

Introduction

- Following and temporally anticipating events in a rhythmic stream is vital for coordinating movements and interacting with our environment (De Kock, 2021)
- Studies have shown that movement exerts a wide range of effects on subjective timing by biasing or improving sensitivity of estimates (De Kock, 2021)
- Beat-based timing demonstrations show that active tapping leads to greater accuracy and precision at detecting timing deviations (De Kock, 2021)

Goal: Investigate the relationship between movement and time-keeping abilities

Investigate: Does tapping affect the way we adjust our rhythmic timing perception to accommodate timing perturbations?

Methods and Materials

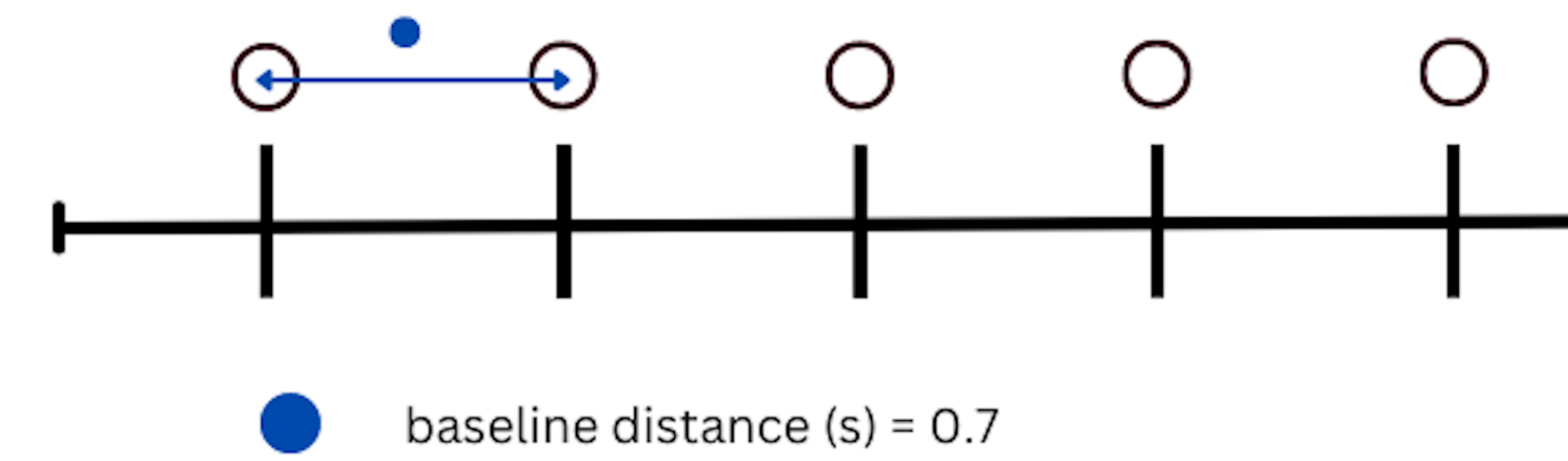
- Undergrads with 2+ years music training
- Timing judgments about final tone in metronomic sequence as "early" or "late"
- Timing parametrically shifted on last and second-to-last tone

TAPPING:

Participants tap along to the first 5 beats

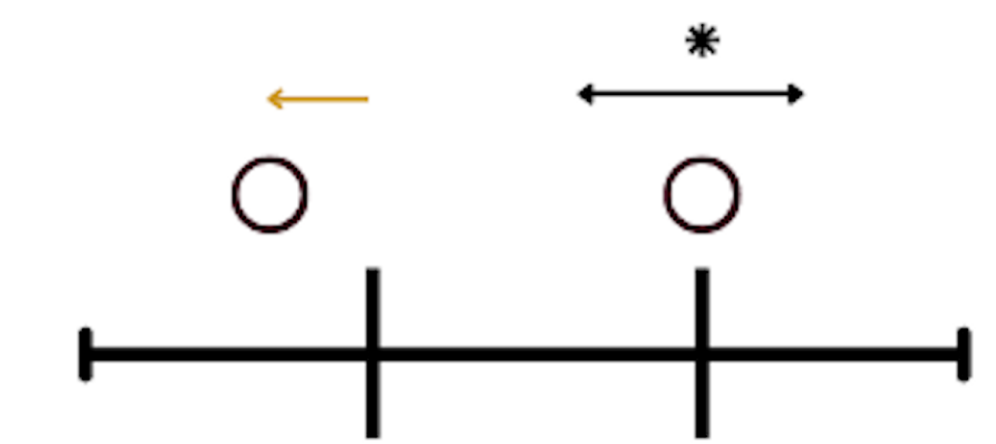
NO TAPPING:

