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Background

- **Research Question:** Can caffeine improve performance on a memory task?
- **Caffeine:** 85% of American adults consume some form of caffeine daily with the average intake being 164 mg (Mitchell et al., 2014). The drug's widespread popularity is due to its ability to reduce fatigue, enhance concentration, improve mood, and increase attention. However, caffeine may also help play a role in improving memory, as well. For example, with regard to short-term memory, caffeine has been shown to decrease reaction time in low task load displays of selective attention tasks (Lorist, Snel, Kok, & Mulder, 1996).
- **Present Study:** This study aims to examine the effects of caffeine consumption on spatial working memory, the temporary storage, maintenance, and manipulation of spatial information (Baddeley & Hitch, 1974).

Hypotheses

- We hypothesized that participants given caffeine will tend to complete levels within Rush Hour quicker (fewer moves, less time to completion) and with fewer errors (recursions – back and fourth movements) than those given the placebo. This effect would be more pronounced on easier levels than on harder levels due to the latter's increased task load.
- We also hypothesized that while caffeine consumption will increase physiological arousal, those given caffeine will, generally, tend to report lower levels of stress on the Dundee Stress State Questionnaire (DSSQ). This is due to a paradoxical calming effect caused by the mood-enhancing qualities of caffeine consumption.

References

- Baddeley, A. D., & Hitch, G. (1974). Working memory. *Psychology of Learning and Motivation*, 8, 47-89.
- Lorist, M. M., Snel, J., Kok, A., & Mulder, G. (1996). Acute effects of caffeine on selective attention and visual search processes. *Psychophysiology*, 33, 354-361.
- Mitchell, D. C., Knight, C. A., Hockenberry, J., Teplansky, R., & Hartman, T. J. (2014). Beverage caffeine intakes in the US. *Food and Chemical Toxicology*, 63, 136-142.

