THE INFLUENCE OF PERCEIVED MENTAL EFFORT AND FAMILIARITY OF STUDY STRATEGIES ON SELF-REGULATED LEARNING CHOICES

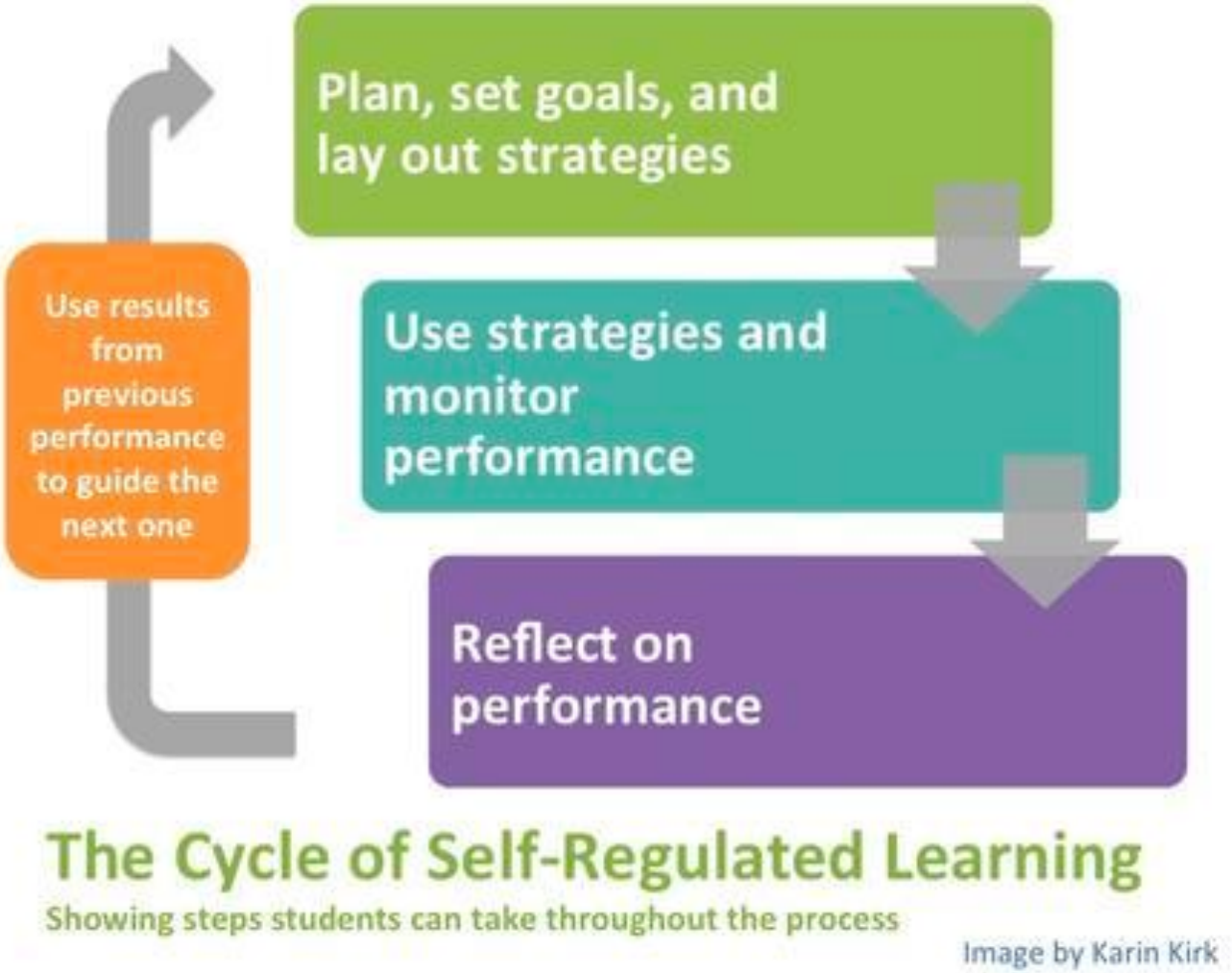
By Jessica Macaluso

Background: Metacognition & Learning

Effective learning requires good study strategy decisions!

Kirk-Johnson, Galla, & Fraundorf, 2019; Kornell & Bjork, 2007; Schraw & Moshman,1995

Background: Self-regulated Learning



Ariel & Dunlosky, 2013; Ariel, Al-Harthy, Was, & Dunlosky, 2011

Background: Metacognition & Learning

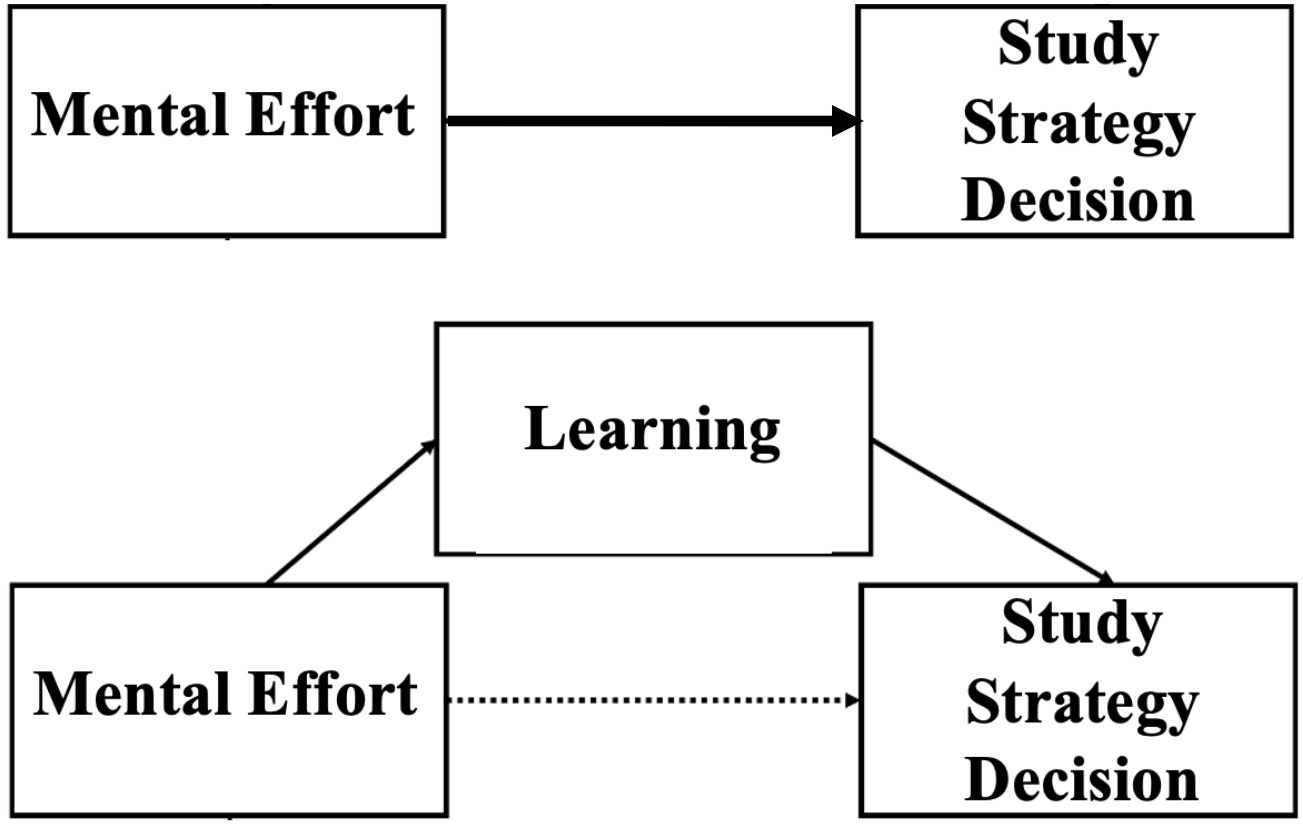
Effective learning requires good study strategy decisions!

Learners are rarely taught how to learn and often choose suboptimal study strategies.

Strategies effective for learning often require more initial effort, but learners often misinterpret this effort as indicative of poor learning.

Kirk-Johnson, Galla, & Fraundorf, 2019; Kornell & Bjork, 2007; Schraw & Moshman,1995