Participants do not tap along to the first 5 beats



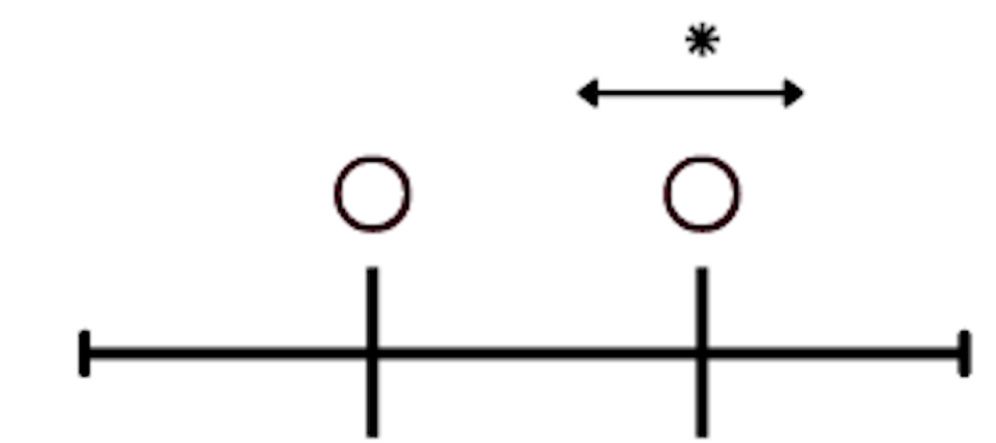
EARLY:

initial shift (s) = -0.028



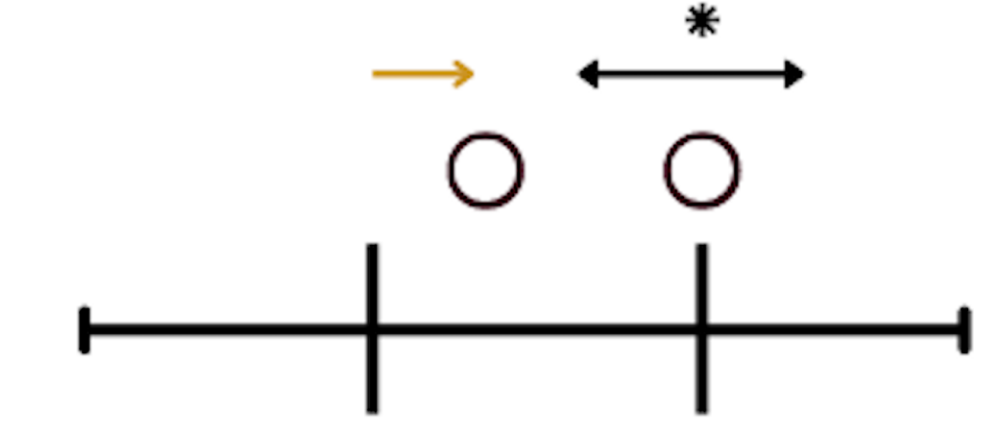
NO SHIFT:

initial shift (s) = 0.0



LATE:

initial shift (s) = 0.028



* final shift (s) = -0.056, -0.042, -0.028, -0.014, 0.0, 0.014, 0.028, 0.042, 0.056

