

Number Line Estimation

Hanit Galili¹, Avigail Langer², Avishai Henik²

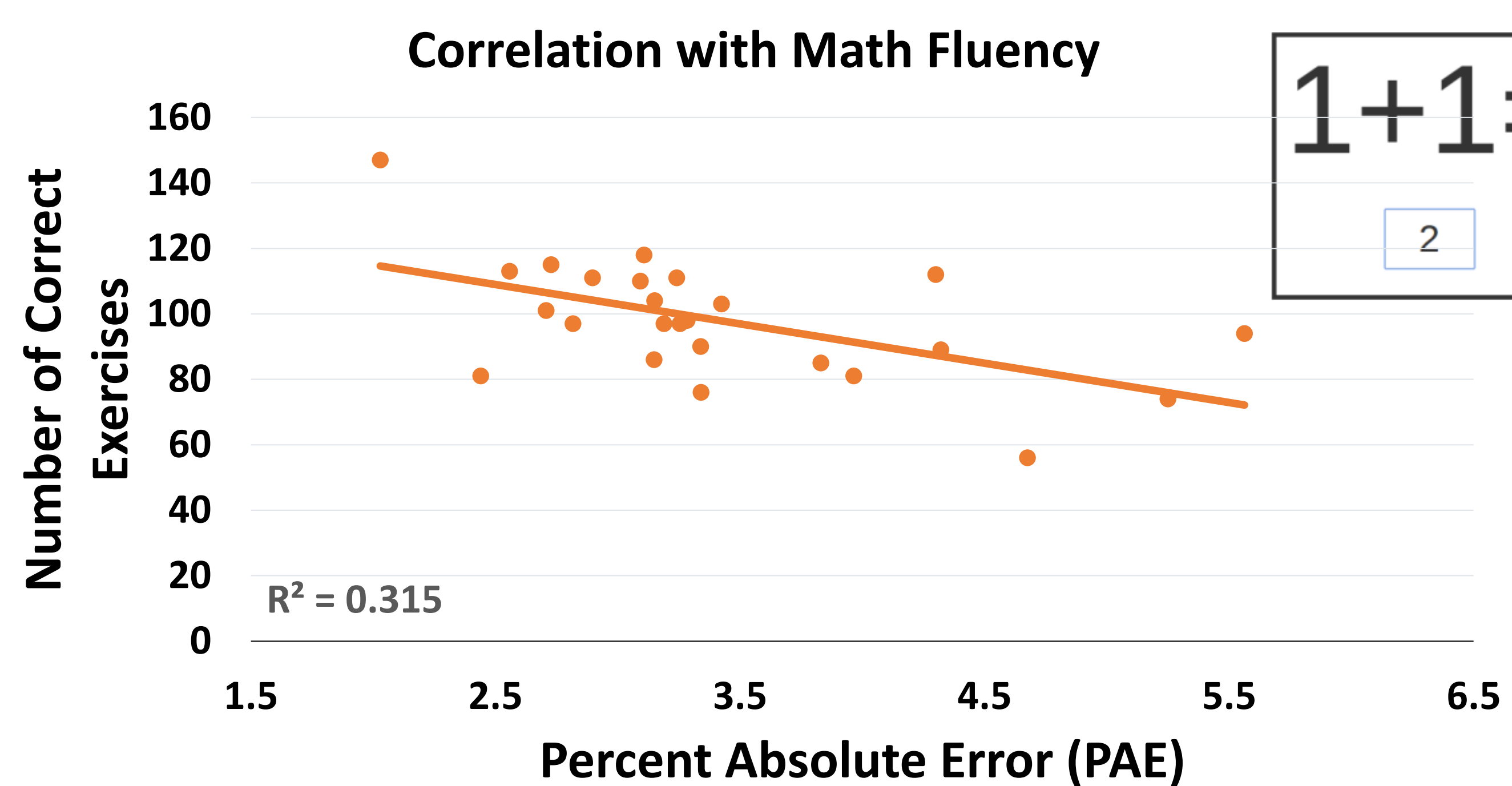
