



Does Looking Mean Liking: Processing Differences Across Perceptual and Preferential Choice

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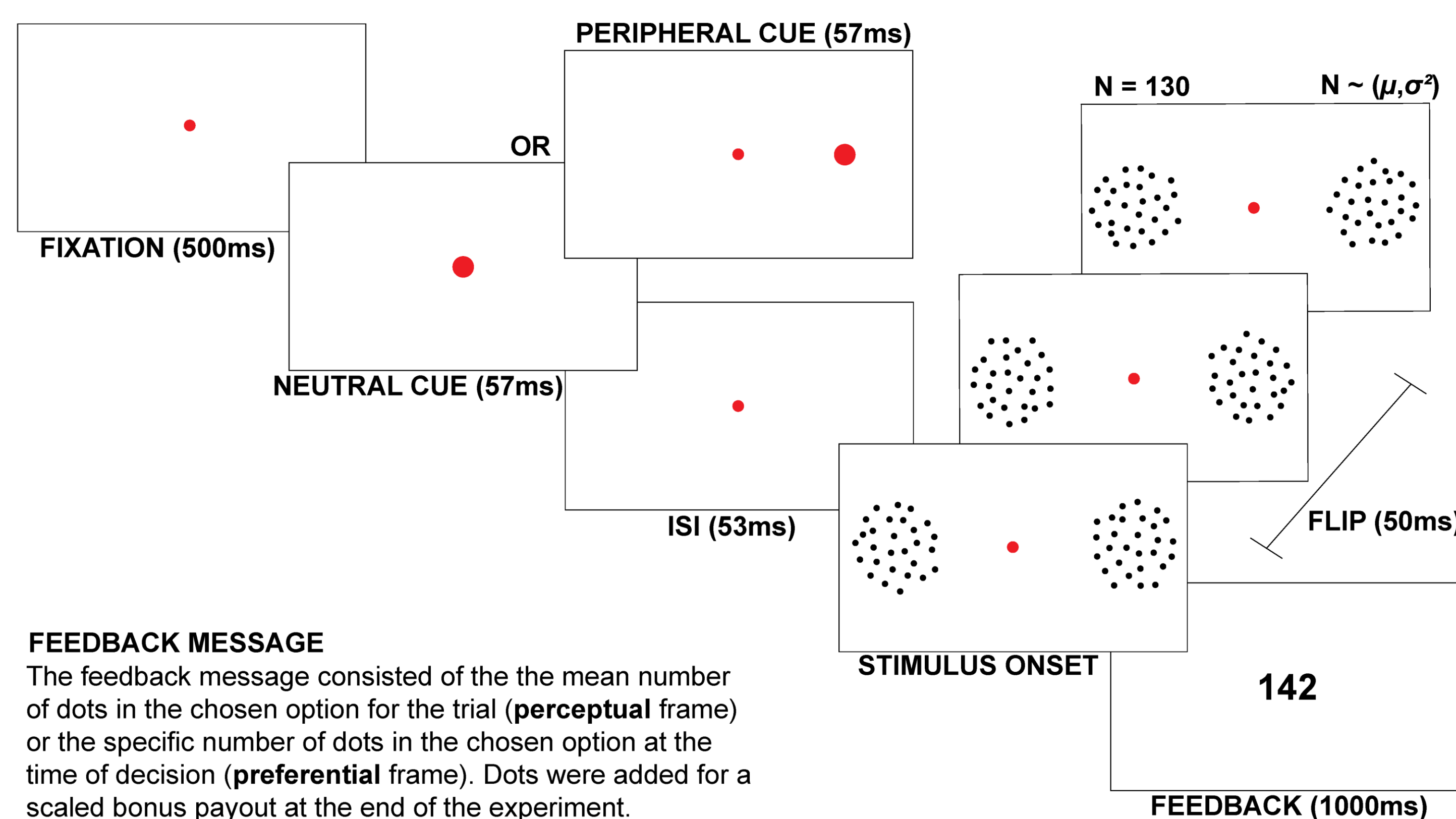
Introduction

- In **perceptual** decisions, attention helps participants in discriminating between both options and in choosing the correct one (Carrasco, 2004; Liu et al., 2006).
 - Information accumulated via attention primarily serves to enhance the difference between choice options.
- In **preferential** decisions, people tend to choose the option they attended to the most: they start off by equivalently attending to both options before gradually shifting and focusing their gaze on their chosen option (Krajbich & Rangel, 2011; Krajbich et al., 2010; Shimojo et al., 2003).
 - Information is accumulated via the same perceptual processes (i.e., attention), and more information is accumulated for the attended option, leading to an attention-biasing effect called the *gaze cascade*.
- RQ:** What are the effects of attention in preferential choice over and above low-level perceptual processes?