Results

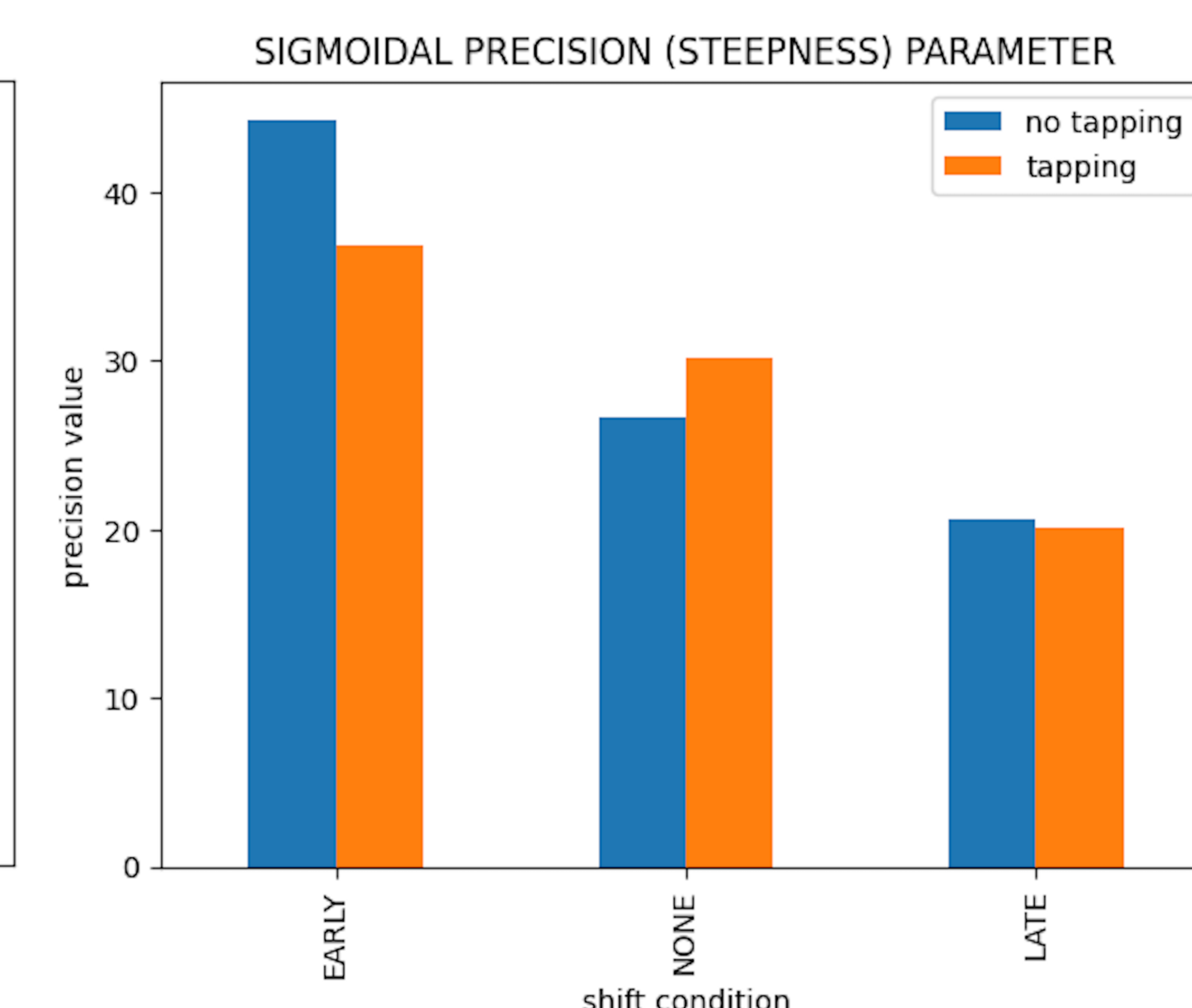
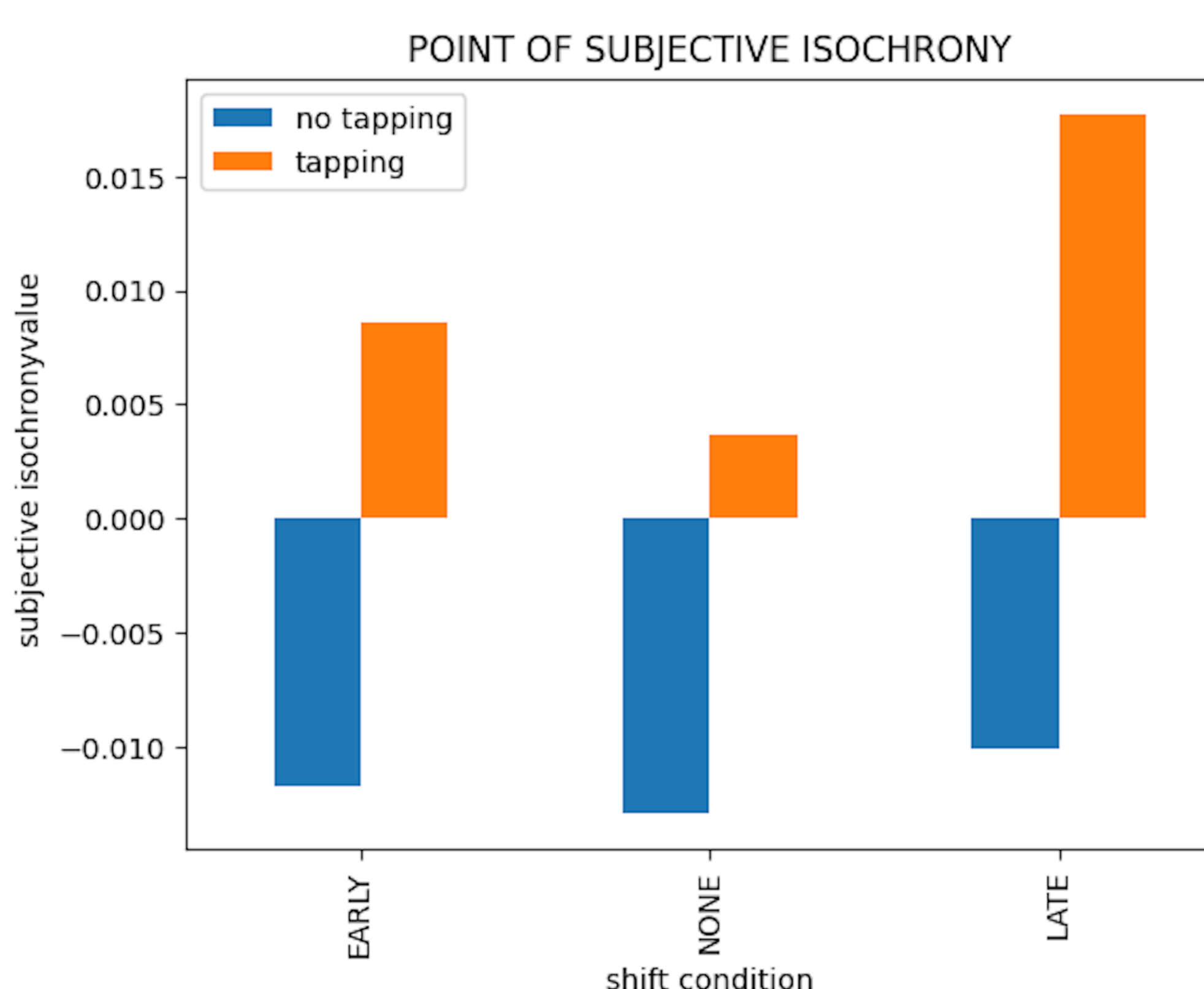
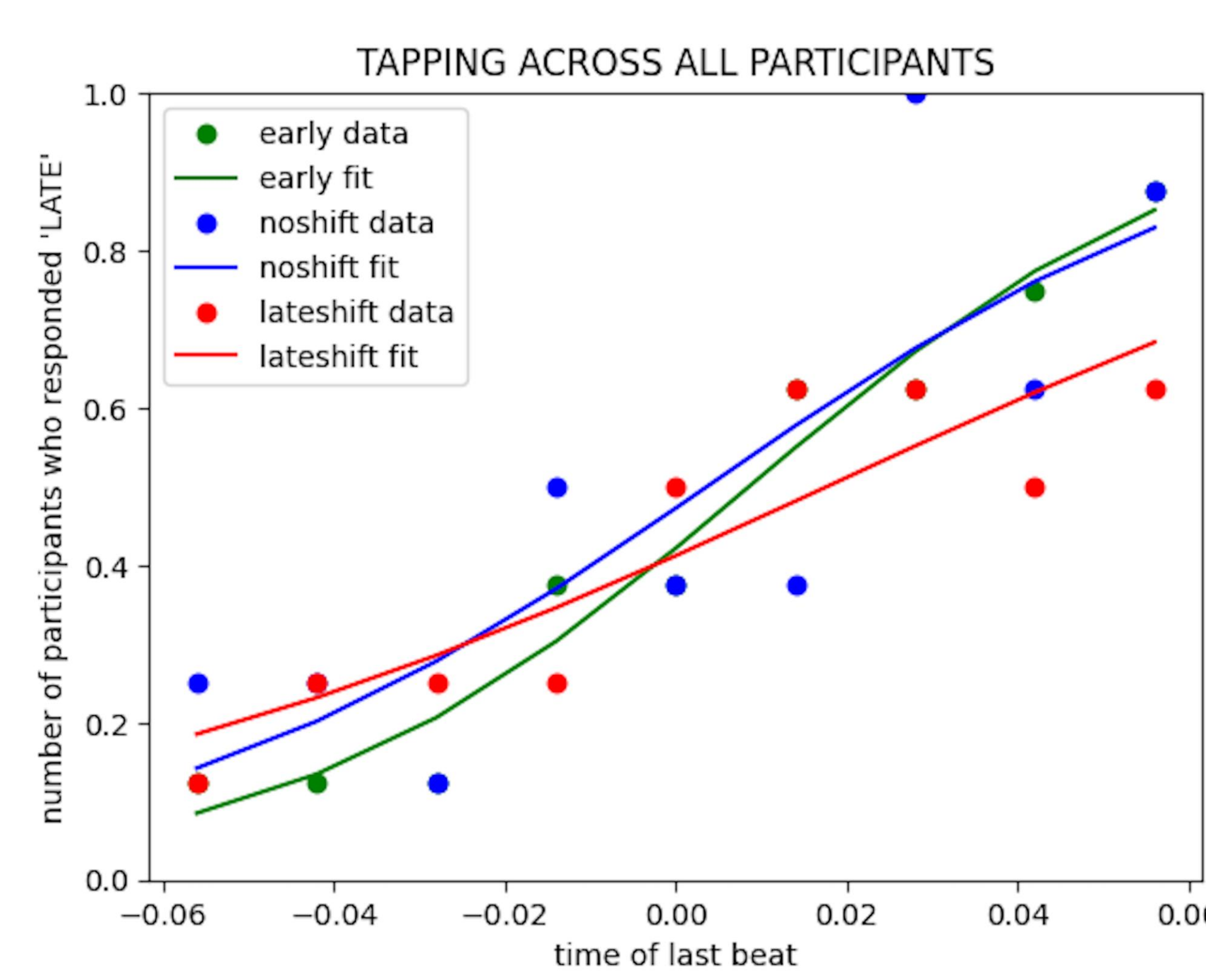