Methods

Pre-Experimental Phase

1. Participants are asked to abstain from caffeine for at least 24 hours prior
2. Informed consent
3. Intake survey

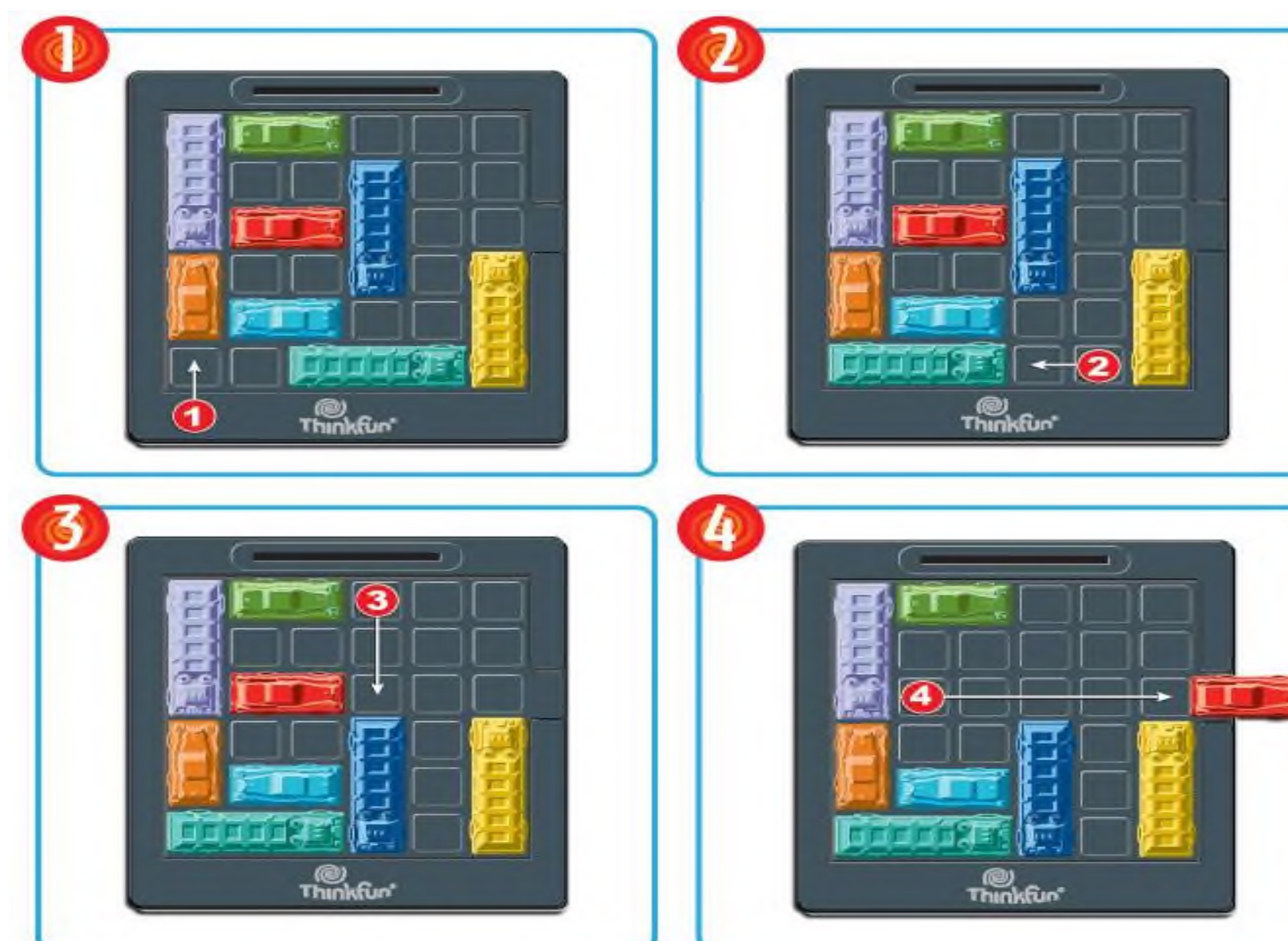
Phase 1: Familiarization

1. Demographic ?'s
2. Dundee Stress State Questionnaire (DSSQ) - Part 1
3. Participants complete 5 easy levels in Rush Hour™
4. DSSQ - Part 2
5. Participants are randomly assigned to caffeine OR placebo condition
6. Caffeine / placebo administration

