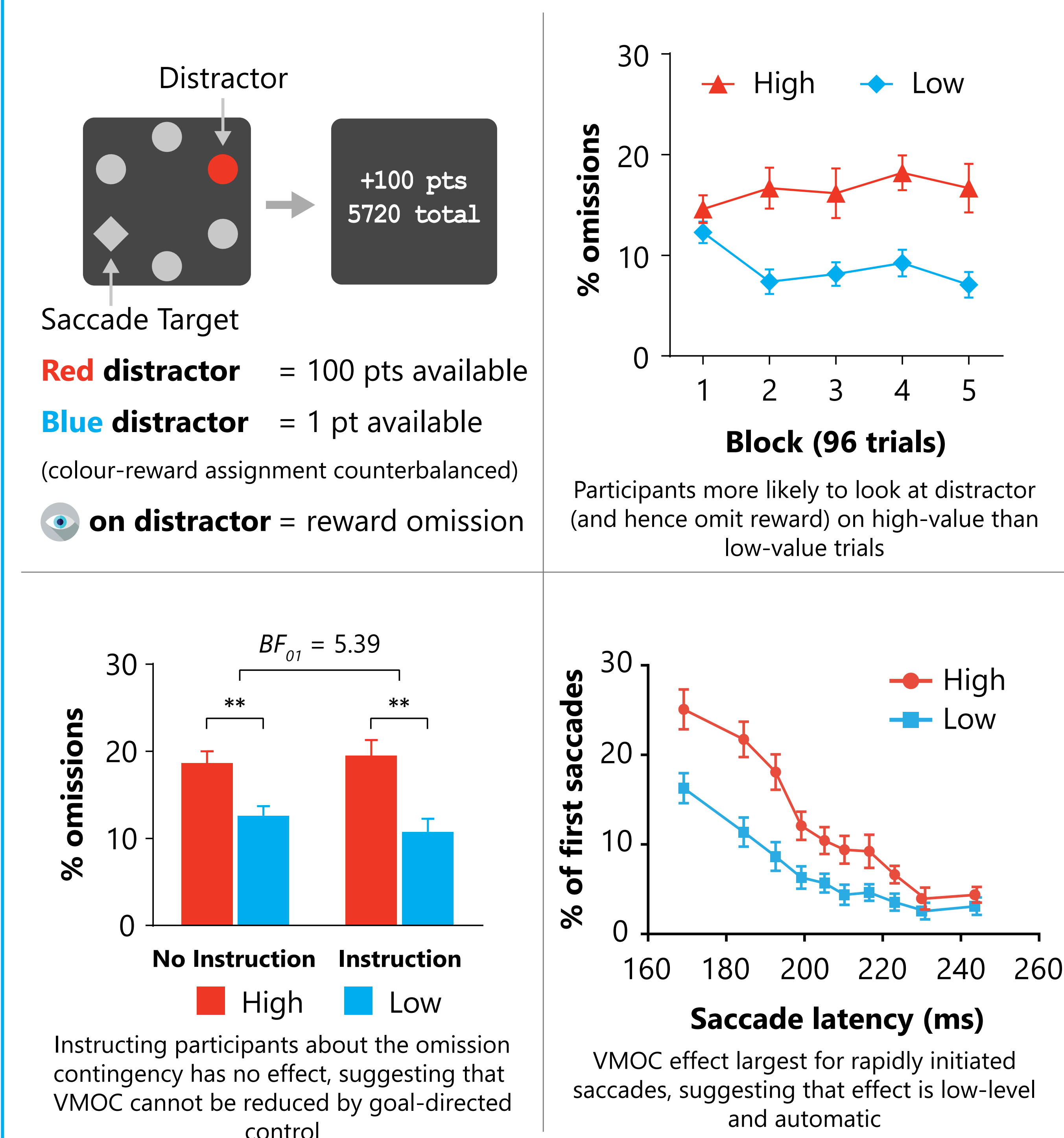


Background:

Previous studies have shown that stimuli associated with high-value rewards capture eye-gaze more often than stimuli associated with low-value rewards, even when looking at the reward-associated stimuli is counterproductive (Fig 1, Failing et al., 2015; Le Pelley et al., 2015; Pearson et al., 2015, 2016). This effect has been labelled *Value-Modulated Oculomotor Capture* (VMOC).

