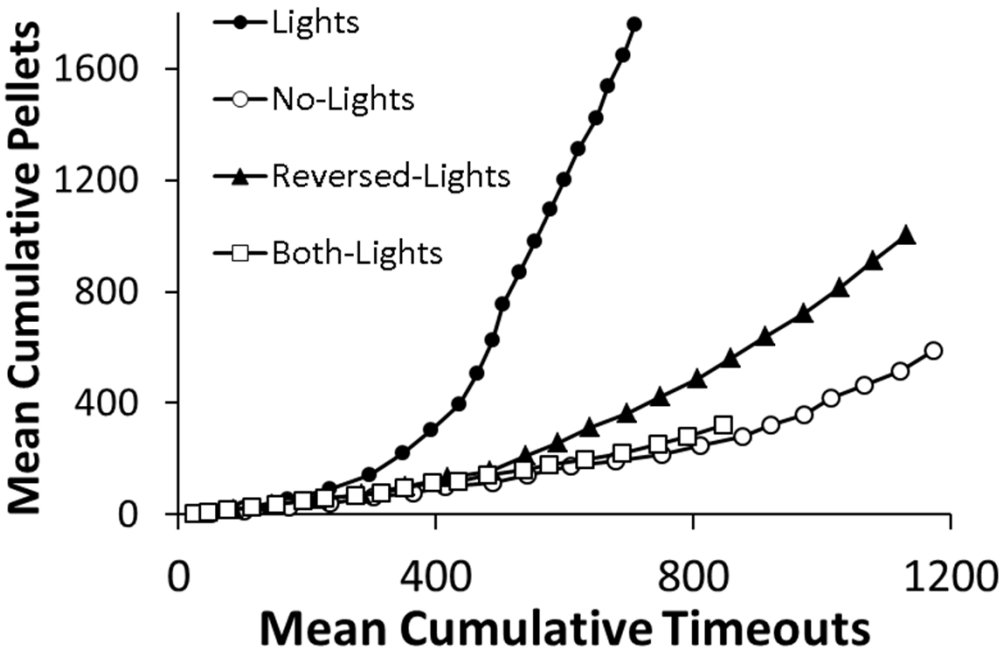


# The Practice Effect



# Speed of Learning

**Reid, Rapport, and Le (In press)**




Lights>>Reversed-Lights>No-Lights = Both-Lights

# Purpose

- Sought to manipulate the effectiveness of guiding cues and measure behavioral autonomy through probe trials
- Thus, measuring how autonomy develops under different guiding cues
- Analogy of “holding a child’s hand”
- Which type of instruction helps the child to become autonomous?

# Method

- 16 rats
- 2 x 2 design
- Separated into groups of four:

Lights/No Lights probes

Lights/Both Lights probes

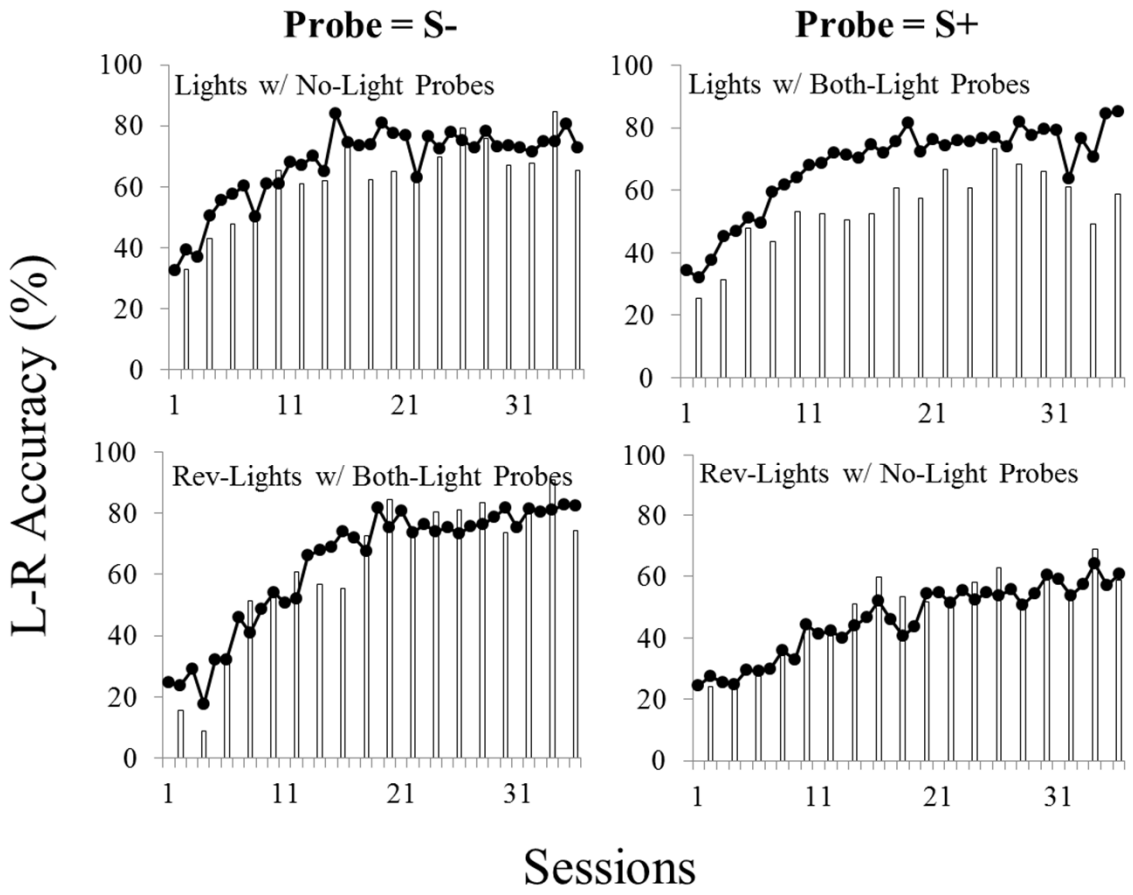
Reversed-Lights/No Lights probes

Reversed-Lights/Both Lights probes

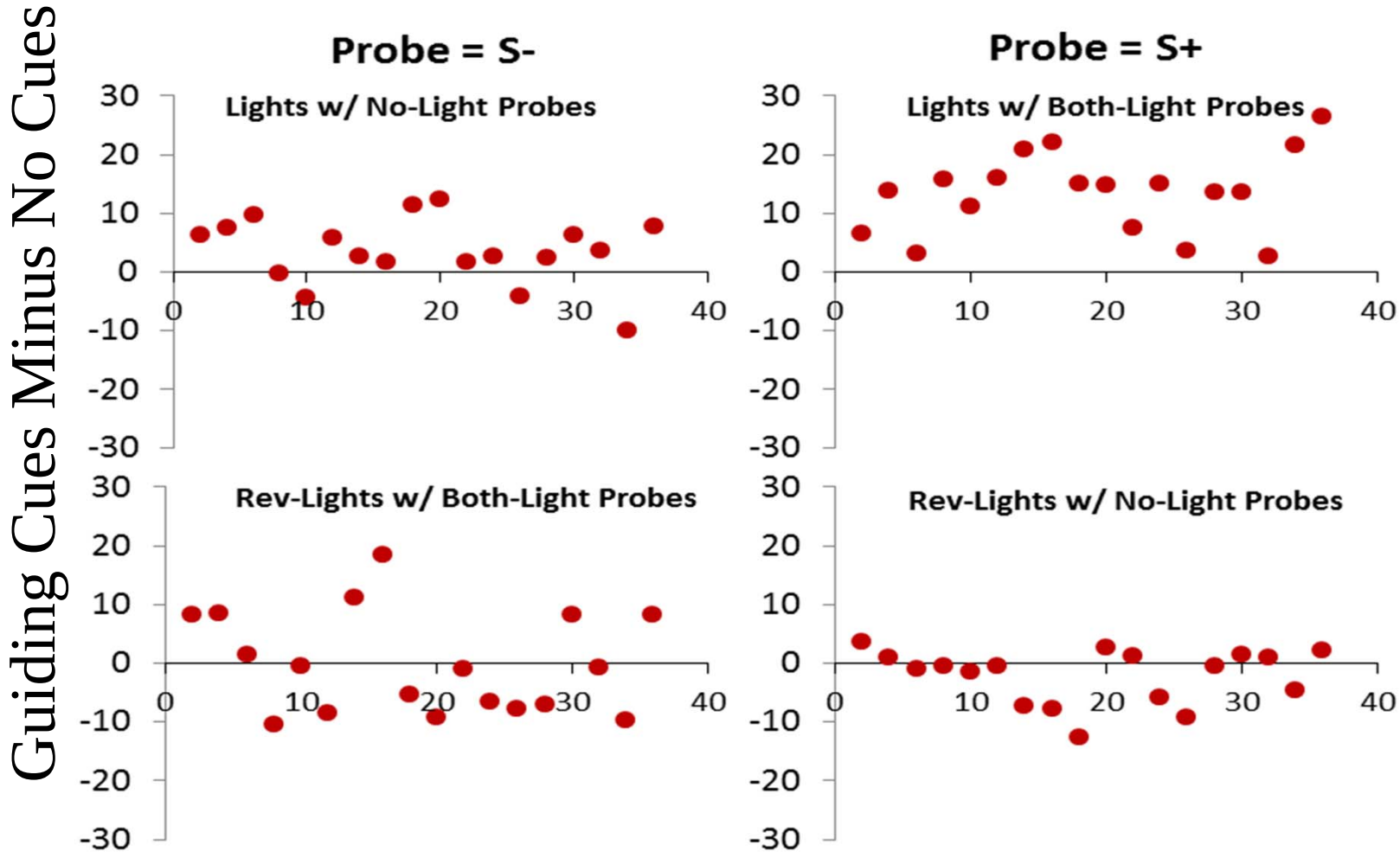
# Experimental Procedure

- Sessions end with 45 minutes or the delivery of 45 pellets
- 3-sec timeout if they got sequence incorrect
- 36 sessions of 2 alternating types
  - Guiding Cues trials only
  - Guiding Cues and Probe trials combined
- Probe trials measure behavioral autonomy!

# Guiding Cue Vs. Probe Accuracy



# Guiding Cues Minus No Cues



# Statistics

- Pair-wise comparison of Lights with Both-Light probes and Reversed Lights with No-Light probes (S+ groups)
- $t\ (17) = 7.485,\ p < 0.001$
- Pair-wise comparison of Lights with No-Light probes and Reversed Lights with Both-Light probes (S- groups)
- $t\ (17) = 1.513,\ p = 0.074$

# What does this mean to us?

- Analogous to a child being led by the parent to school
- What if the parent doesn’t hold the child’s hand and asks the child for directions along the way?
- We predicted that the child would learn to do it by themselves

# Where do we go from here?

- Interaction between practice cues and guiding cues
- What is the mechanism responsible for this interaction?
- Pavlovian conditioning would argue cue competition, and thus, blocking
- Investment of attention?
- Experiments to discover this interaction would be fruitful