Background: Misinterpreted-effort Model



Kirk-Johnson, Galla, & Fraundorf, 2019

Background: Habits, & Self-regulated Learning

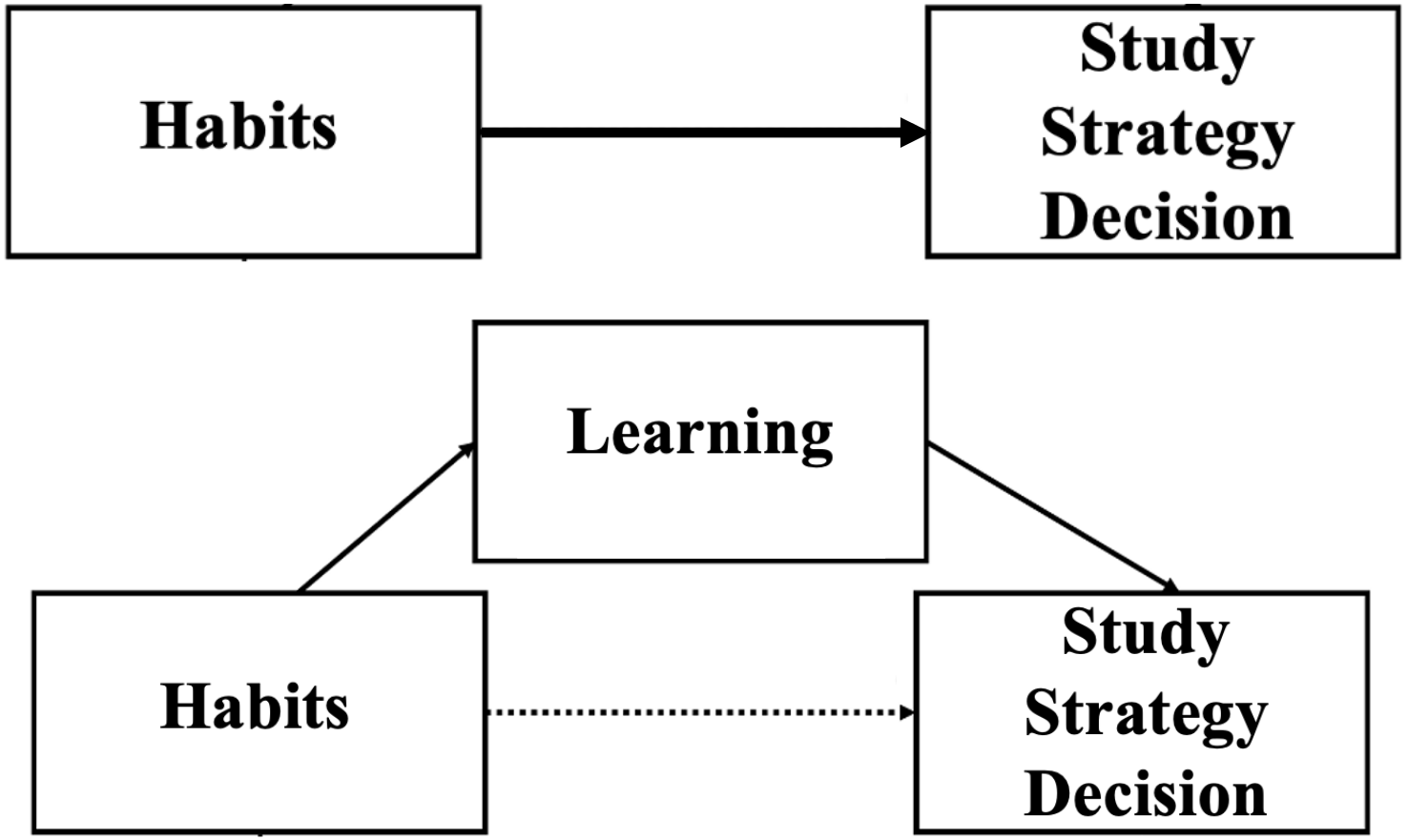
Habits and familiarity influence self-regulated learning.

Learners prefer familiar strategies, regardless of what they feel they are learning from.

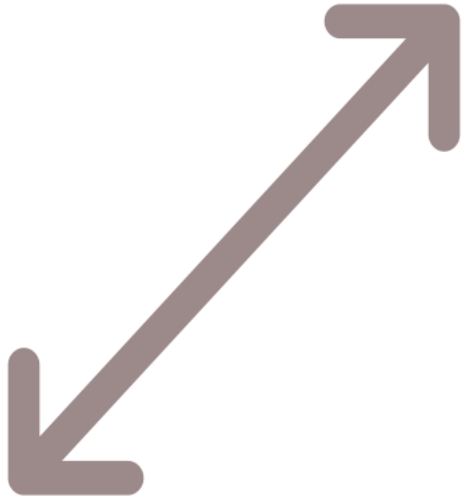
Strategy familiarity contributes to the feeling of learning.

Ariel & Dunlosky, 2013; Kirk-Johnson, Galla, & Fraundorf, 2019

Background: Habits & Self-regulated Learning



Motivation & Project Goals



Expand upon the **misinterpreted-effort model** by looking at **habits**

Gain a greater understanding of **self-regulated learning** behavior

Method: Design

Blocked

(Finch-Finch-Finch)

Interleaved

(Sparrow-Tyrant Flycatcher-Wood Warbler)

Tullis, Benjamin, & Ross, 2011

Methods: Participants & Materials

Sample Size

- Experiment 1: $N = 328$
- Experiment 2: $N = 377$

Study Phases (6 total bird families)

