

Background

The nature of learning ensures that students at any level encounter challenges in their schoolwork, resulting in their need for assistance. To keep their learning process moving forward, students can adopt adaptive strategies of asking for help. Students seek out help in three different ways: appropriate help-seeking behavior, dependent help-seeking behavior, and avoidant help-seeking behavior (Ryan, Shim, & Patrick 2005). So far, educational psychology research has identified social and cognitive factors that predict these behaviors, but little work has been done on metacognitive processes. **Metacognition is defined as a person's ability to introspect about what they know and what they do not know** (Selmeczy & Dobbins, 2013). This ability could therefore be a critical predictor of adaptive help-seeking. In order to address this gap, I conducted a recognition memory experiment with metacognitive checks and opportunities to seek out help on test trials. Furthermore, this design removed social factors that have already been shown to influence help-seeking behavior and focused solely on metacognition's relationship to adaptive help-seeking behavior.

Study Aims:

Use a modified recognition study to evaluate whether metacognitive ability predicts the conditions under which students seek out help.

Methods

- 28 undergraduate students enrolled in lower level psychology courses completed the task.
- Each participant did 120 study trials, and 240 test trials, half of which were targets the other half foils. There were 2 study/test blocks.

Independent Variables:

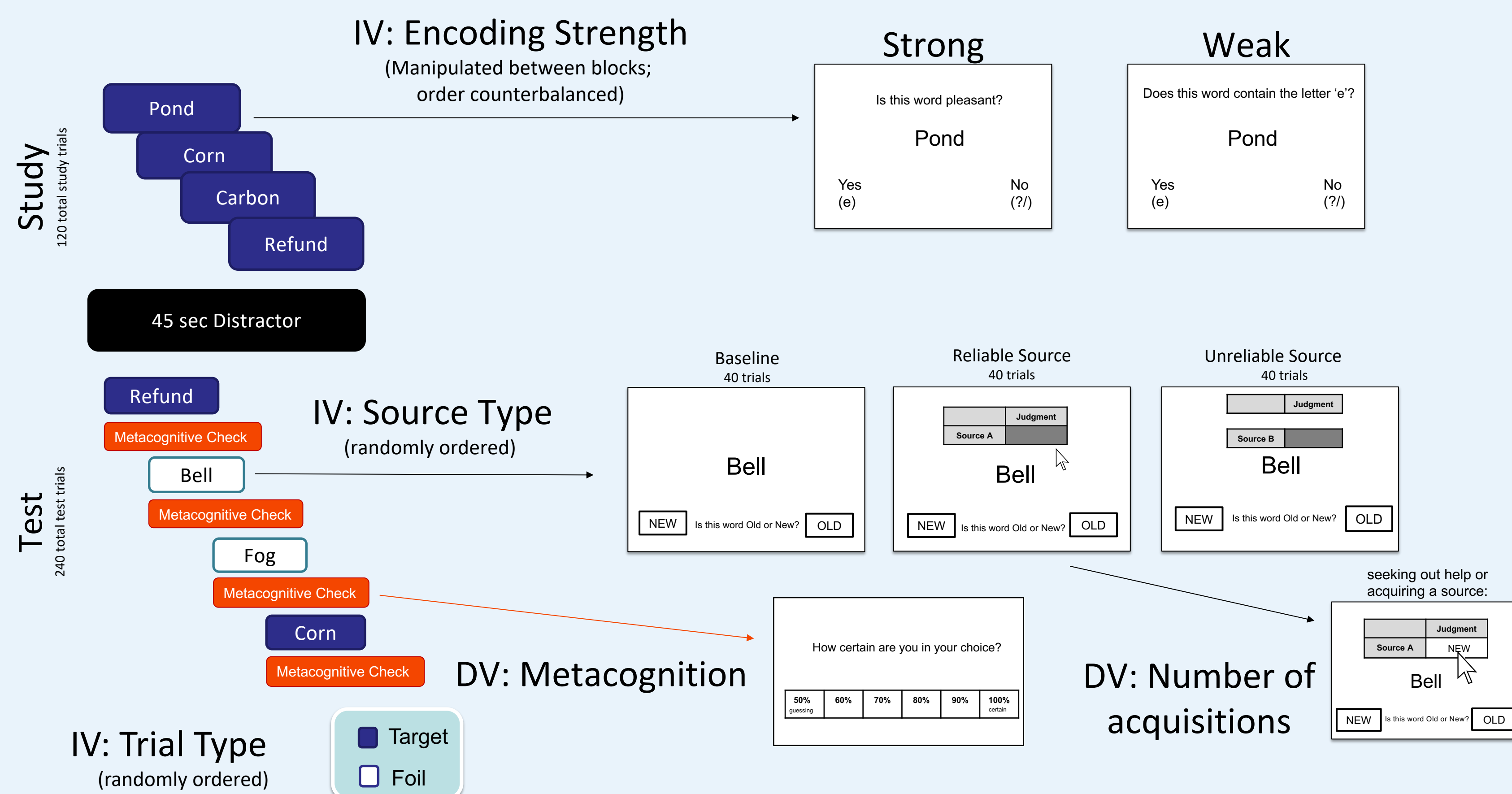
- Encoding Strength (Strong, Weak)
- Trial Type (Target, Foil)
- Source Type (Baseline, Reliable, Unreliable)