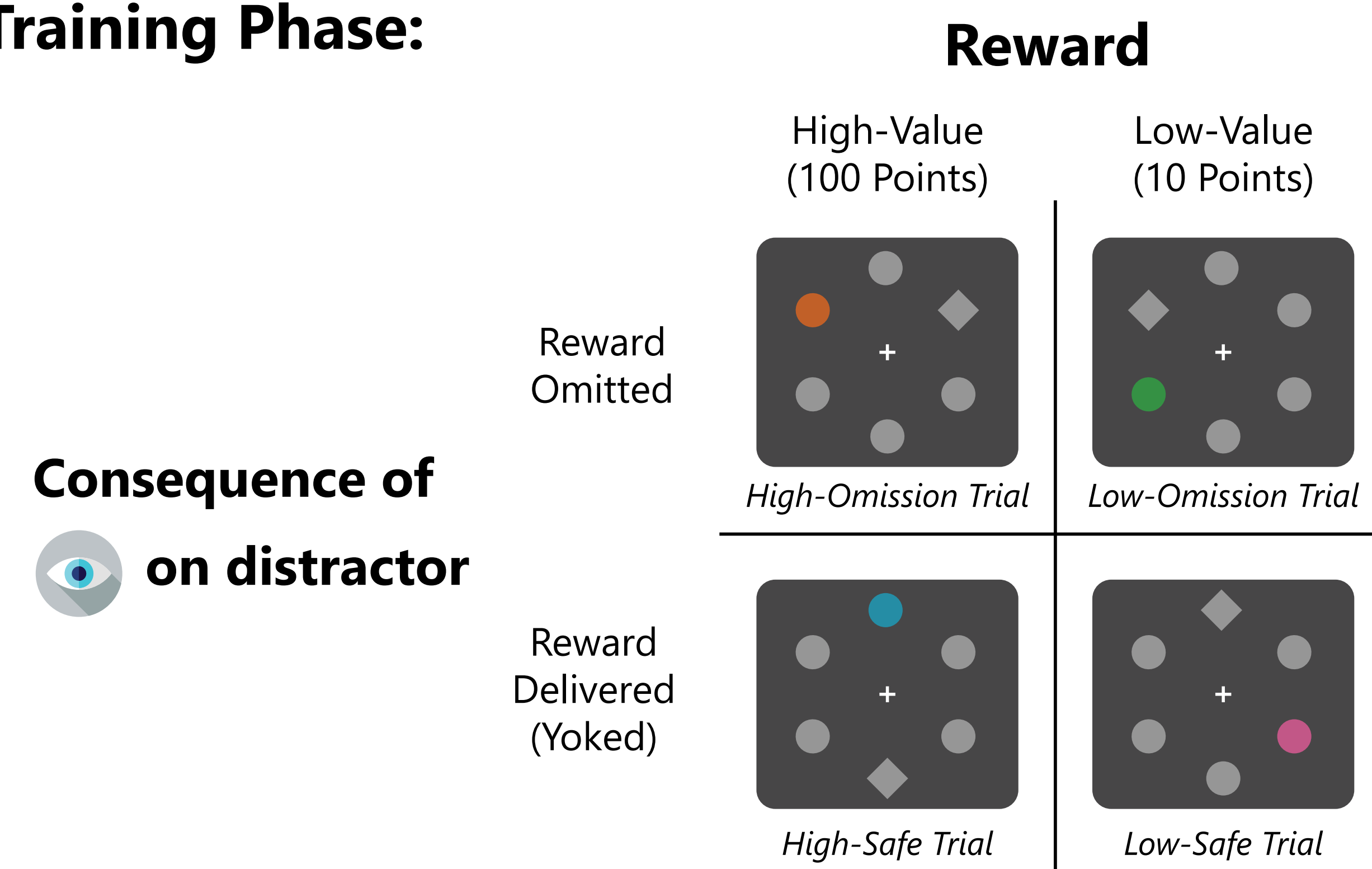


These data suggest that we cannot prevent reward-related stimuli from capturing our gaze, even when there are negative consequences for capture.