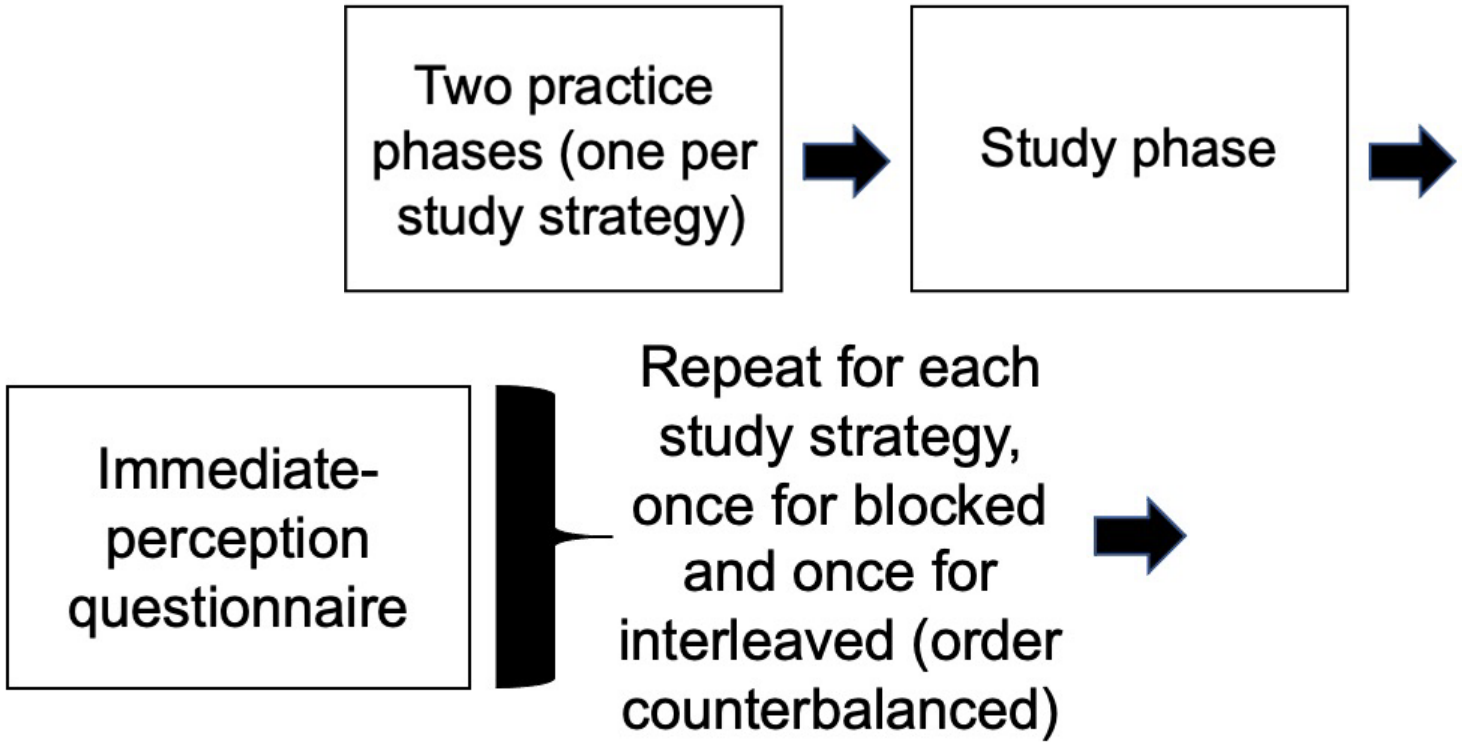
Study Phase 1



Study Phase 2



Methods: Procedure



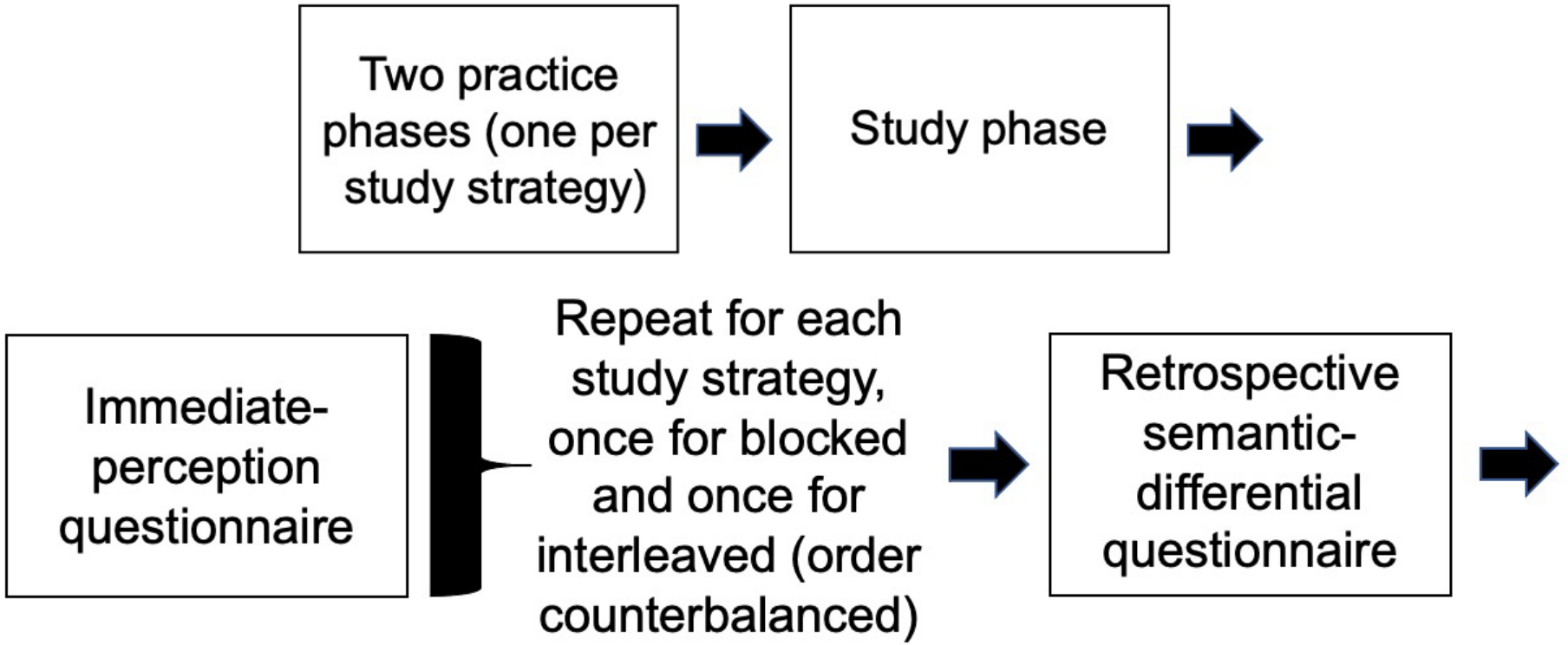
Methods: Questionnaire Materials

Immediate-perception Questionnaire

Likert Scale (1 = a little, 6 = a lot)

- **4 Mental Effort Items** (e.g., “How mentally exhausting was the last exercise?”)
- **4 Learning Items** (e.g., “How well did you learn to distinguish between the types of birds?”)
- **4 Habits Items** (e.g., “How well did the last exercise match your study habits?”)

Methods: Procedure



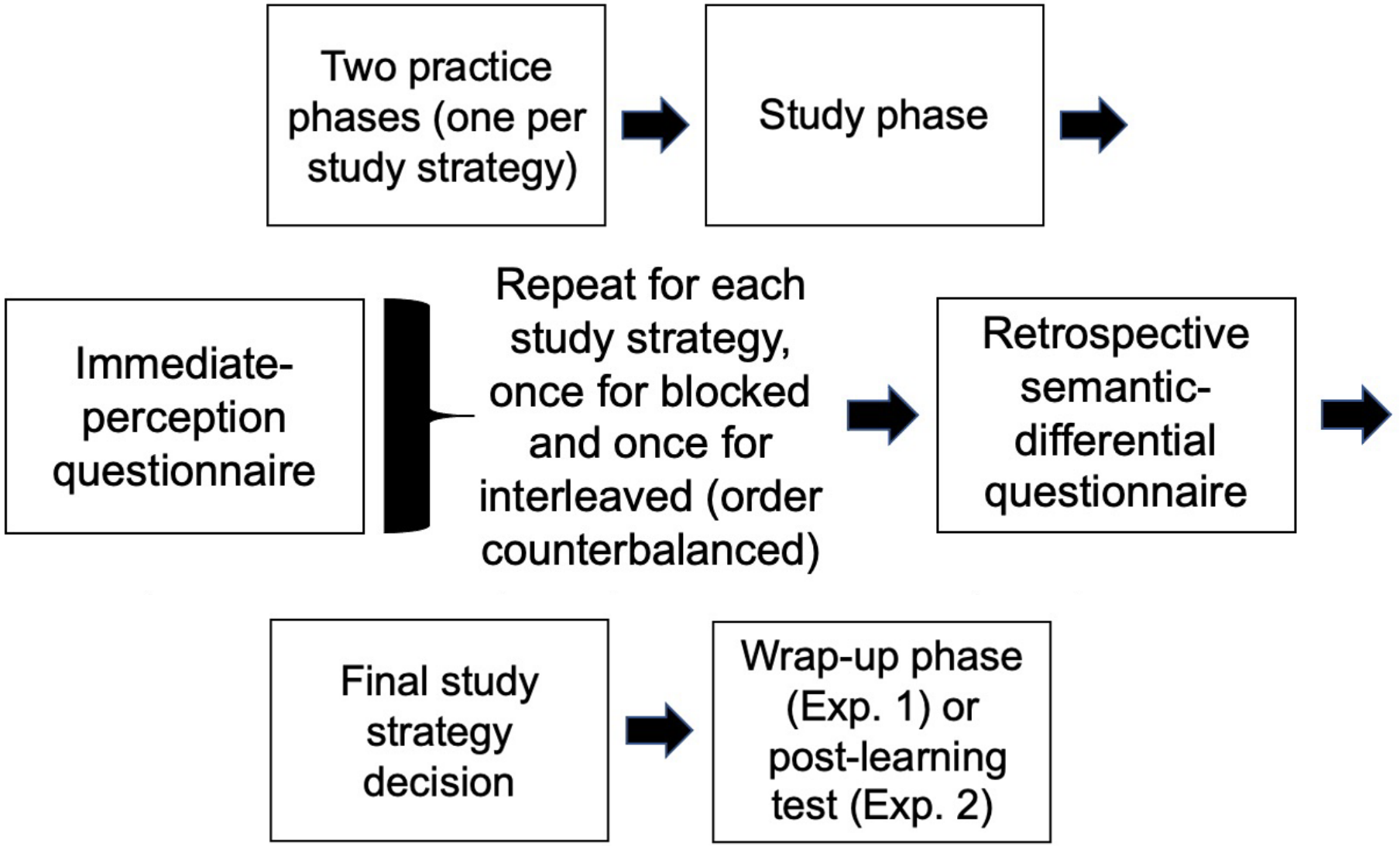
Methods: Questionnaire Materials

Retrospective Semantic-differential Questionnaire

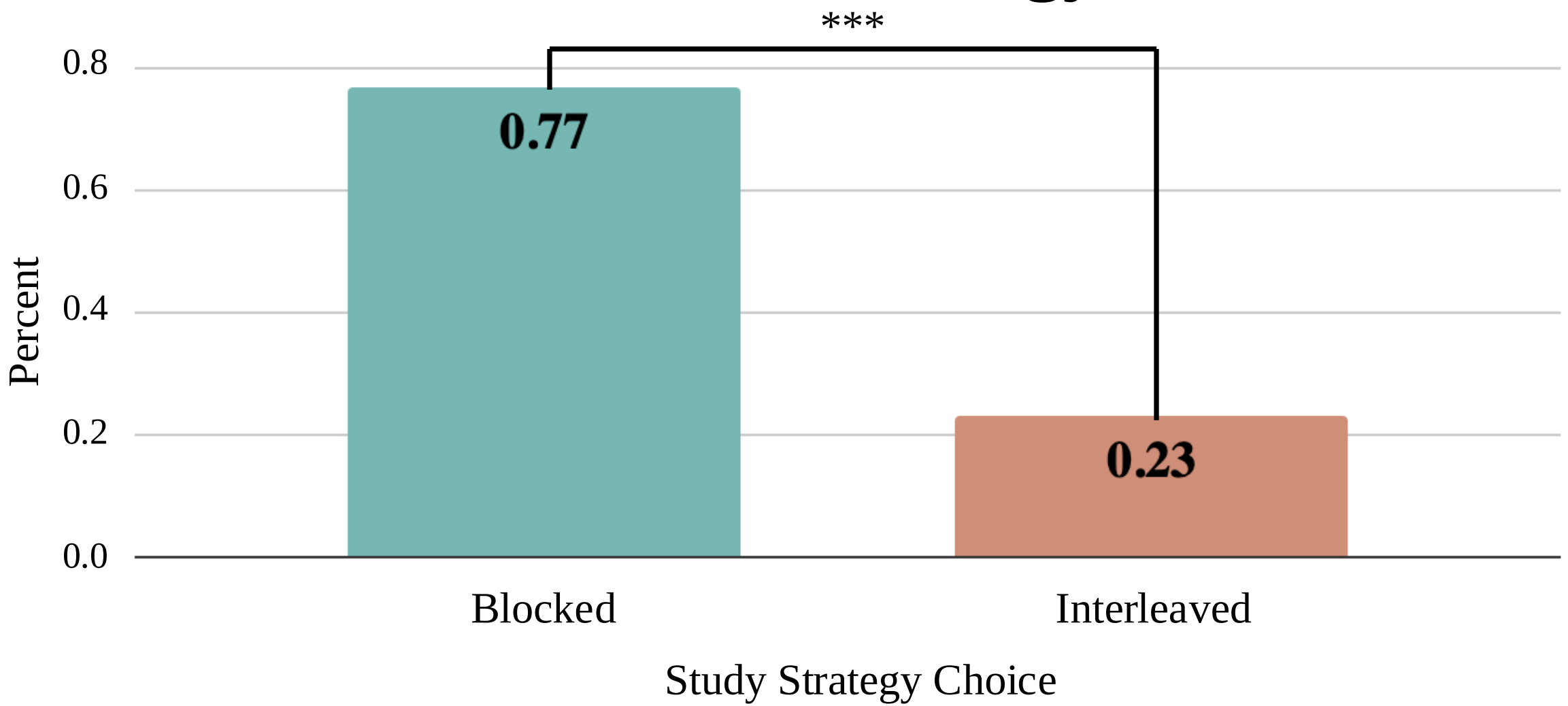
Likert Scale (1 = blocked, 6 = interleaved)

- **4 Mental Effort Items** (e.g., “Which exercise required more mental effort?”)
- **4 Learning Items** (e.g., “Which do you think is a more effective learning strategy for you?”)
- **4 Habits Items:** (e.g., “Which exercise best matched your study habits?”)