manipulated within participants

Dependent Variables:

- Response Accuracy
- Number of Acquisitions (adaptive help-seeking behavior: weak acquisitions - strong acquisition)
- Metacognitive Ability (Gamma*: Correspondence between confidence and accuracy)

Recognition Memory Task



Results

Does metacognitive monitoring ability relate to help-seeking behavior?

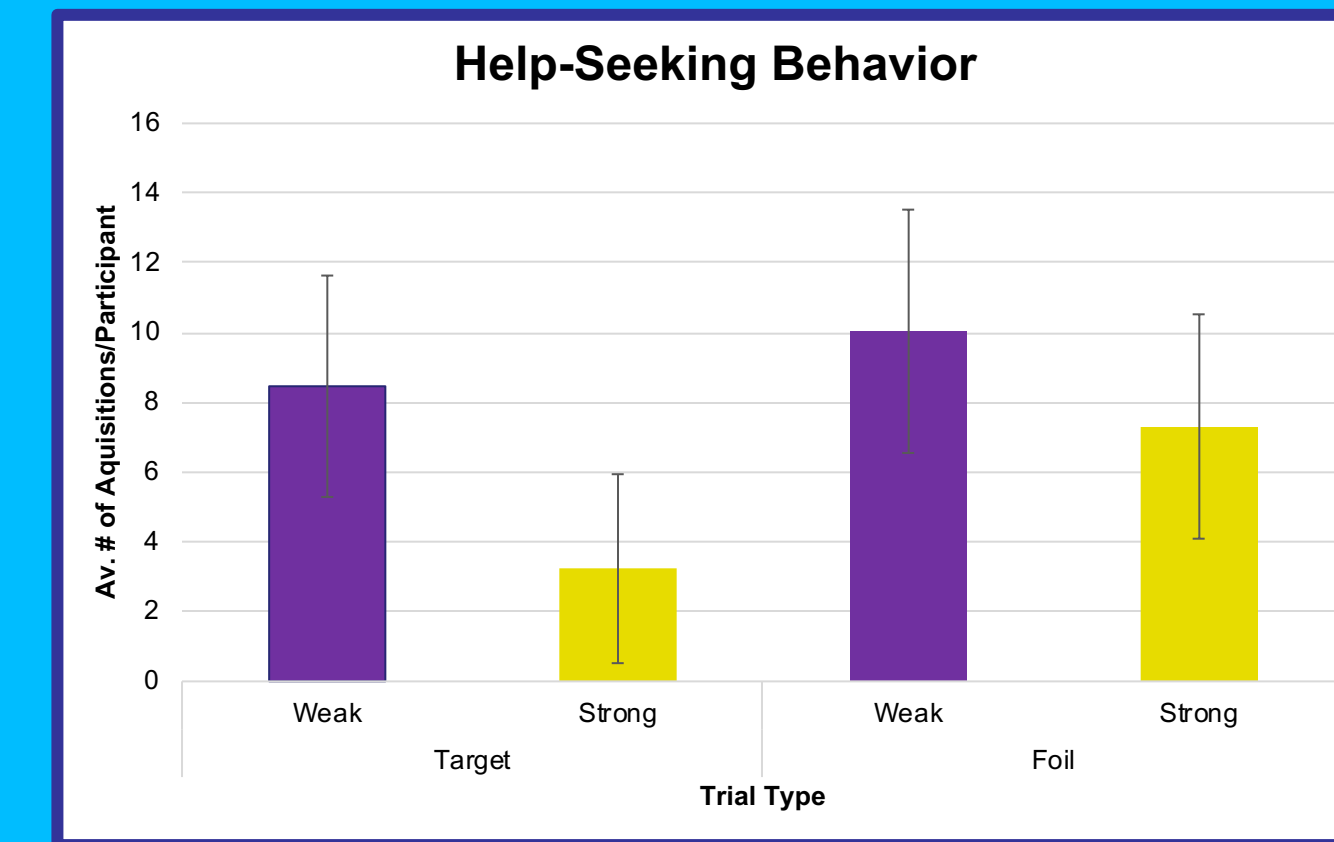


Figure 1. The difference in acquisitions per participant between weak and strong trials and target and foil trials. (+/-) 1 SE.

- Did participants seek out help more often under conditions of poor memory?
- Participants' recognition accuracy (d') was better on strong trials ($M = 2.449$) than weak ($M = 1.277$), $p_{\text{bonf}} < .001$.
- Participants sought out hints more in weak trials than strong trials, $F(1, 25) = 9.505$, $p = 0.012$, $\eta_p^2 = 0.226$ and more in foil trials than target trials, $F(1, 25) = 7.288$, $p = 0.005$, $\eta_p^2 = 0.275$.