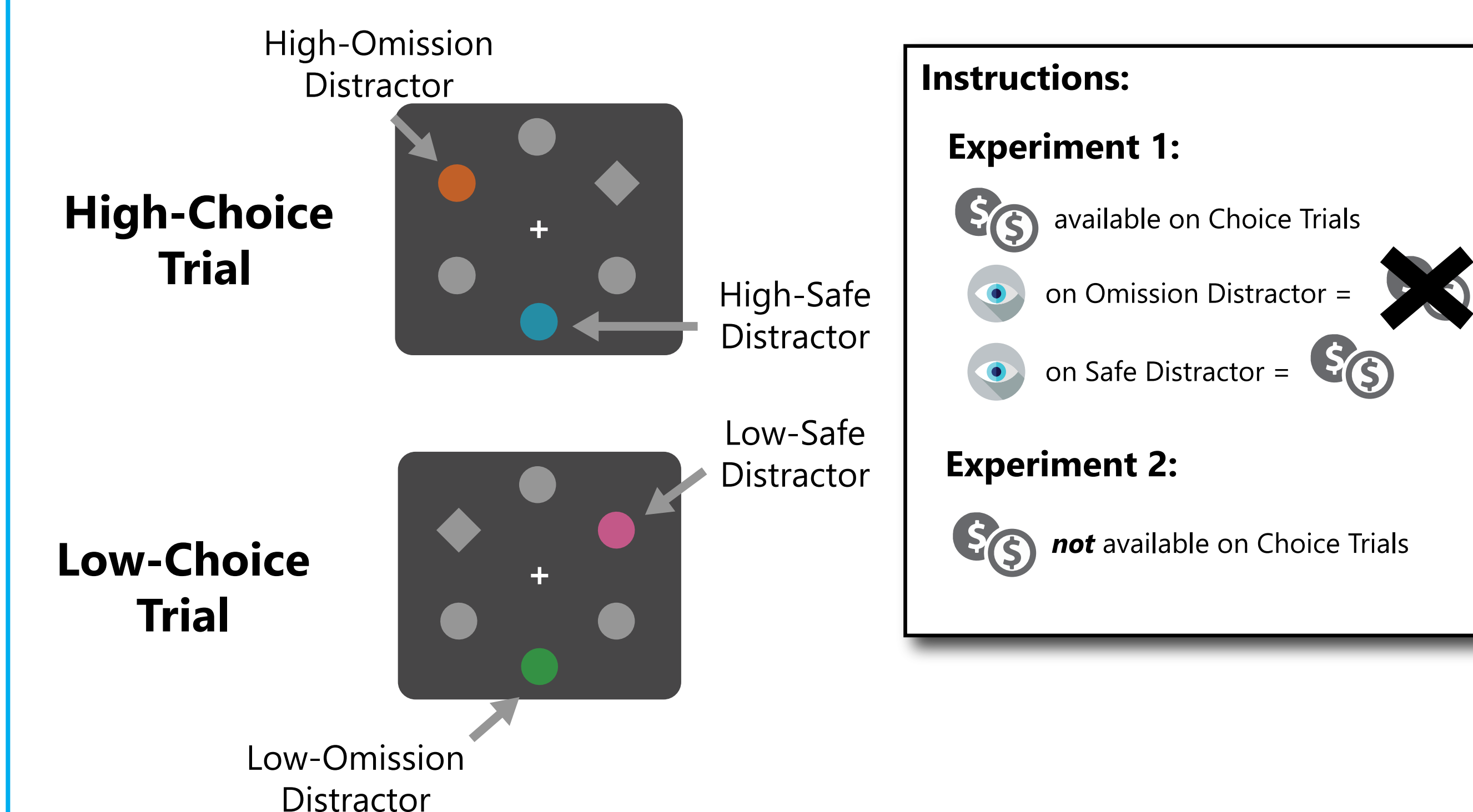
While we may be poor at preventing ourselves from *initiating* saccades to reward-related stimuli, it is possible that we can control the *direction* of those saccades once initiated. The current study investigated this question.

Method:

Training Phase:



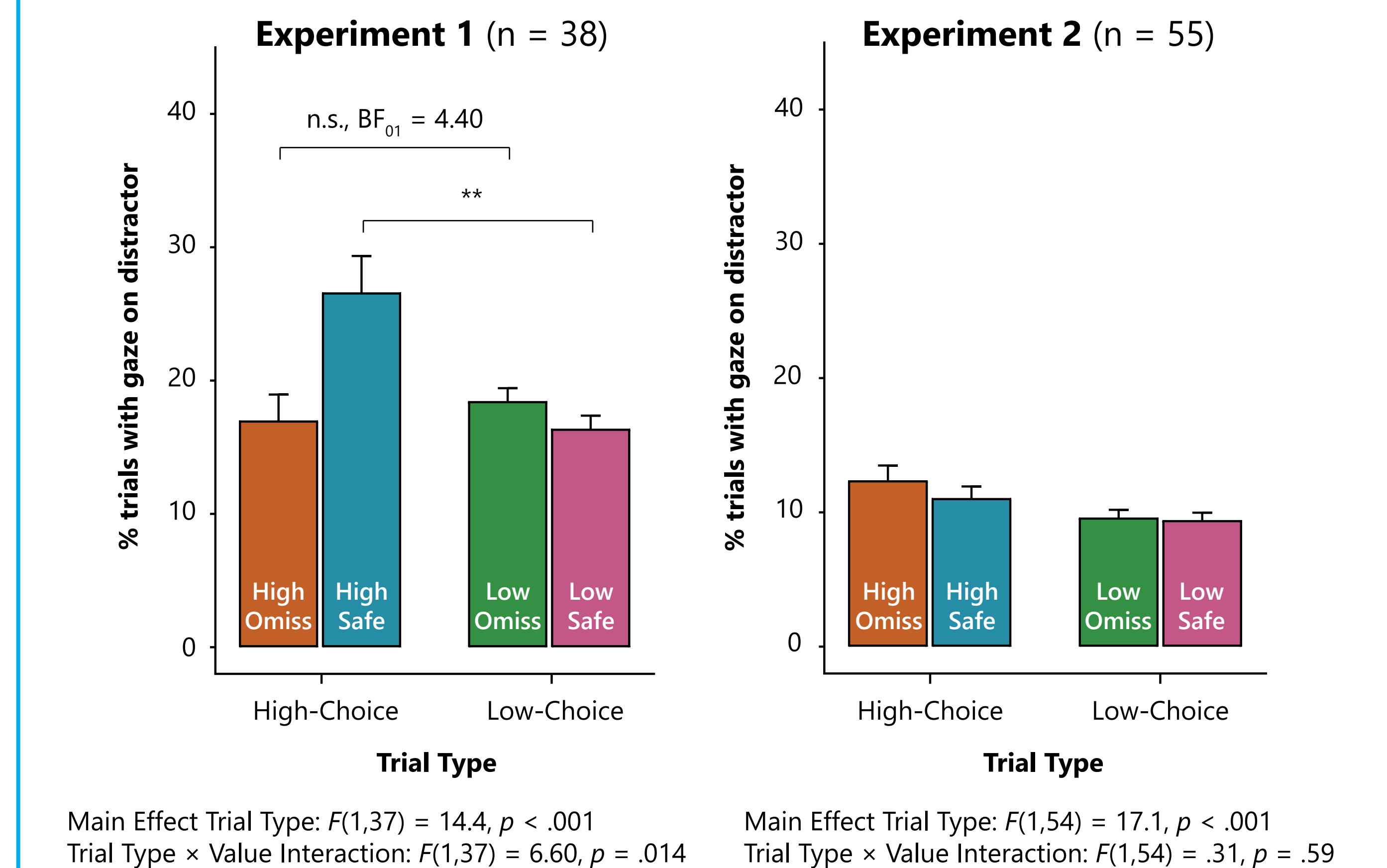
Test Phase:



If eye-movements to distractors are determined *purely by reward value*, saccades will be *equally likely* to High-Omission and High-Safe Distractors on Choice Trials.

If participants can use *goal-directed processes* to exert control over their eye-movements to reward-related stimuli, they should direct *more saccades* to the High-Safe Distractor than the High-Omission Distractor.

Results:



- Participants were overall more likely to look at the distractors on High-Choice trials than Low-Choice trials across both experiments (i.e., they displayed a VMOC effect)
- Experiment 1 - participants preferentially directed their gaze towards the High-Safe distractor rather than the High-Omission distractor on High-Choice trials.
- Experiment 2 - when rewards removed, no preference for High-Safe distractor. Suggests that preference in Experiment 1 is due to goal-directed processes rather than automatic consequence of training with safe distractors.

Conclusions:

- Previous research suggests that associating a stimulus with reward increases the extent to which it captures attention and gaze, and that this effect is immune to goal-directed attentional control.
- This study challenges this idea, demonstrating that we do have limited control over the attentional bias for reward cues.
- While we may be unable to prevent ourselves from initiating saccades to reward-related stimuli, we can preferentially direct those saccades to a "safe" option, given the choice.

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