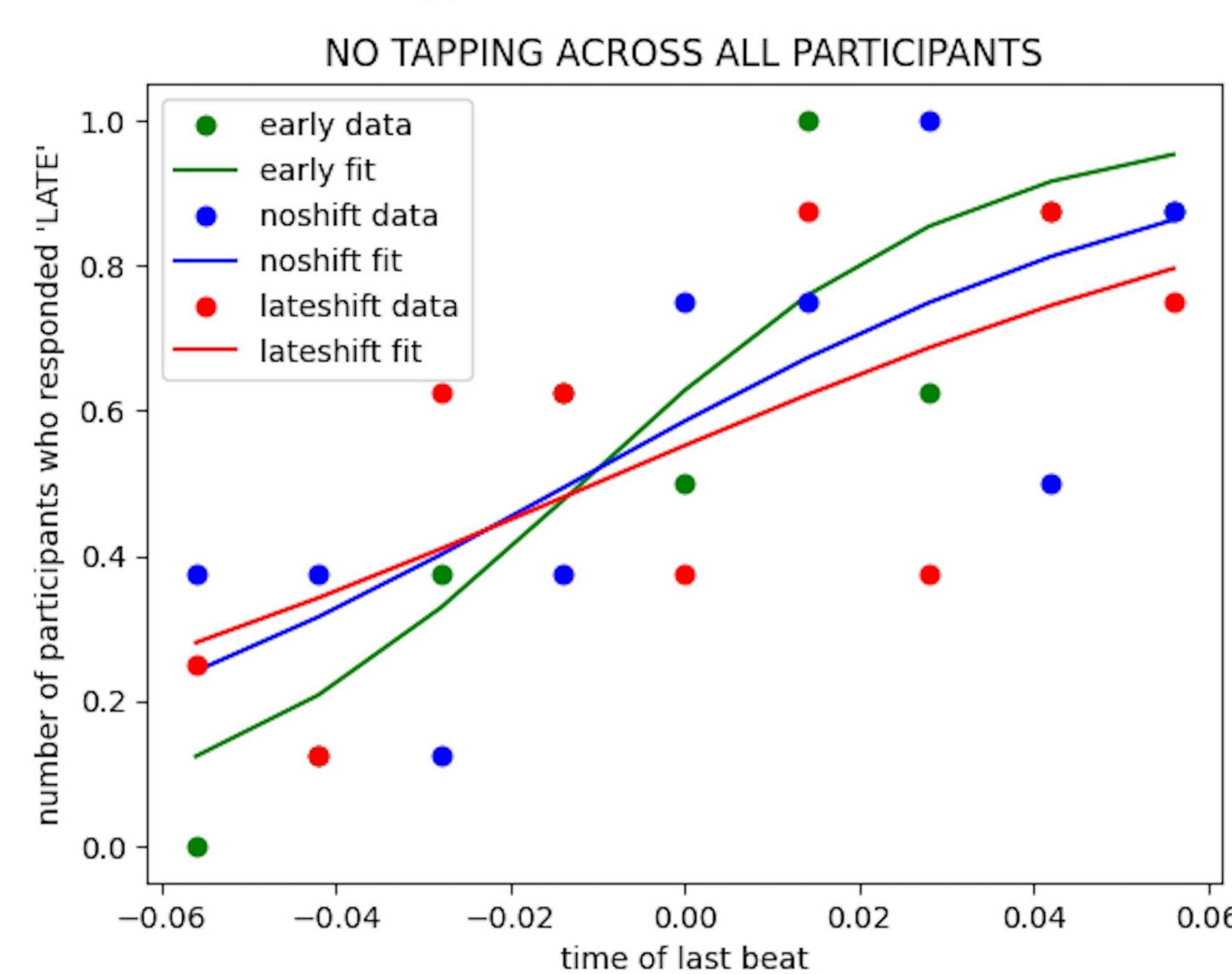
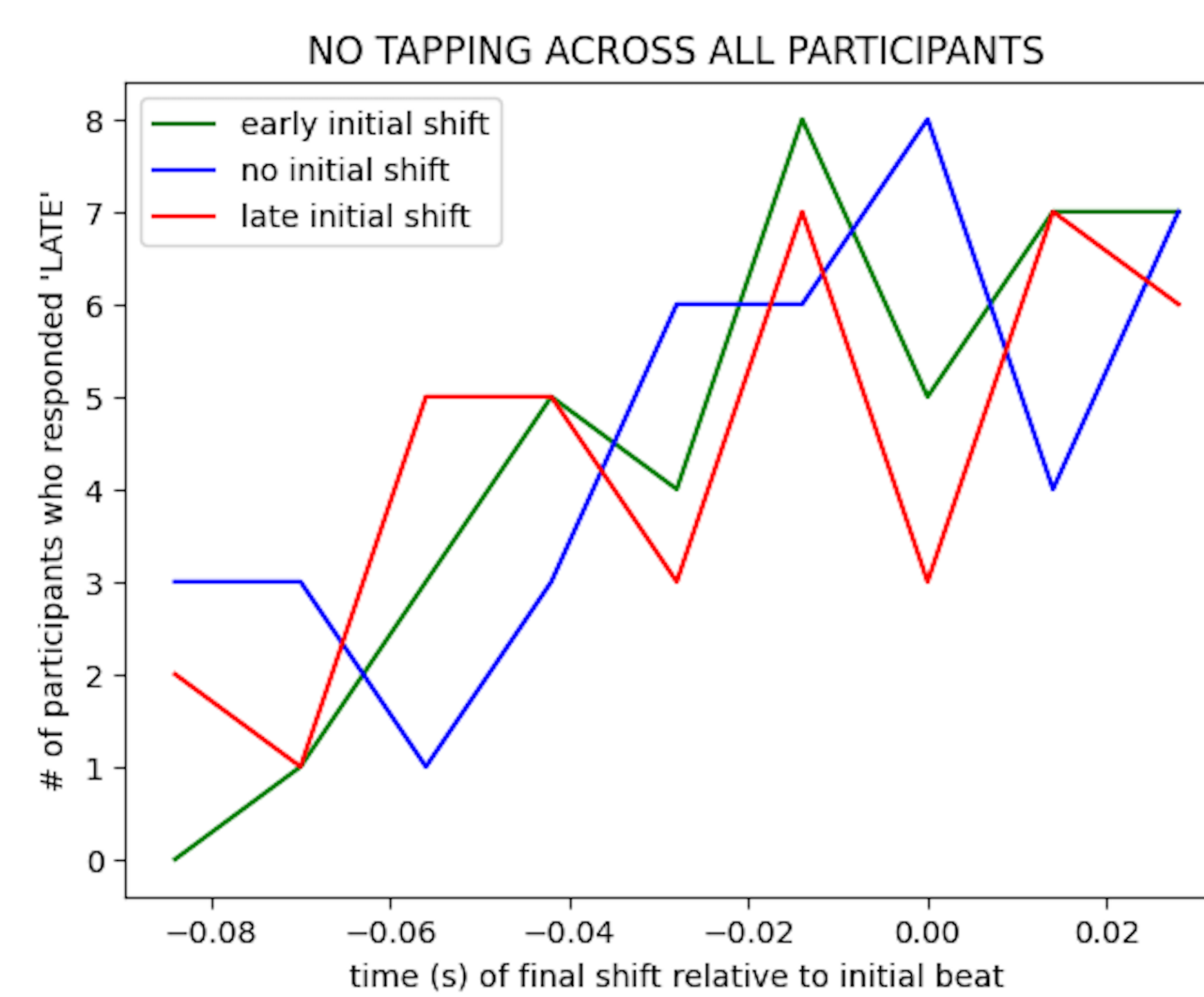
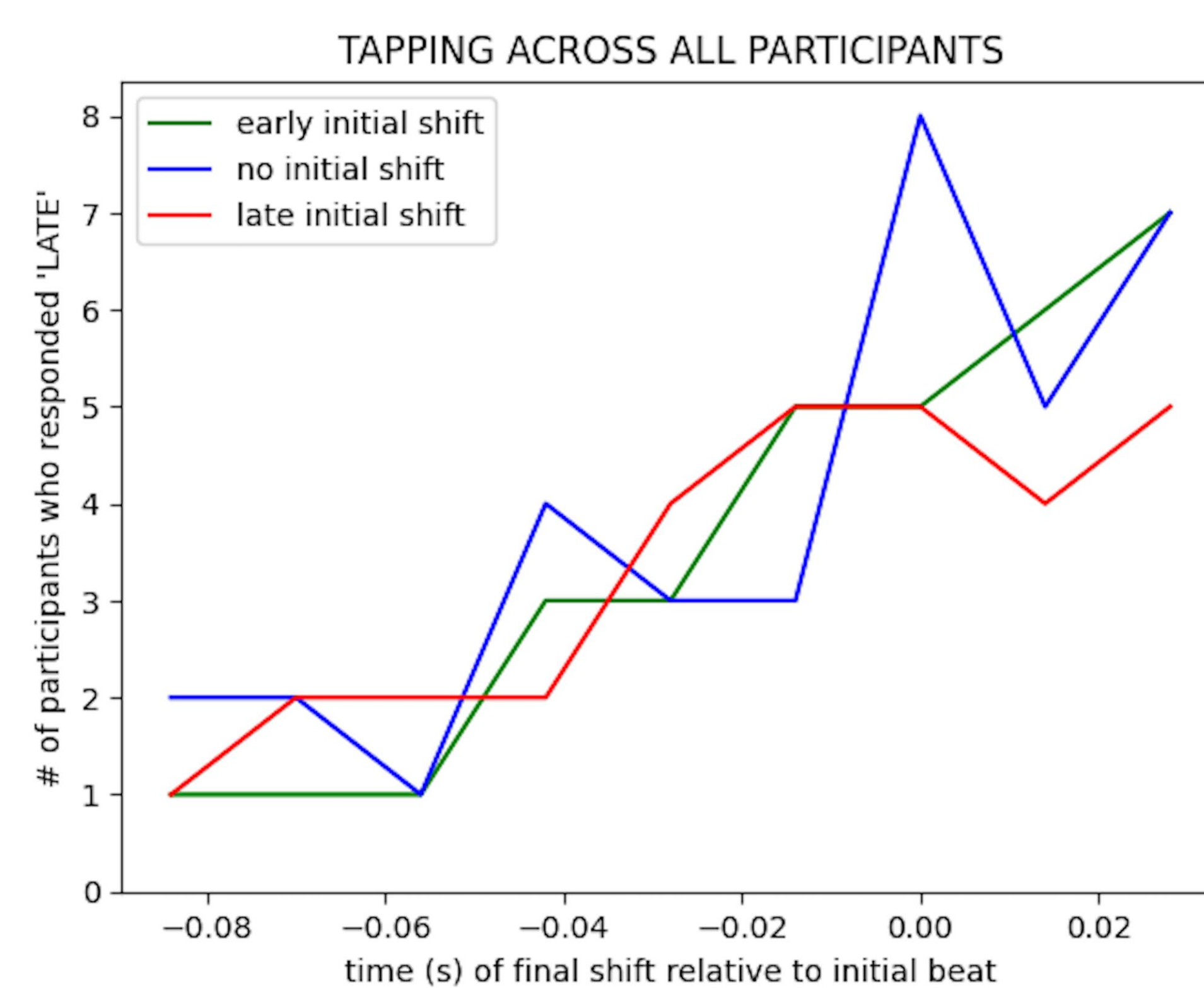
- Increased precision and perception of precision in tapping trials regardless of shift in the second-last beat
- Greater cumulative sum of confidence ratings for tapping trials than non-tapping trials
- More "early" judgments while tapping
- Increased sensitivity to the timing of the last beat