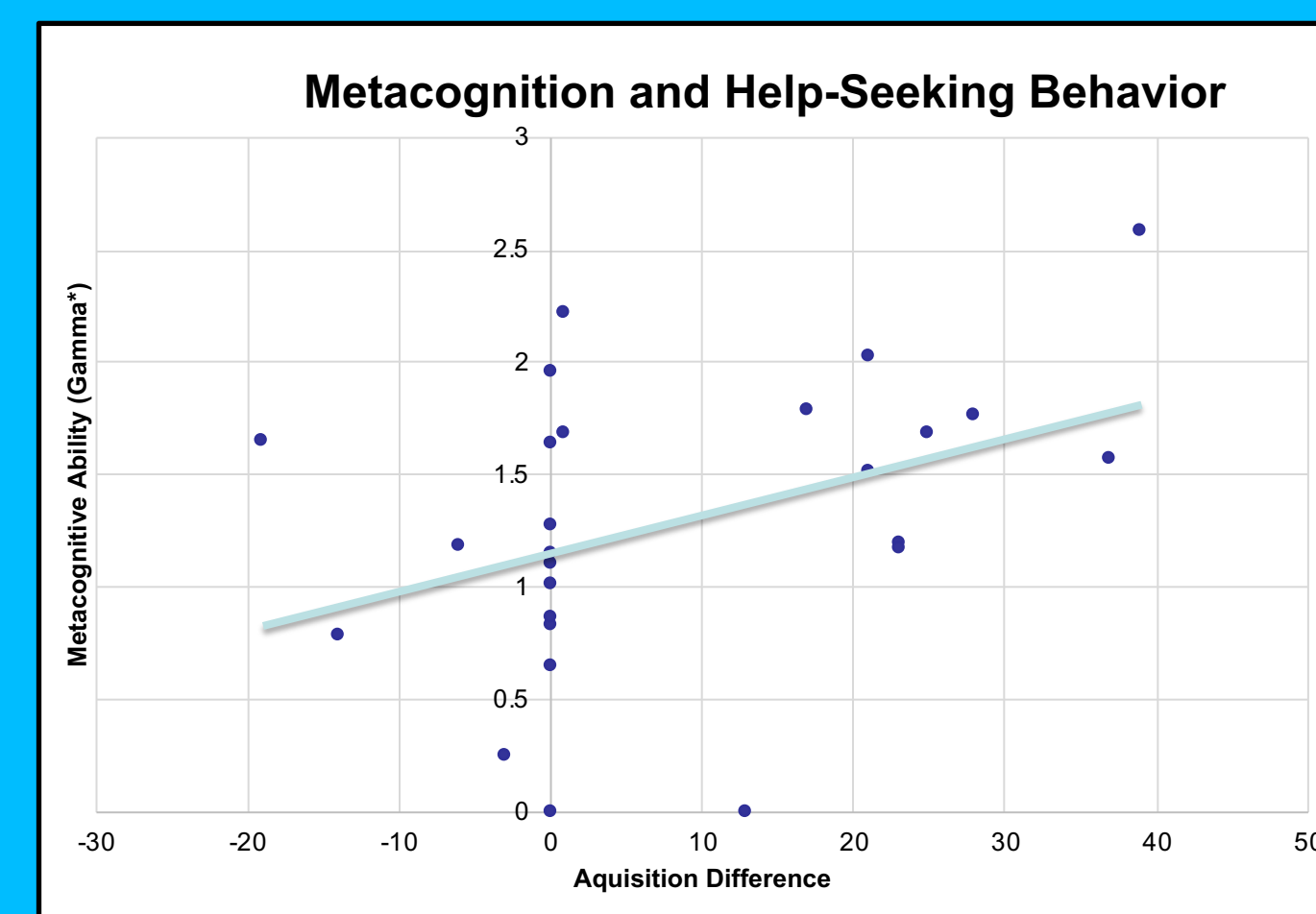


Figure 2. Relationship between gamma and help-seeking behavior. Acquisition difference is the number of acquisitions on strong encoding task subtracted from the number of acquisitions on the weak encoding task.

- Does metacognitive ability additionally relate to help seeking behavior?
- Participants with higher metacognitive ability (Gamma*) were more likely to exhibit adaptive help-seeking behavior at test. A Pearson correlation between metacognitive ability and adaptive help-seeking behavior showed a positive significant correlation to support the hypothesis, $r(24) = 0.397$, $p = .044$.
- A 2 (Help-seeking behavior: Help-seeking, No Help-seeking) x 2 (Strength: Strong, Weak) x 3 (Source Type: Baseline, Reliable, Unreliable) mixed factors ANOVA showed that there was **not a significant** interaction of encoding strength, source type, and help-seeking behavior on recognition accuracy, $F(2, 48) = 0.234$, $p = 0.792$, $\eta_p^2 = 0.010$. Critically, there was no significant difference between help-seeking participants and non-help-seeking participants, $F(1, 24) = 0.456$, $p = 0.506$, $\eta_p^2 = 0.019$.

Adaptive Help-seeking Behavior: Seeking out more help when memory is manipulated to be poor (weak condition) and less help when memory is strong (strong condition):

Metacognitive Ability: Participants' ability to distinguish accurately between the words they remember and do not remember through a certainty rating. Gamma is used to quantify this ability through the relationships between correct and incorrect responses' certainty ratings.

Discussion

- This experiment controlled for social factors - typically analyzed in educational psychology research - by using a recognition memory task where the help could be accessed without in person interaction.
- Metacognitive ability and adaptive help-seeking behavior vary positively with one another. Meaning that when someone's ability to monitor their thought process *increases* they are *more likely* to know when to seek out help.
- The correlation included the participants who did not seek out help at all because not seeking out help is considered avoidant help-seeking behavior. This can be assumed unless the participants who did not seek out help had significantly better recognition accuracy and did not need help. However, there was *no significant difference* in recognition accuracy between the help-seeking and non help-seeking participants, *supporting* that the participants were avoiding help.

Seeking out help in the academic setting is necessary for students as they continue to learn and grow their knowledge base. This research could be used to help educators further understand their student's skills and behaviors. Further, giving students tasks that increase their awareness of their current knowledge may equip students to more adaptively use their teachers' and peers' support.

Limitations and Future Directions

- Using a recognition memory task to address an educational psychology research question does not encompass all that students encounter daily in the classroom, such as critical thinking skills.
- Motivations and goal orientations of the participants were not measured. There is no way of analyzing these variables' relationship to help-seeking in comparison to metacognitive ability.
- Future research could replicate this study with an assessment of the participants goal orientations and motivations to analyze as a factor for adaptive help-seeking behavior.
- To create a more convincing argument, this study should be replicated with a larger participant pool.