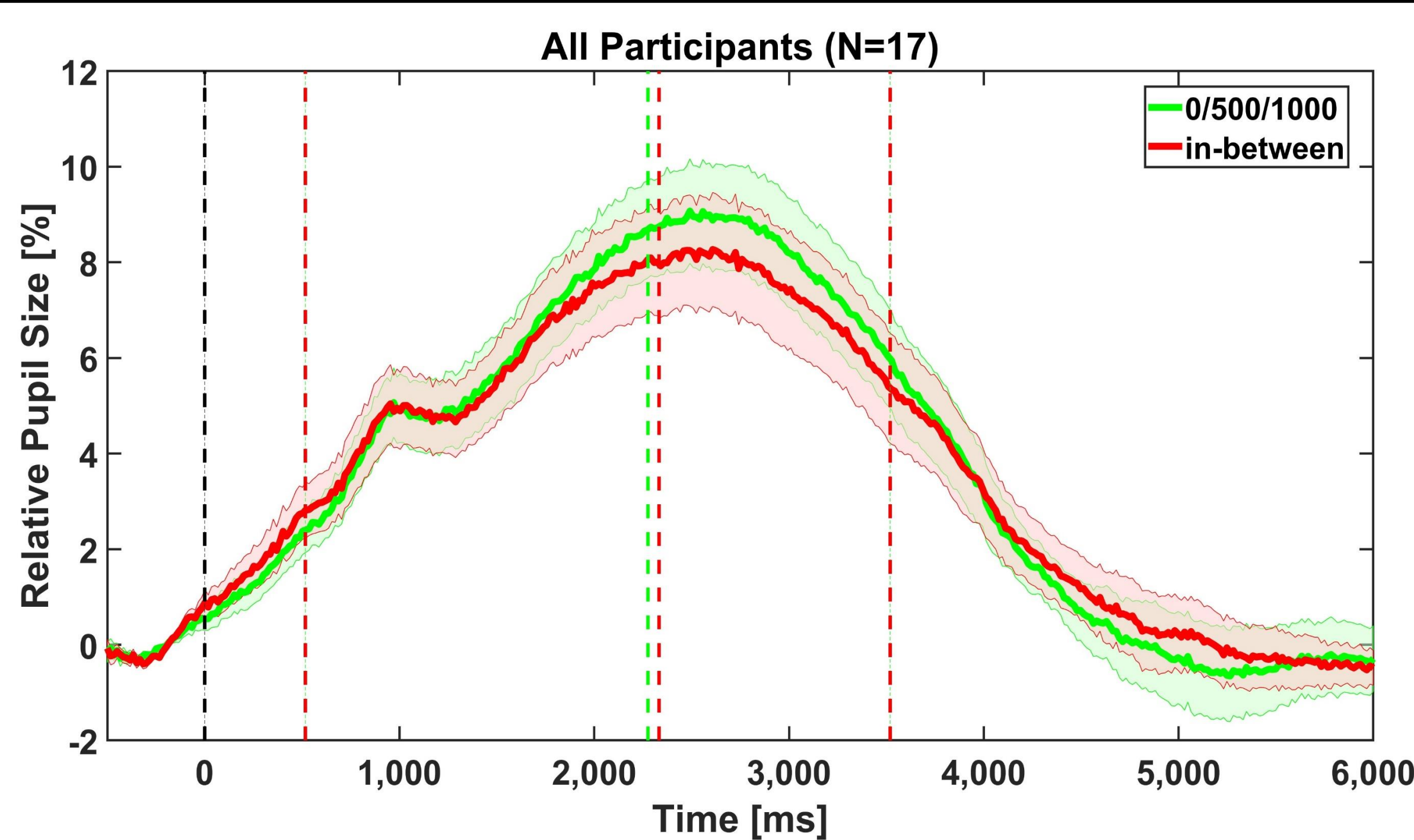
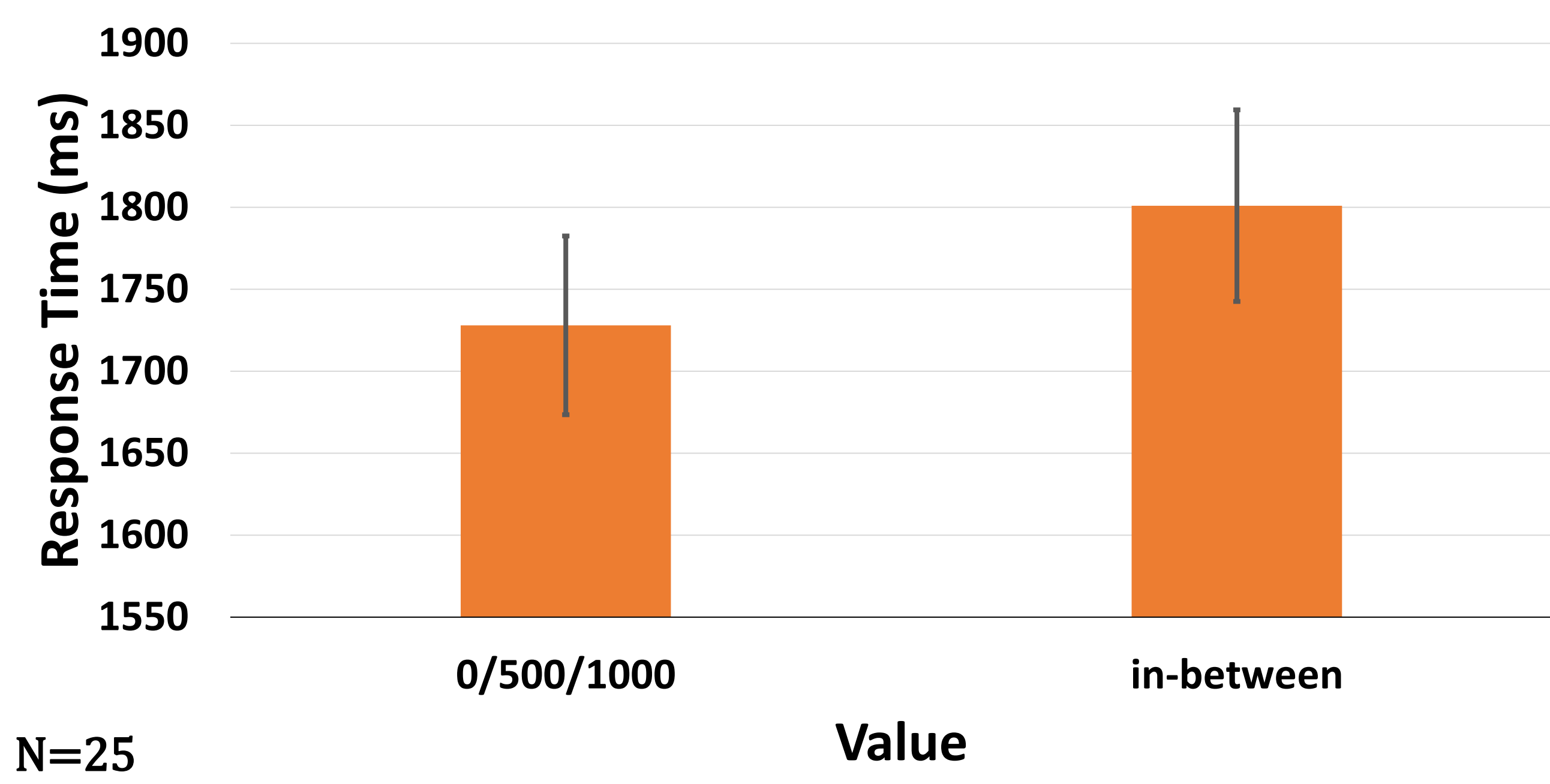