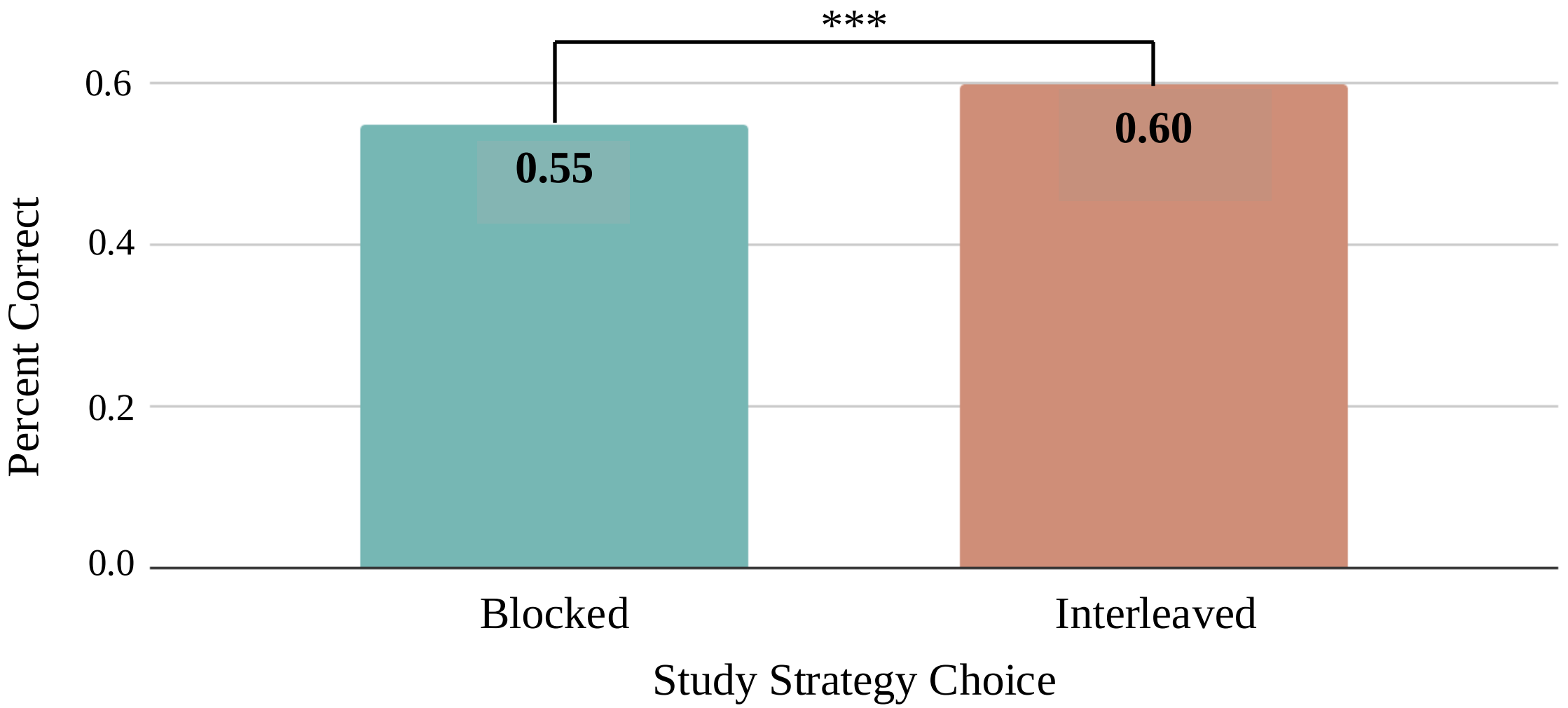
Methods: Procedure



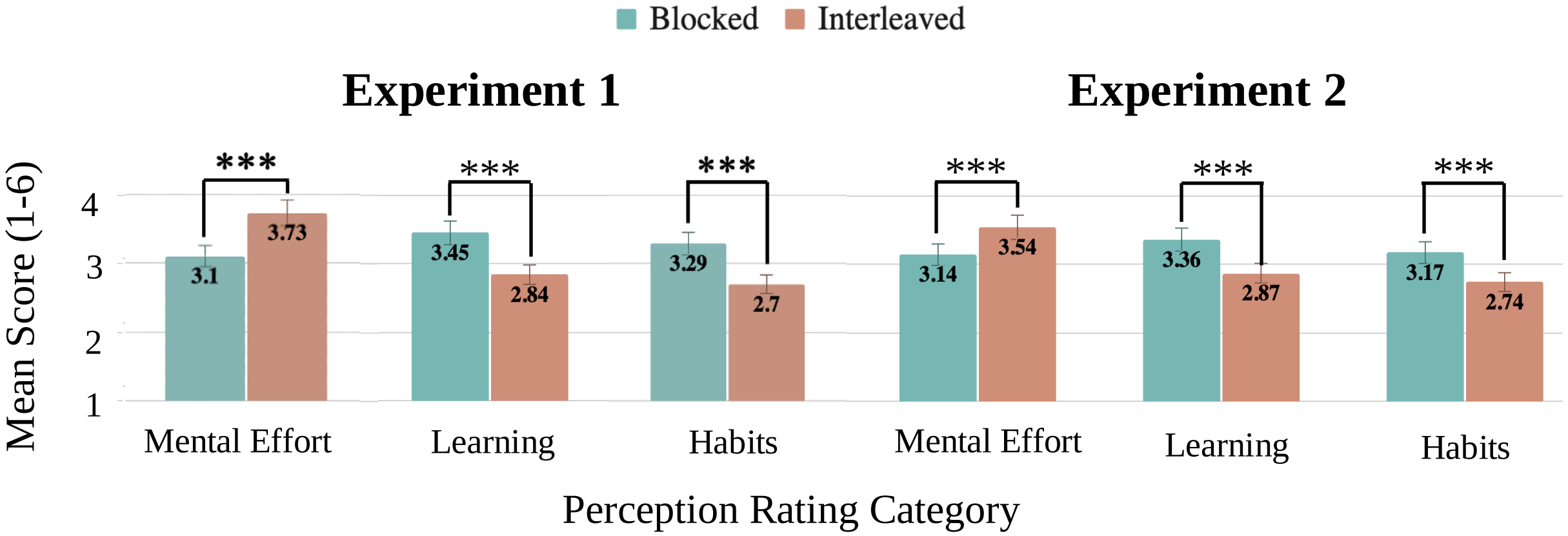
Results (Exp. 1 & Exp. 2): Choice of Strategy



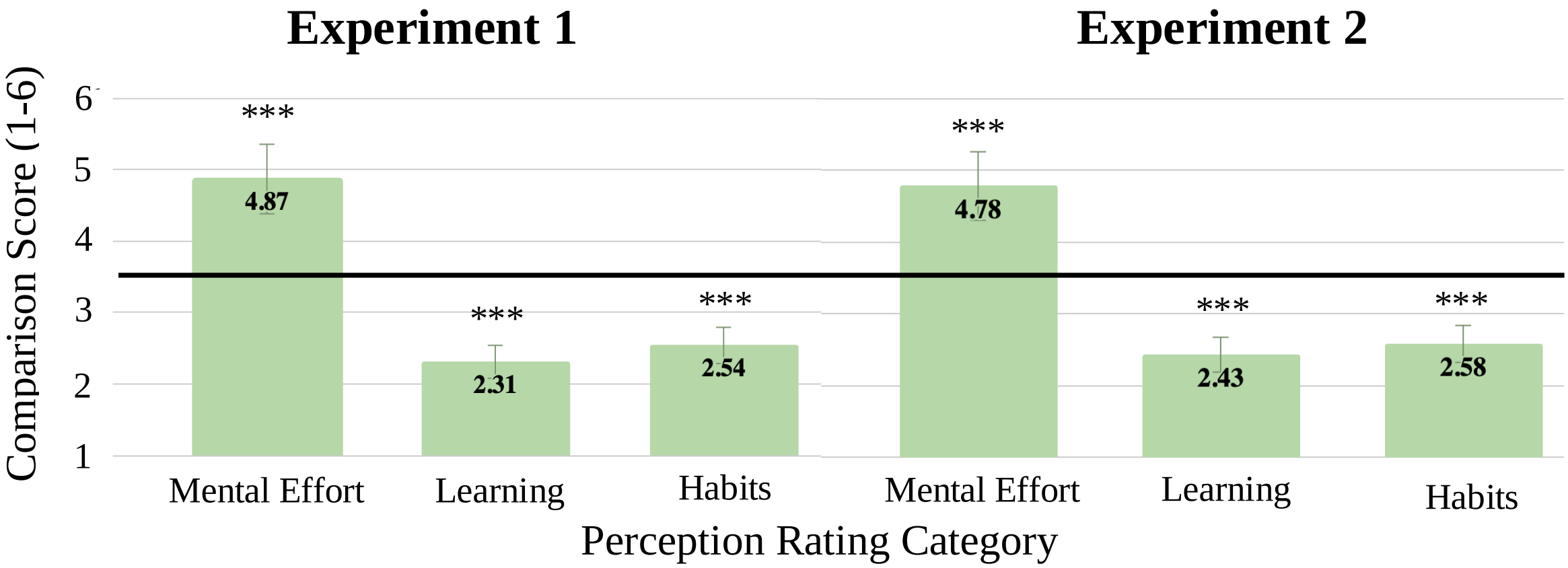
Results (Exp. 2 ONLY): Objective Learning on Post Test