Method

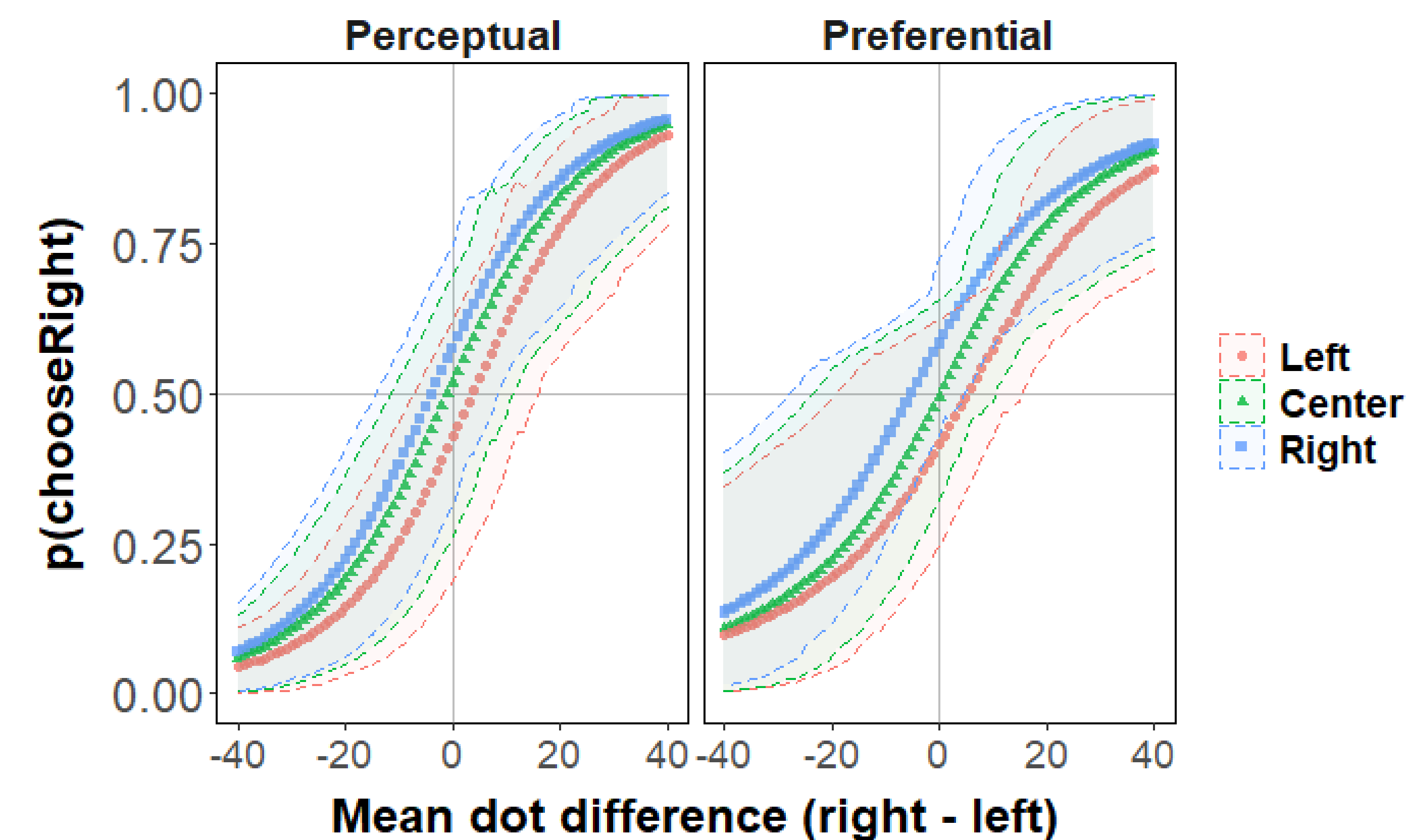
- Participants were exposed to a **Flash Task**, where they saw rapidly updating circles of dots and were asked to choose one while thinking of the dots as fish in a pond and while having their gaze measured.
- Participants were randomized into the **perceptual** (asked to choose more populated pond) or **preferential** (asked to choose preferred pond for fishing) condition. Within-subjects, trials differed in terms of **initial cue** placement (left, center, right) and **mean dot difference** between options (-40, -20, 0, 20, 40).