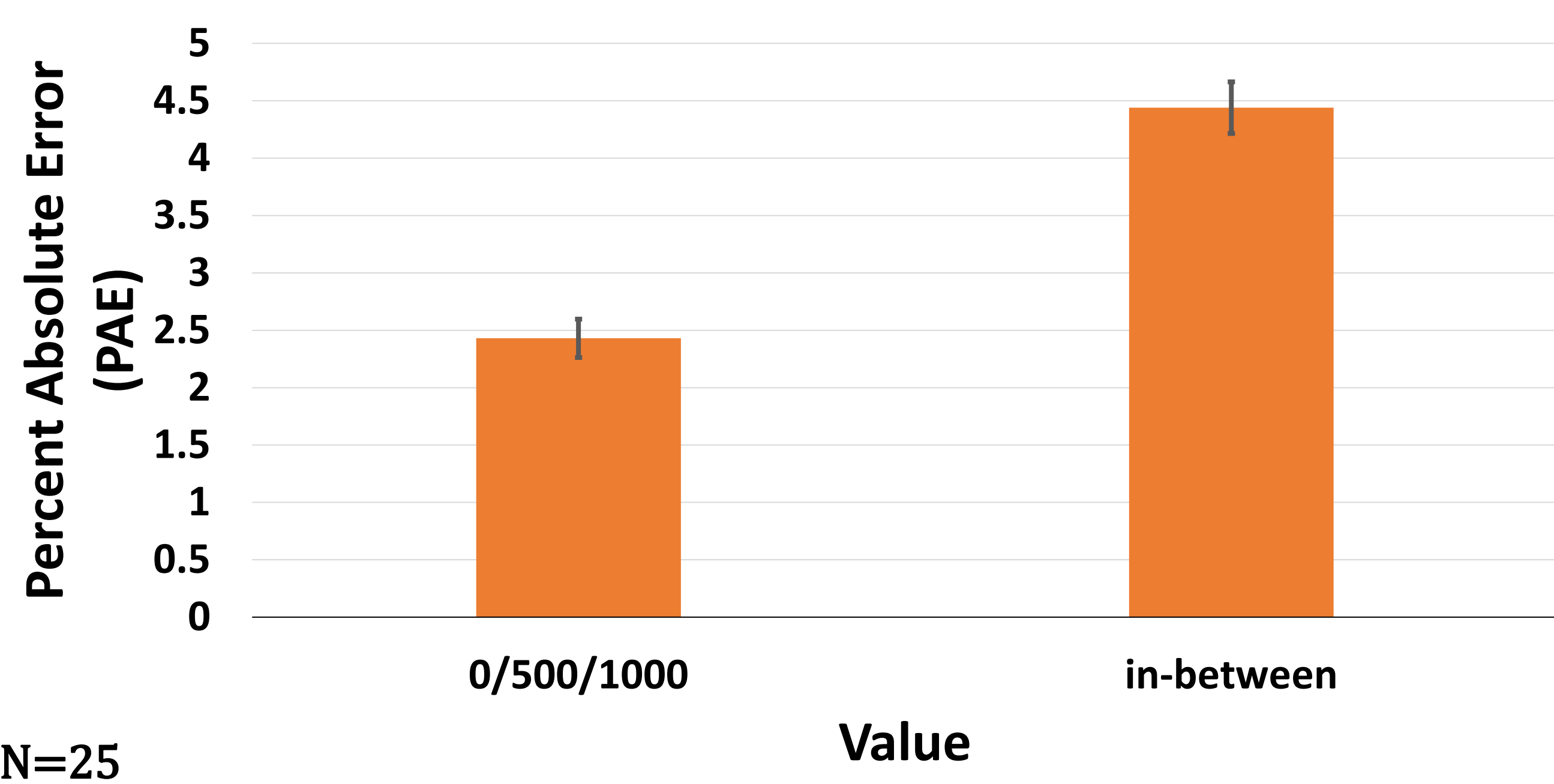
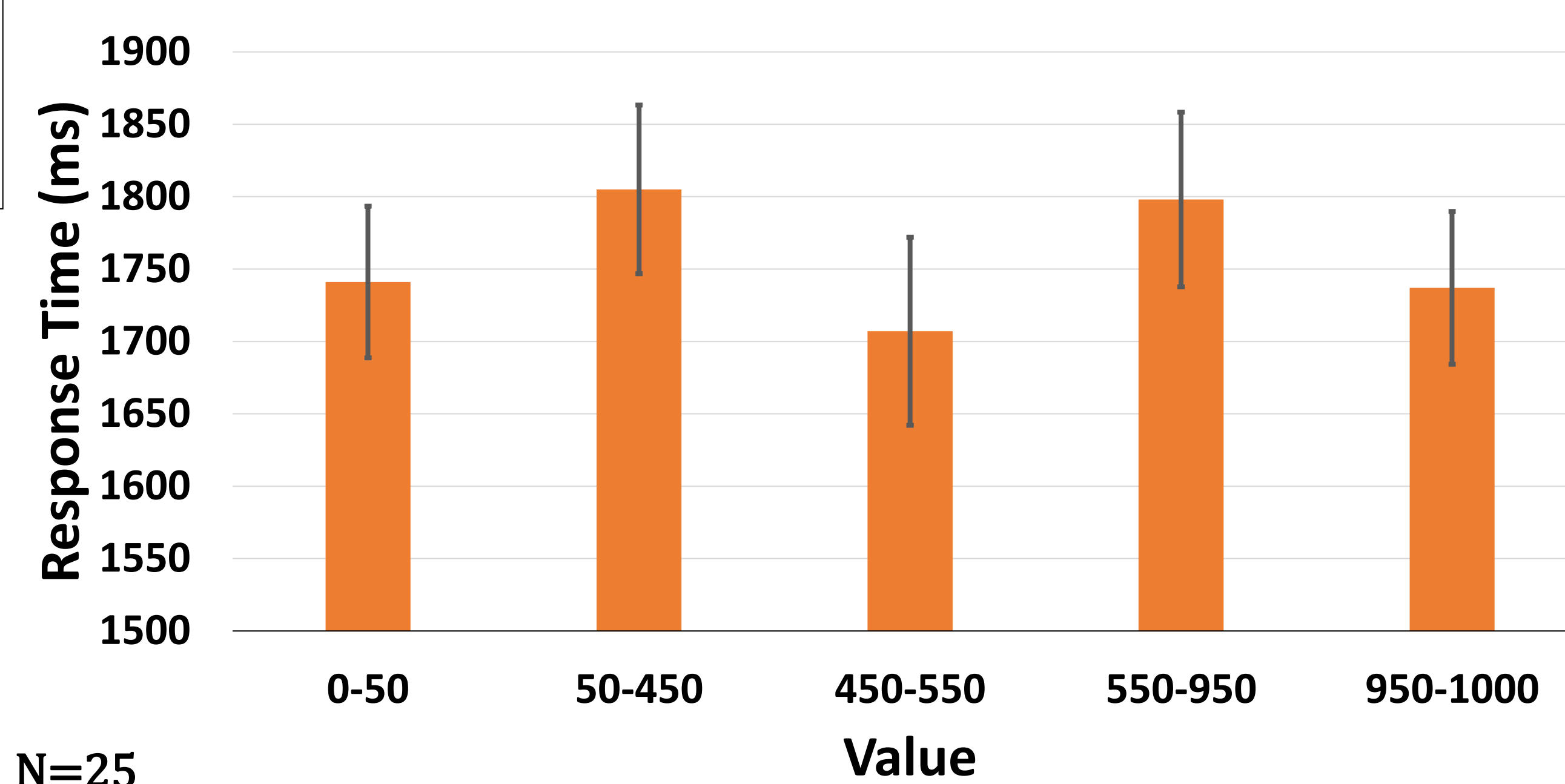
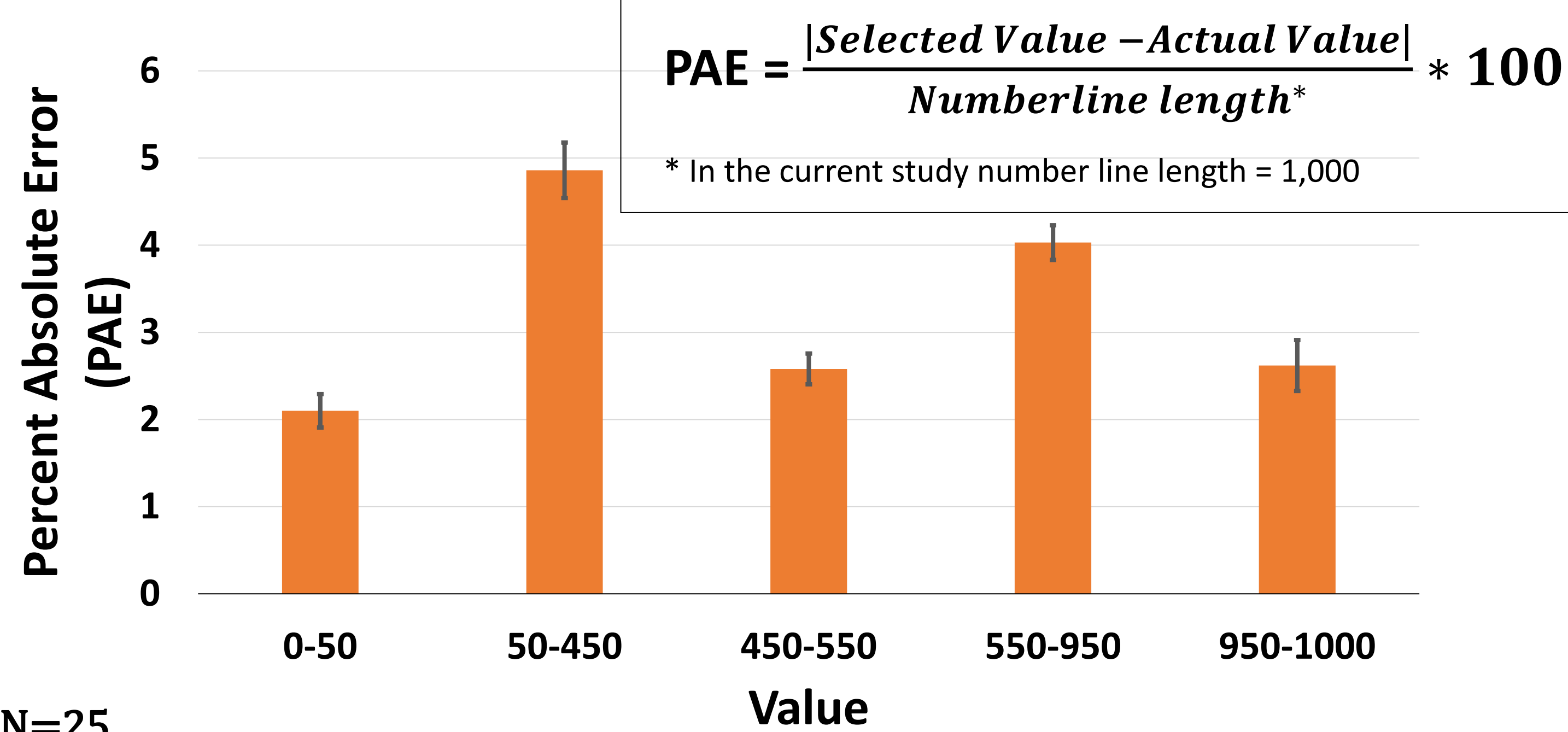