Analysis & Conclusions

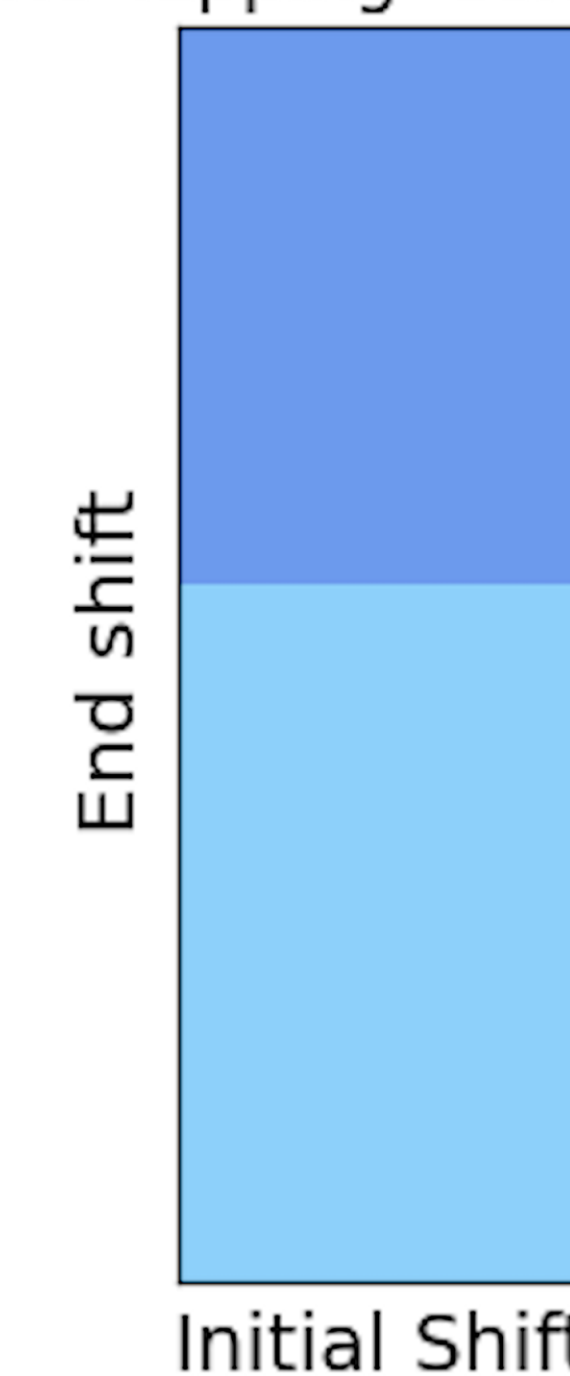
- Increased precision in tapping trials only with no shift in second-last beat
- More "early" judgments while tapping
- Increased sensitivity to the timing of the last beat
- Implies that rhythmic time perception is affected by entrained movement