Figure 1. Experimental Task



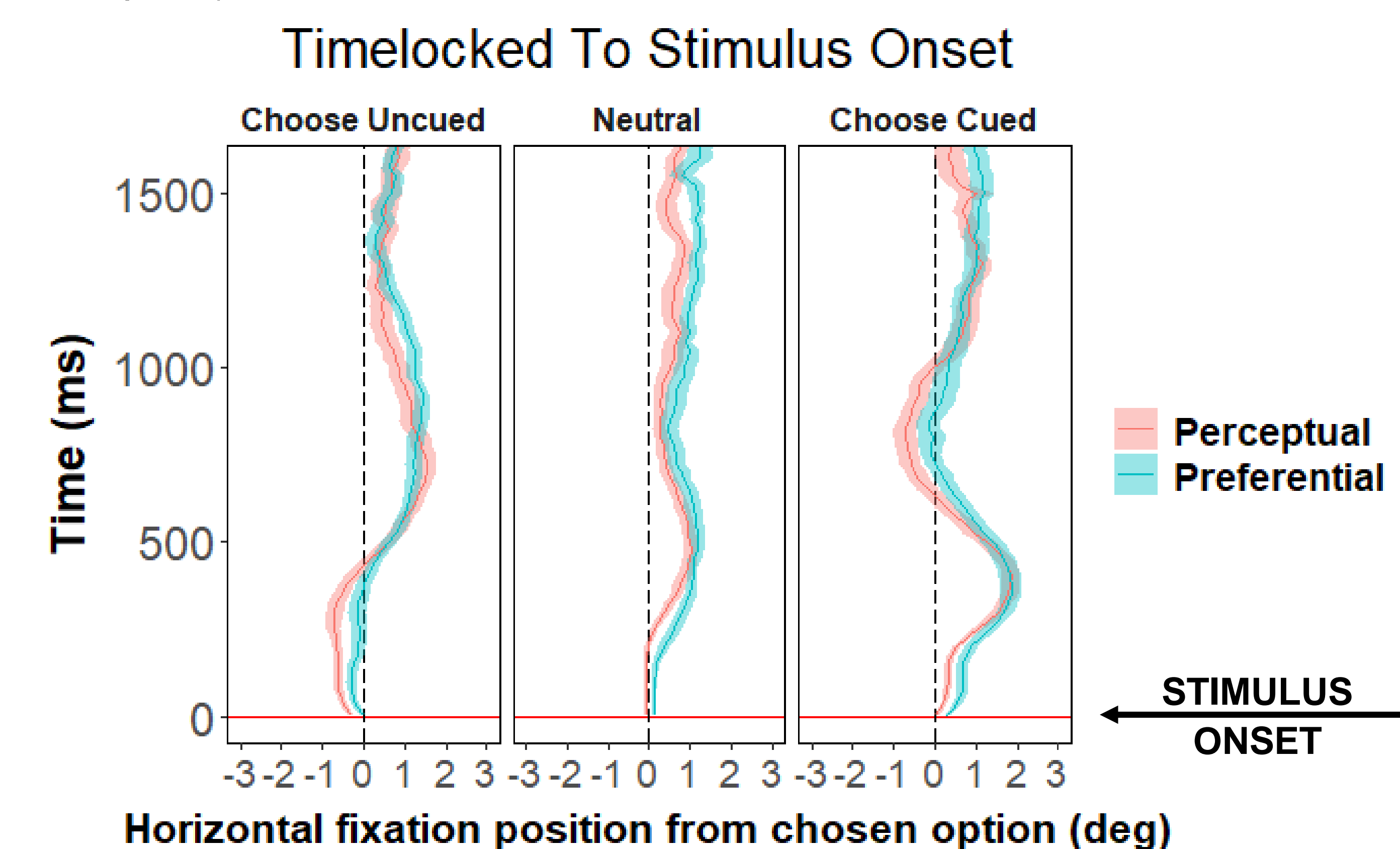
Results

Figure 2. Psychometric Function Plots (Steeper Slopes in Perceptual)



- Preferential** participants were less likely to choose the option with the higher mean number of dots (shallower slopes above) across the left ($\mu_D=5.39$, $HDI=[1.90,8.92]$), center ($\mu_D=4.16$, $HDI=[0.70,7.56]$), and right ($\mu_D=4.98$, $HDI=[1.49,8.43]$) initial cue.