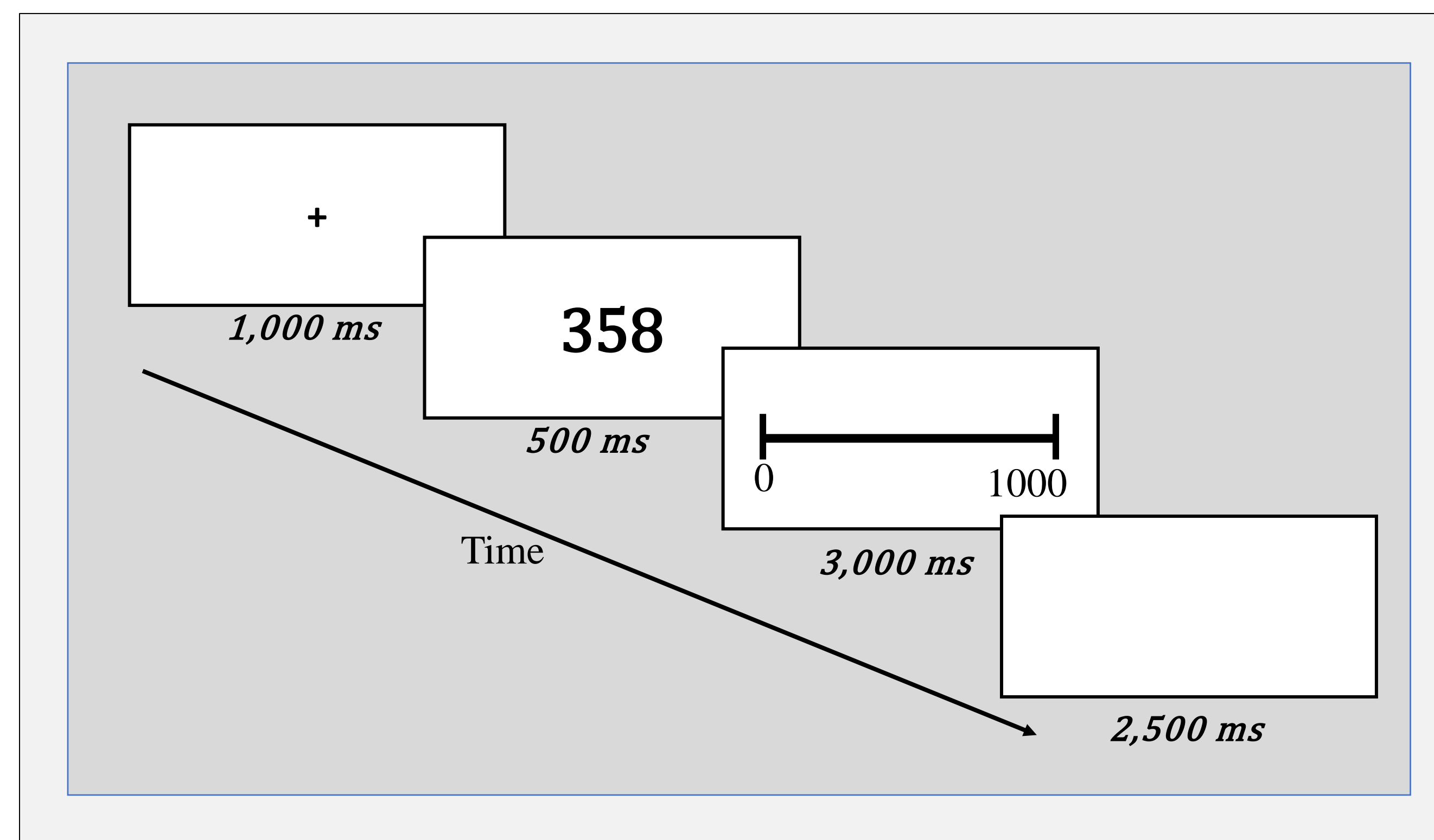
¹Department of Cognitive and Brain Sciences, ²Department of Psychology
Ben-Gurion University of the Negev, Beer-Sheva, Israel



Introduction

- In number line estimation tasks, participants are presented with a number (e.g., 358) and asked to estimate this number position on a line between 0 and 1,000 (0 and 100 for young children or 0 and 1 for fractions).