Results: Immediate Perception Ratings

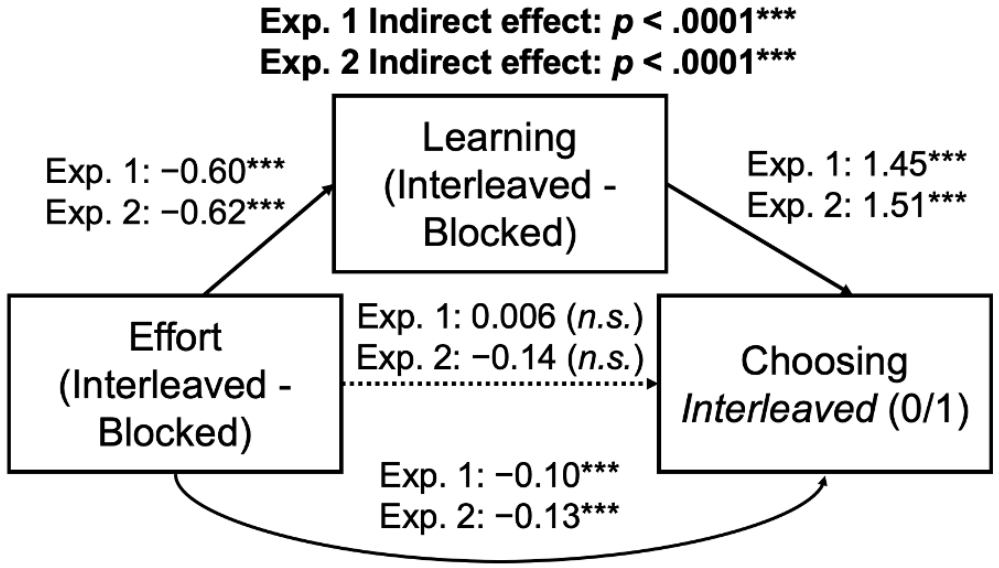


Results: Retrospective Comparisons



Results (Immediate Perceptions)

Indirect Effect of Perceived Mental Effort



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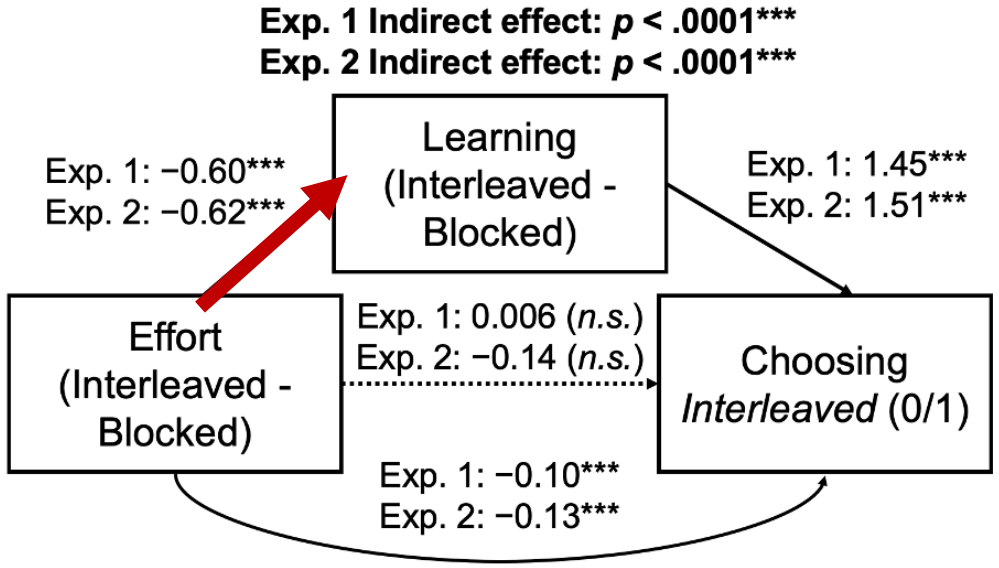

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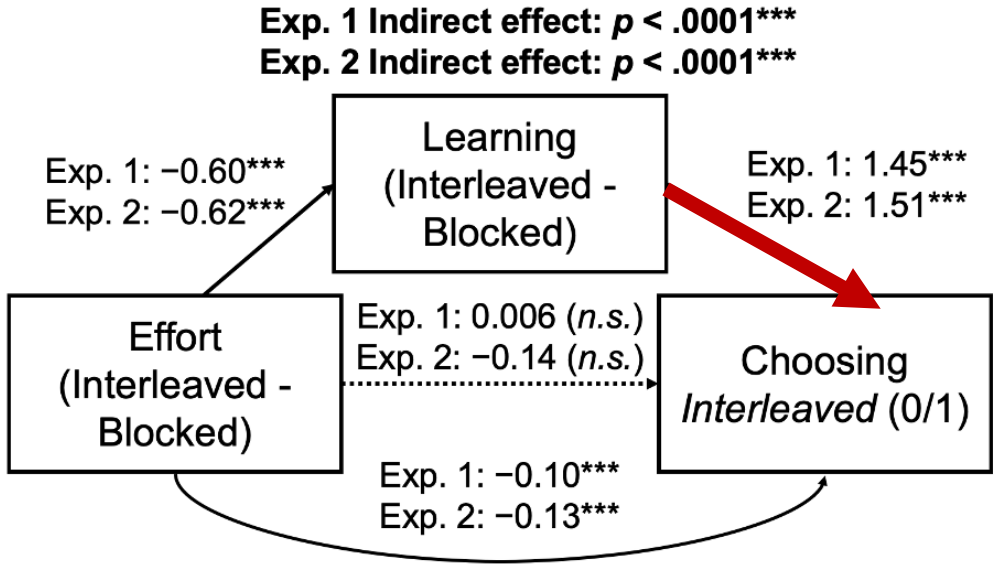

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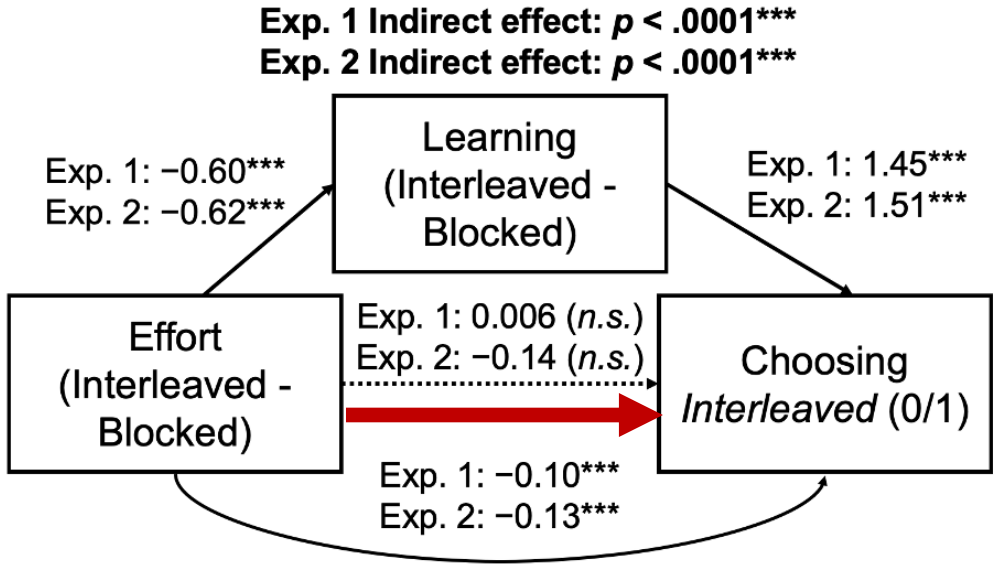