← 60 minute intermission

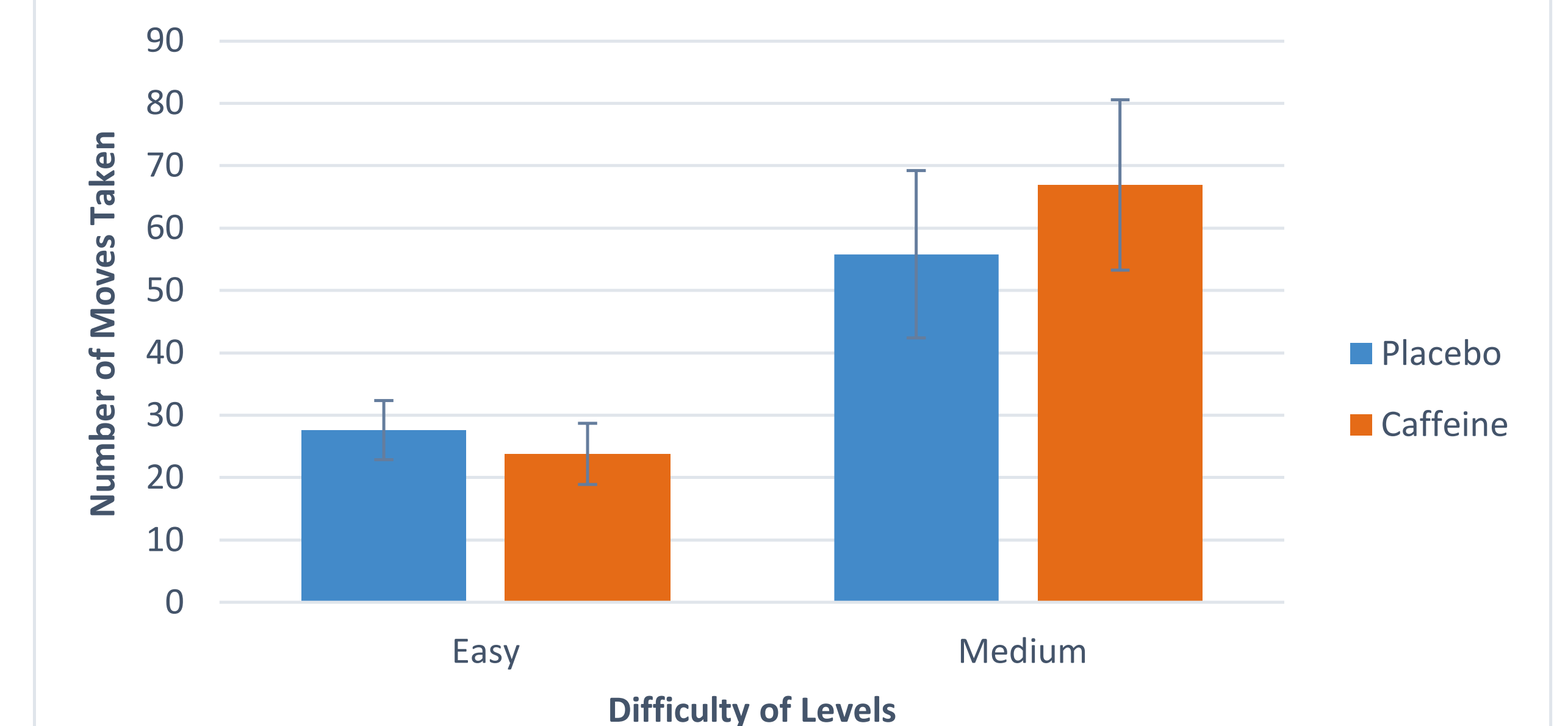
Phase 2: Testing

1. DSSQ – Part 1 (again)
2. Participants complete 6 easy + 6 medium levels in Rush Hour™
3. DSSQ – Part 2 (again)
4. Participants are checked for any negative side effects
5. Debriefing

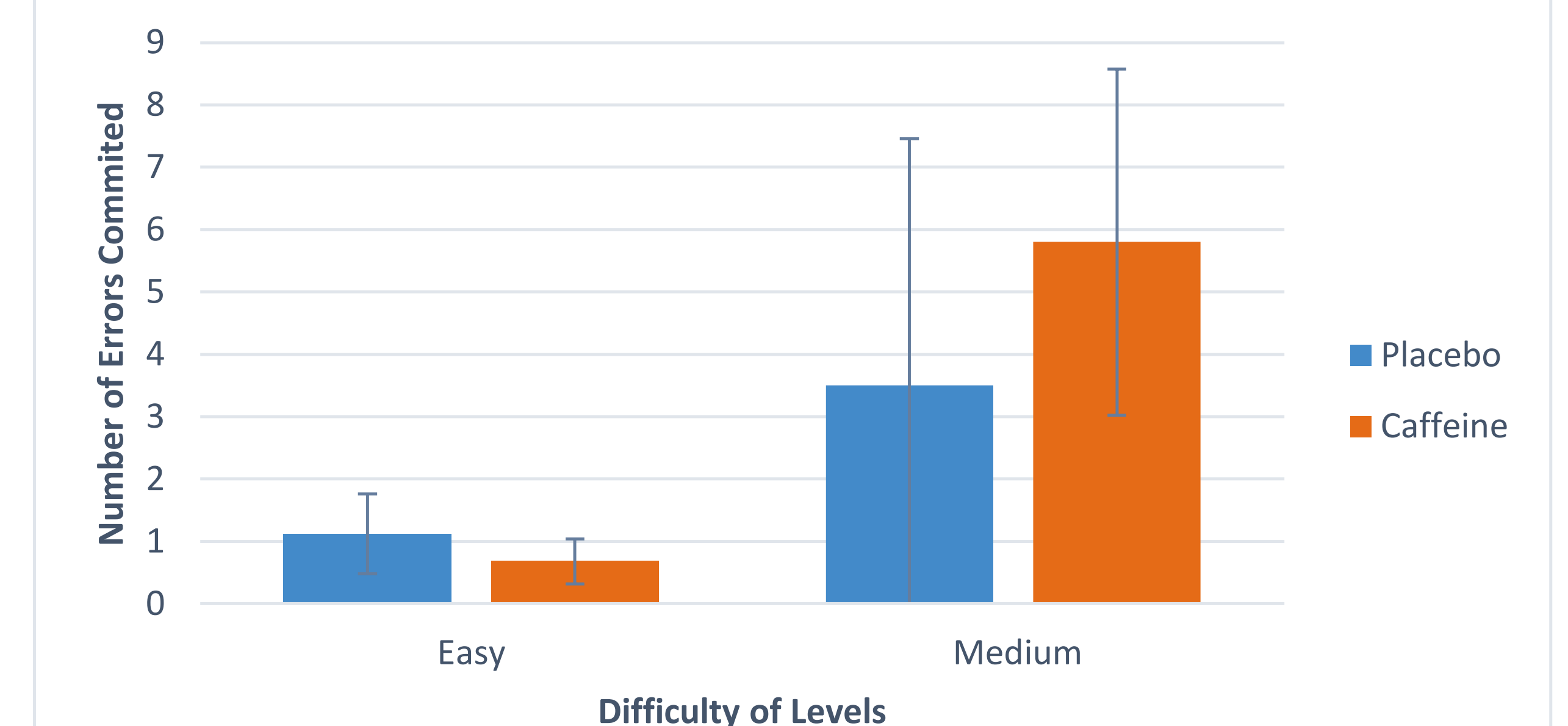


Preliminary Results

Average Number of Moves Taken



Average Number of Errors Committed



Average Time Taken