References

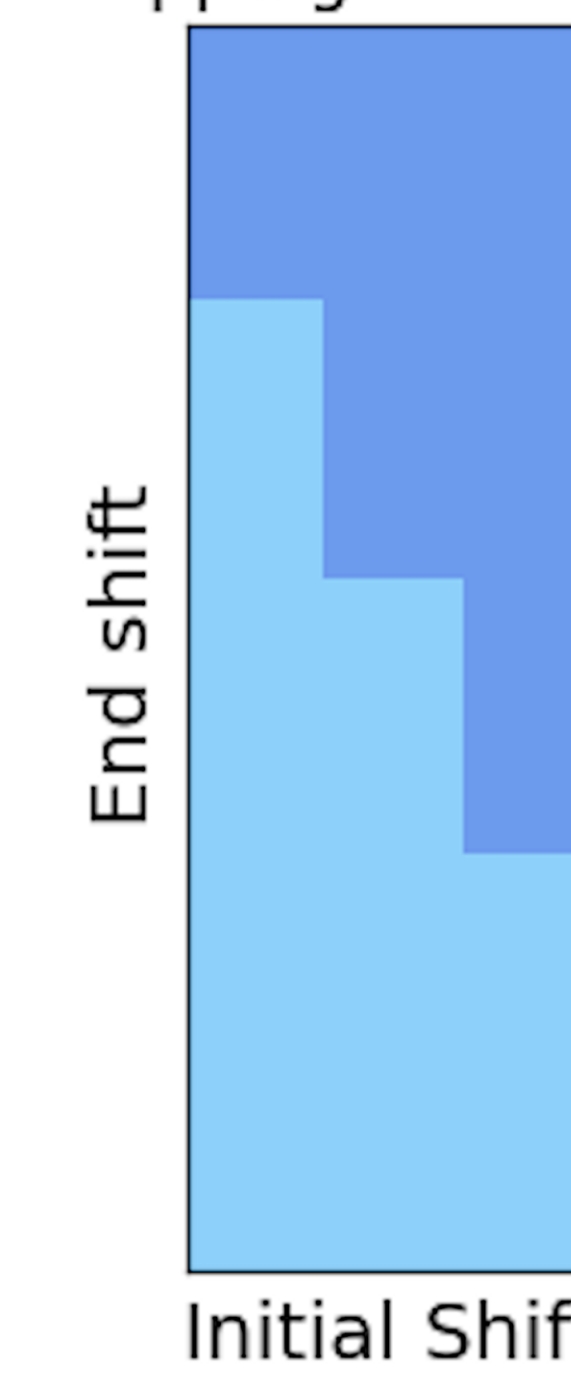
De Kock R, Gladhill KA, Ali MN, Joiner WM, Wiener M. How movements shape the perception of time. Trends in Cognitive Sciences. 2021 Nov 1;25(11):950-63.



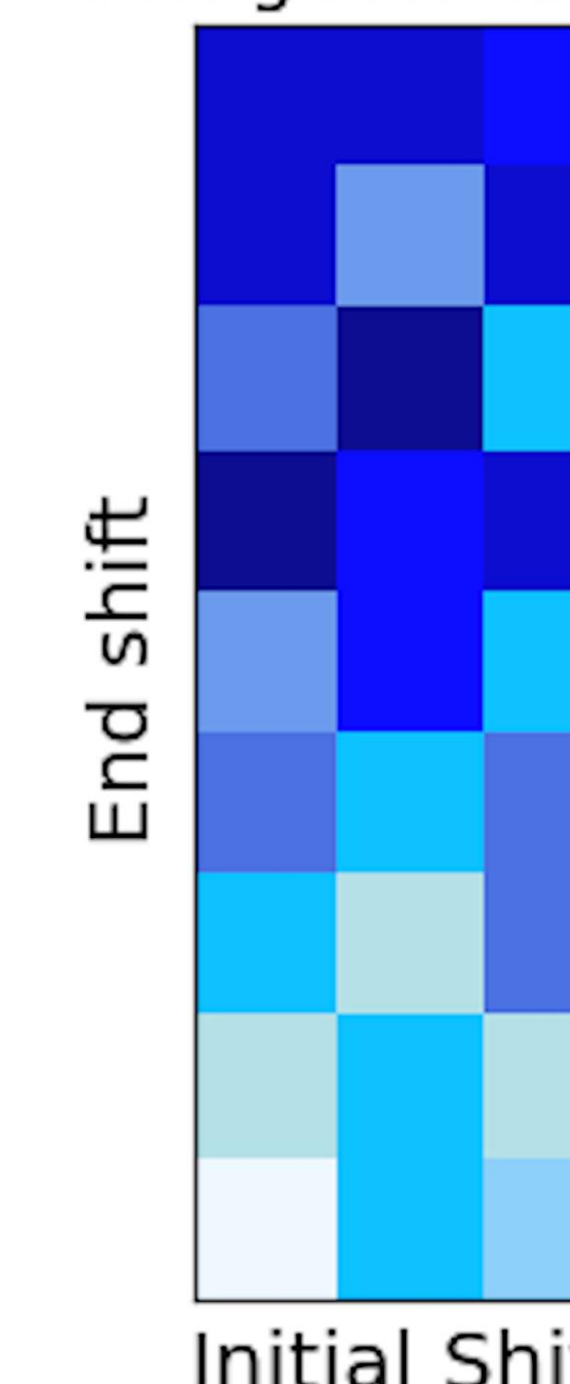
Expected Distribution 'No Tapping' Condition



Expected Distribution: 'Tapping' Condition



Average No Tapping



Average Tapping