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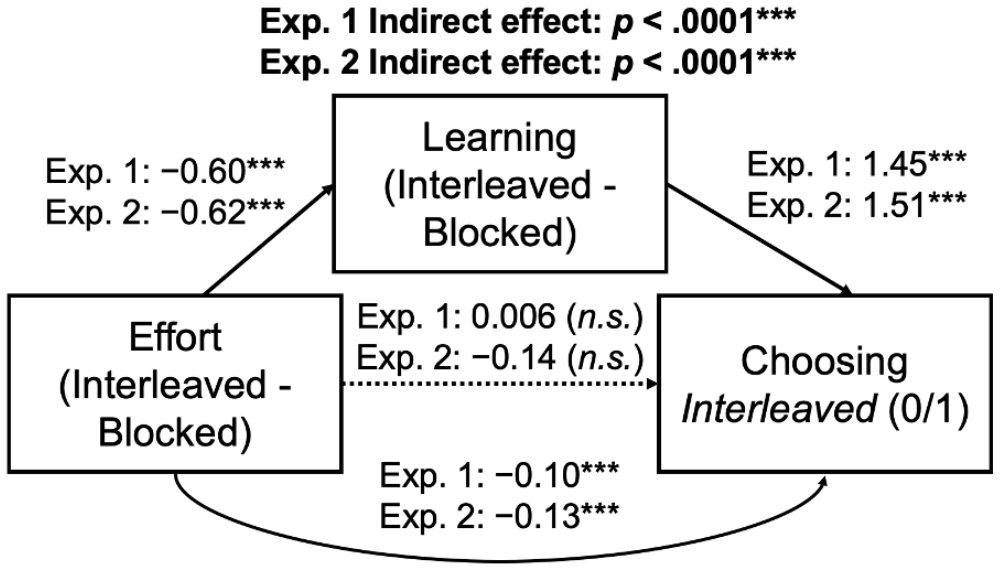
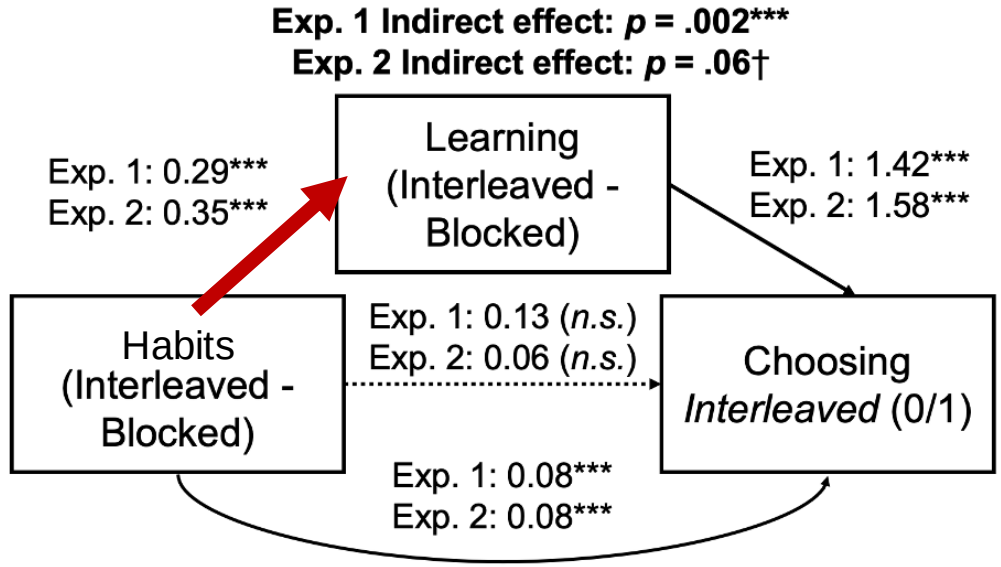


Indirect Effect of Perceived Habits



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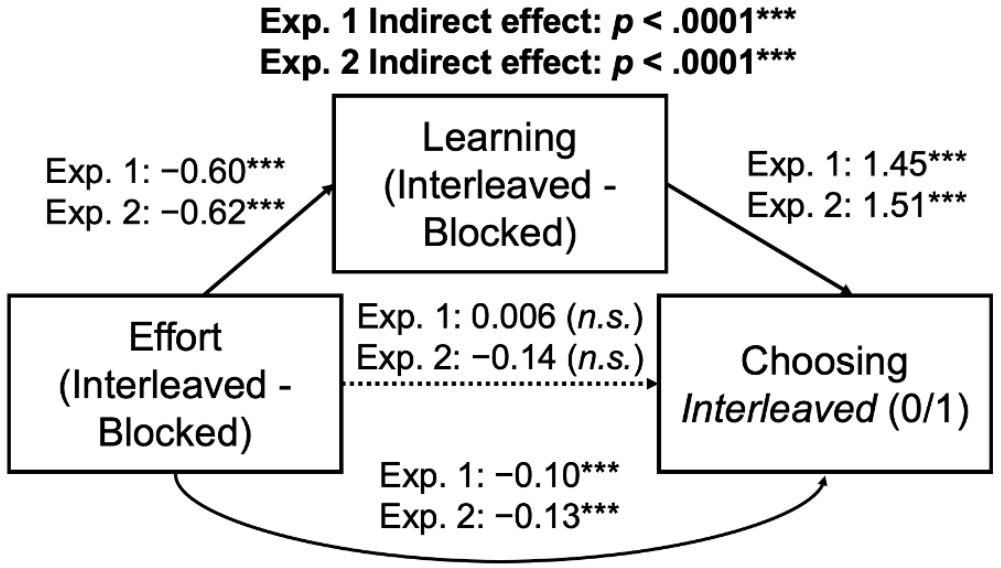

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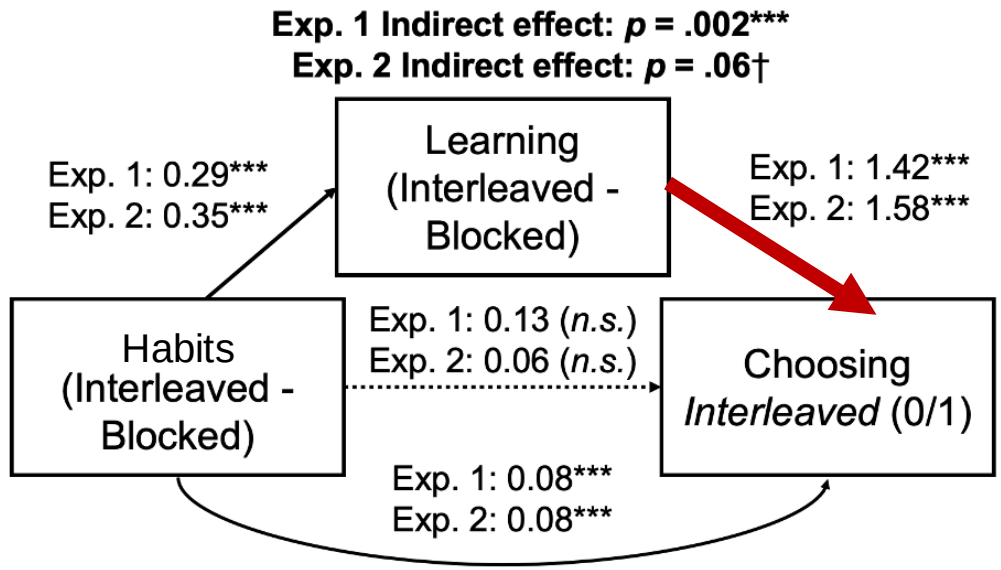

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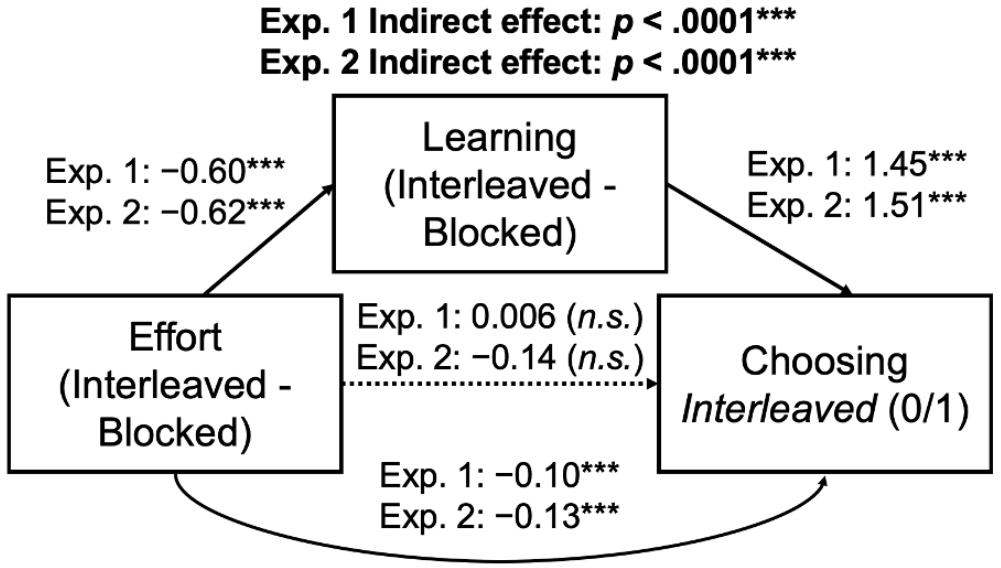

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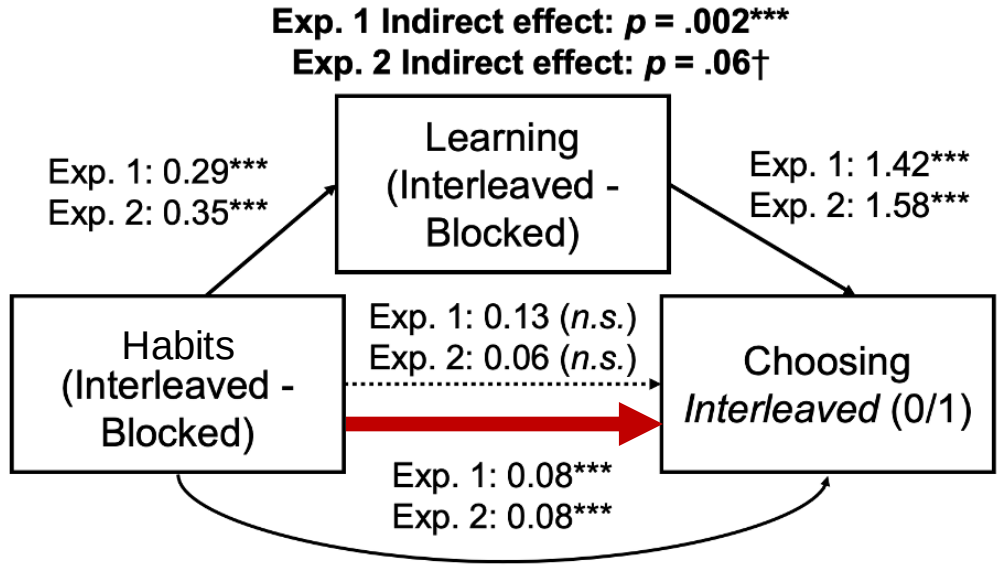