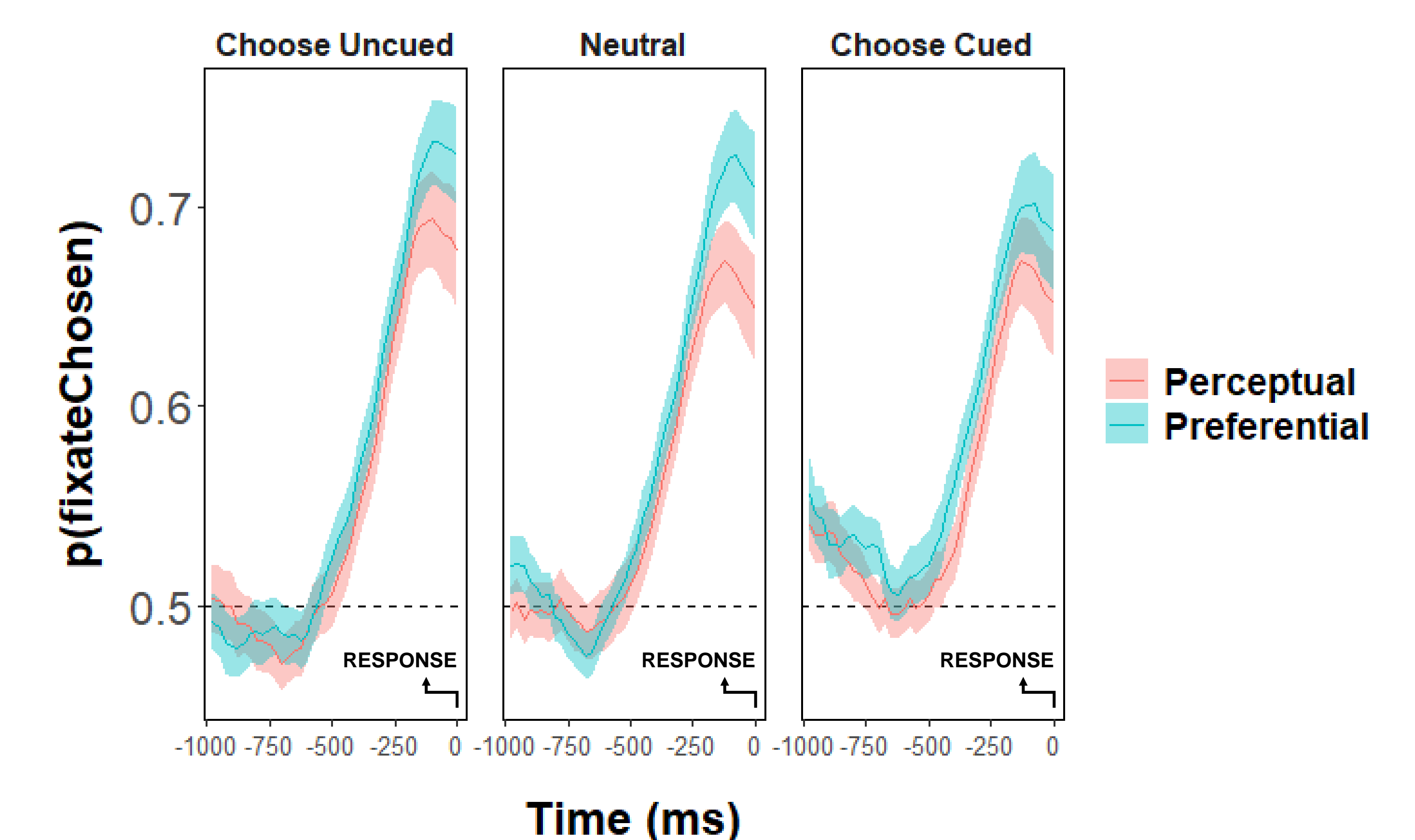
Figure 3. Gaze Position Across Time (More Information Search in Perceptual)



- Preferential** participants kept their gaze closer to their eventually-chosen option following stimulus onset.

Results

Figure 4. Gaze Cascade Effect (Weaker in Perceptual)



- Preferential** participants were more likely to fixate on their chosen option, especially immediately prior to their choice response. This also suggests that **preferential** participants were more likely to choose the option they were last fixated on.

Discussion & Conclusions

- The **perceptual** condition served as the baseline to investigate how attention influences choice under **preferential** framing.
 - The same perceptual processes are present in both conditions (i.e., visual information search) with the key difference of asking participants to frame the task differently.
 - It was found that self-directed attention in **preferential** framing largely made participants less sensitive to and less curious about the differences between the choice options on the screen.
- We ran another study with a similar **Flash Task** paradigm where one option was presented at a time (i.e., exogenous attentional control) and where the duration of the first option was manipulated within-subjects.
 - It was found that differences in the choice likelihood between the task frames and across the first-option durations were eliminated (c.f., Figure 2).
- Results from both studies suggest that choice under **preferential** framing is more impacted by voluntary attention allocation compared to **perceptual** choice. Thus, looking seems to mean liking, over and above the effect of attention on perception.

References

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