- Researchers have suggested that this task captures participants' intuitions regarding numbers and their magnitudes.
- Accuracy on this task, which correlates with math achievements, is higher at specific orientation points (e.g., ends or middle of the line) and for integers than for fractions.
- We reasoned that the different estimation requirements entail different needs of mental manipulation and attention.
- In the current study, we measured pupil dilation while performing the task and checked correlation with a math fluency task (Glicksman et al., 2022).

Method



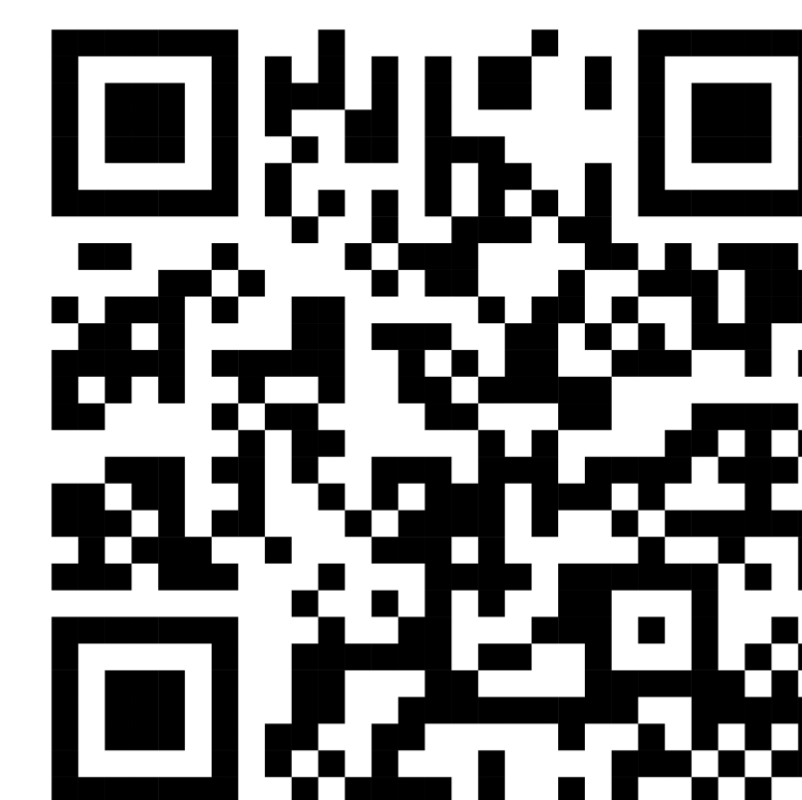
Discussion

- As expected, accuracy is higher and response time is lower for numbers near orienting points and in the middle (near 500).
- Pupils dilated more for numbers near orienting points and in the middle (near 500), suggesting more mental attempts or more weighing of alternatives is required for these numbers than for other numbers along the line.
- High correlation between number of correct exercises in a math fluency task and PAE in number line estimation task was found because both tasks correlate with math achievements.

Reference

Glicksman, Y., Berebbi, S., Hershman, R., & Henik, A. (2022). BGU-MF: Ben-Gurion University Math Fluency test. *Applied Cognitive Psychology*, 36(2), 293-305.

Read it online:



Email:
hanit.galili@gmail.com