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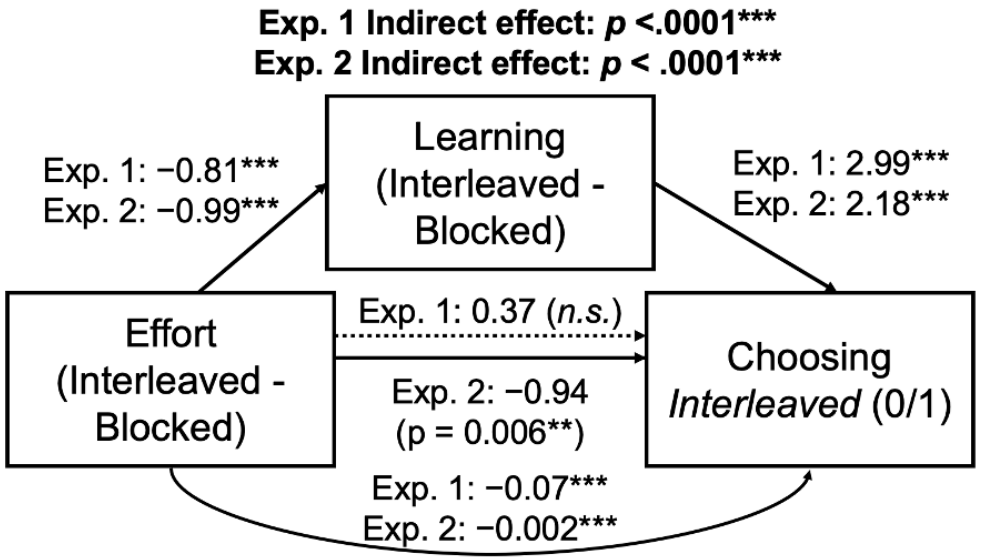

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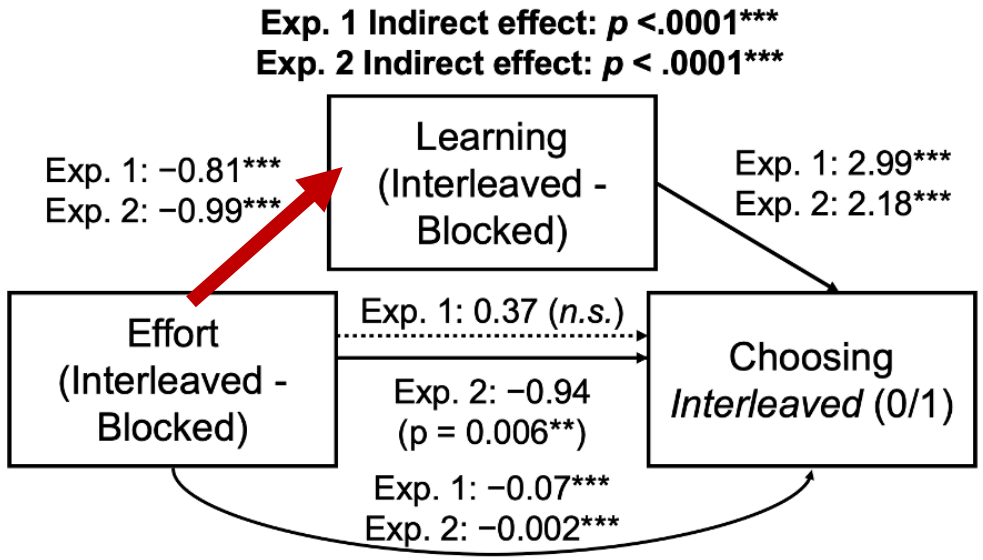

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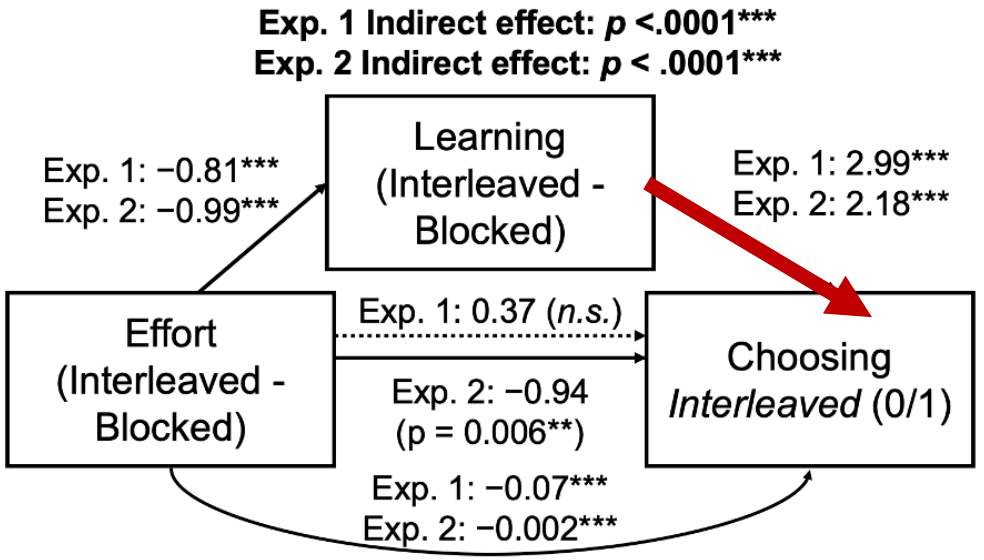

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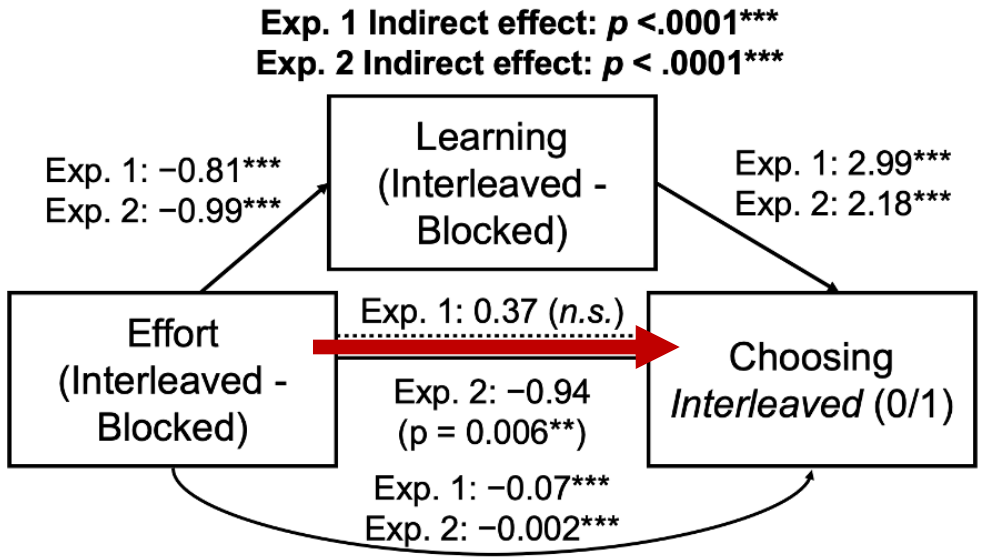

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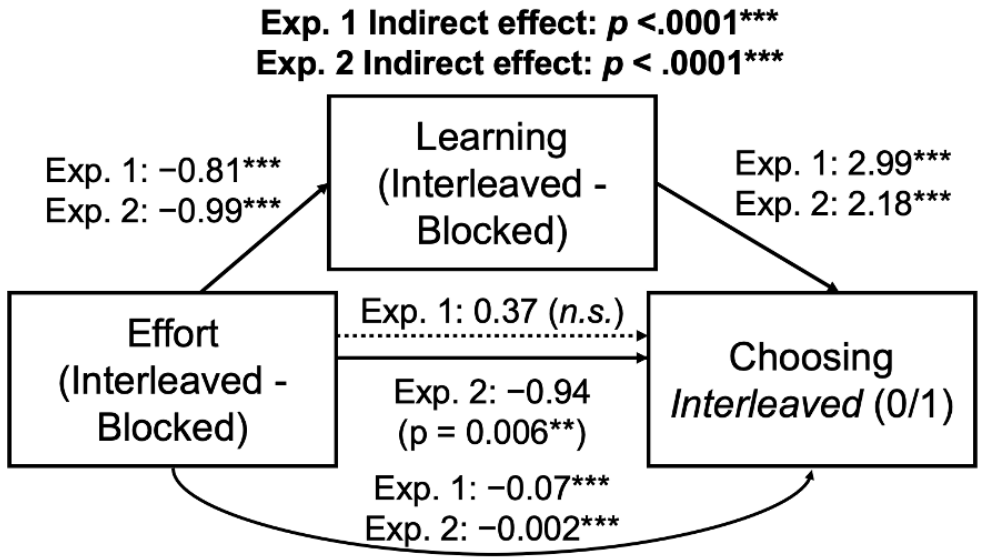

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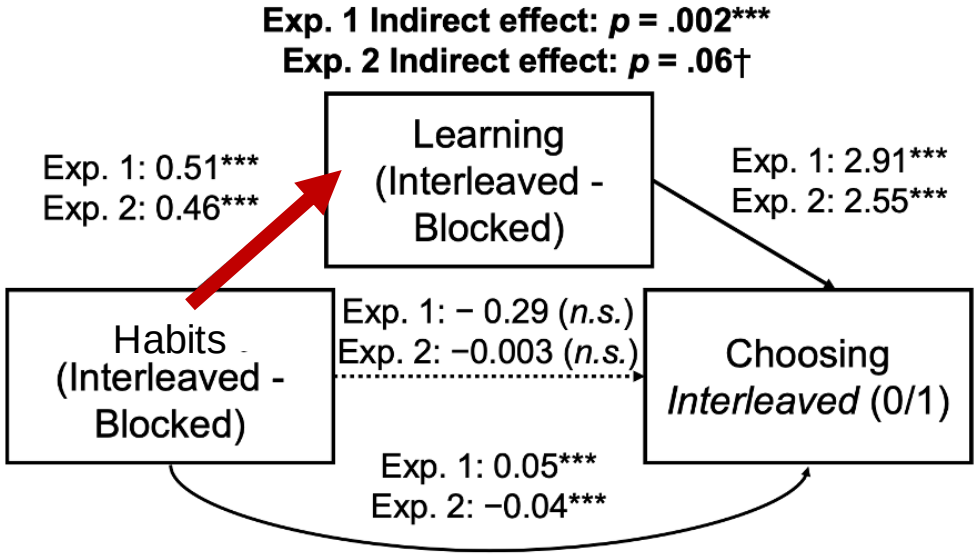

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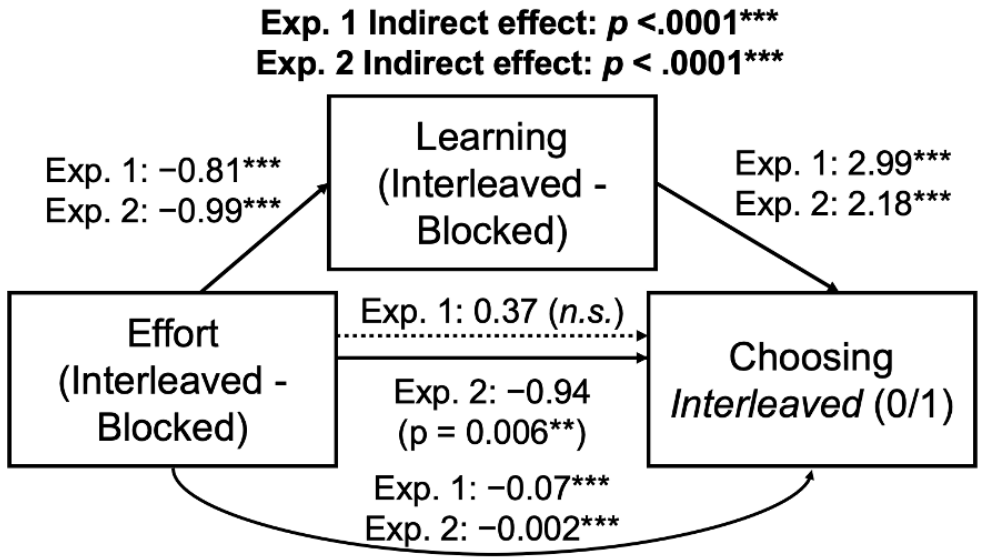

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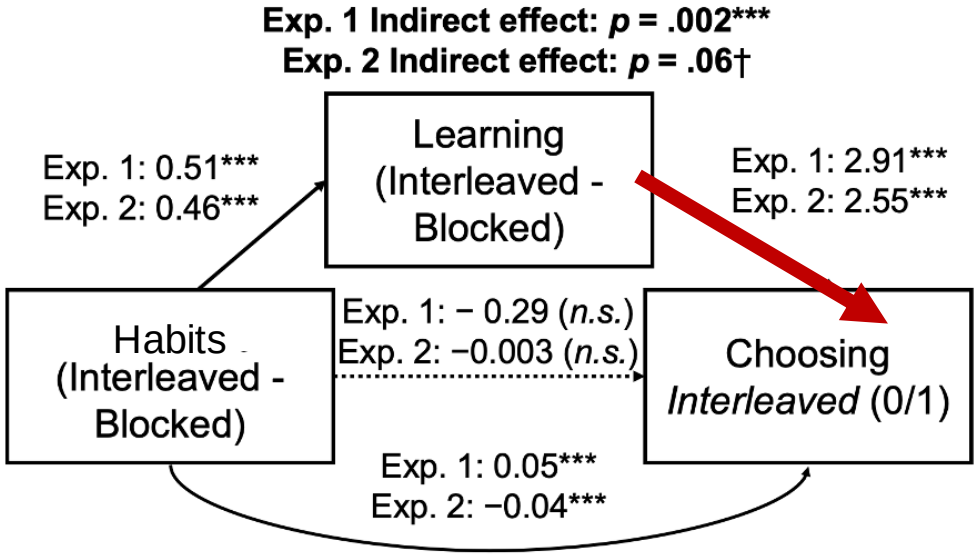

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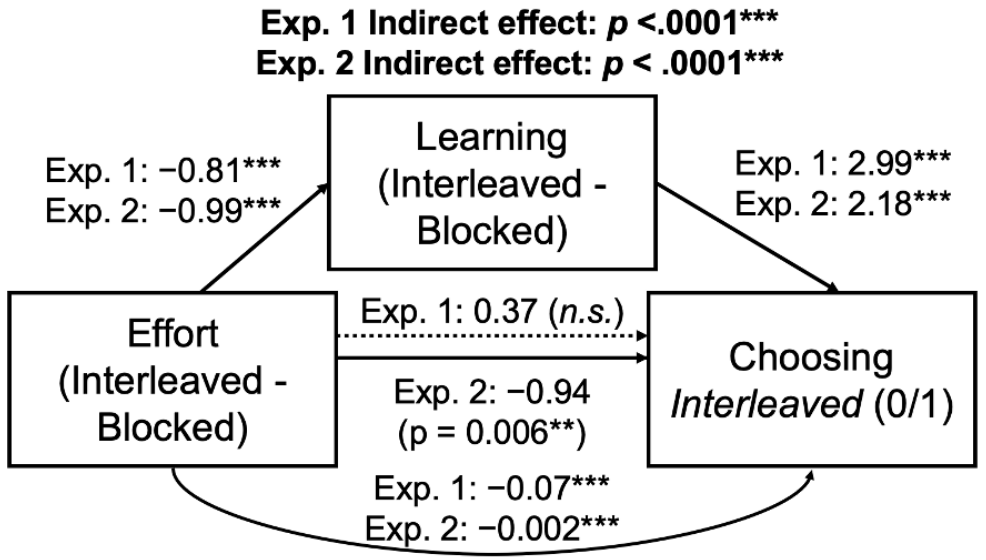

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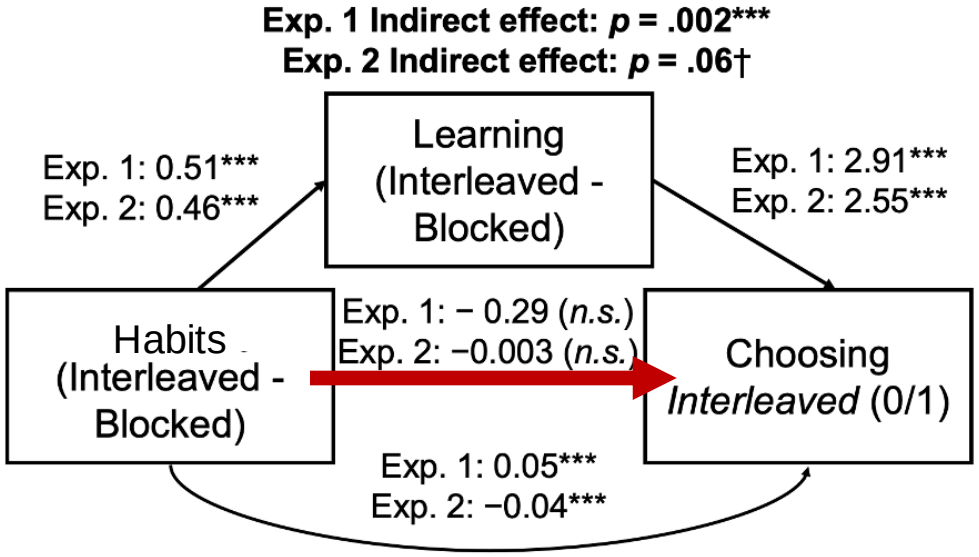

Take Aways

Learners interpret the extra effort required by the interleaved study schedule as a sign of poor learning and consequently do not choose it.

Learners found the blocked study schedule more habitual, and this tendency predicted the degree to which they perceived blocking as more favorable for their long-term learning.

Learners do not choose strategies simply because they are habitual or easy, but rather because they interpret such strategies as better for learning.

Discussion

Even when participants were explicitly told that 90% of learners learn better when items are interleaved, they still prefer blocking over interleaving.

Learners are not evading strategies because they are effortful or not habitual, they attempt to pick the optimal strategy, but, due to perceived mental effort and unfamiliarity, they mistakenly believe that a blocked schedule is best for learning.

Real-world Implications

Highlight the importance of desirable difficulties

Promote understanding that familiar study habits aren’t necessarily the most effective

Bridge the gap between research and learner’s choice of learning strategies

Acknowledgments

We would like to thank the MAPLE Lab, the LRDC, and Ramya Beuford for her conceptualization of how habits and familiarity affect our perceived learning and thus our self-regulated study strategy decisions.

MAPLE Lab

Memory And Psycholinguistics in Learning & Education

UNIVERSITY OF PITTSBURGH

LRDC Learning Research & Development Center

THANK YOU!

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