

BACKGROUND

- ❖ **Sense of agency (SoA)** refers to the subjective experience that one has control over their actions and the outcomes of these actions¹⁻².
- ❖ **Intentional binding** refers to the perceived temporal attraction between voluntary actions and their outcomes³, and has been used as an implicit measure of the SoA³.
- ❖ **Feeling of control (FoC) judgment** is the subjective report of the degree of control felt over actions or outcomes.
- ❖ Main processes that contribute to the SoA
 - ❖ Matching of the predicted and actual outcomes⁴
 - ❖ Prospective processes involved in action selection (e.g., selection fluency, action choice space)⁵⁻¹¹
 - ❖ Retrospective processes (high level judgments on the relationship between actions and outcomes, causal beliefs)¹²
 - ❖ Valence or monetary value of outcomes¹³⁻¹⁵

Current study

The goal of the current study was to examine the effect of emotional valence during free and instructed action selection on the SoA.

METHODOLOGY

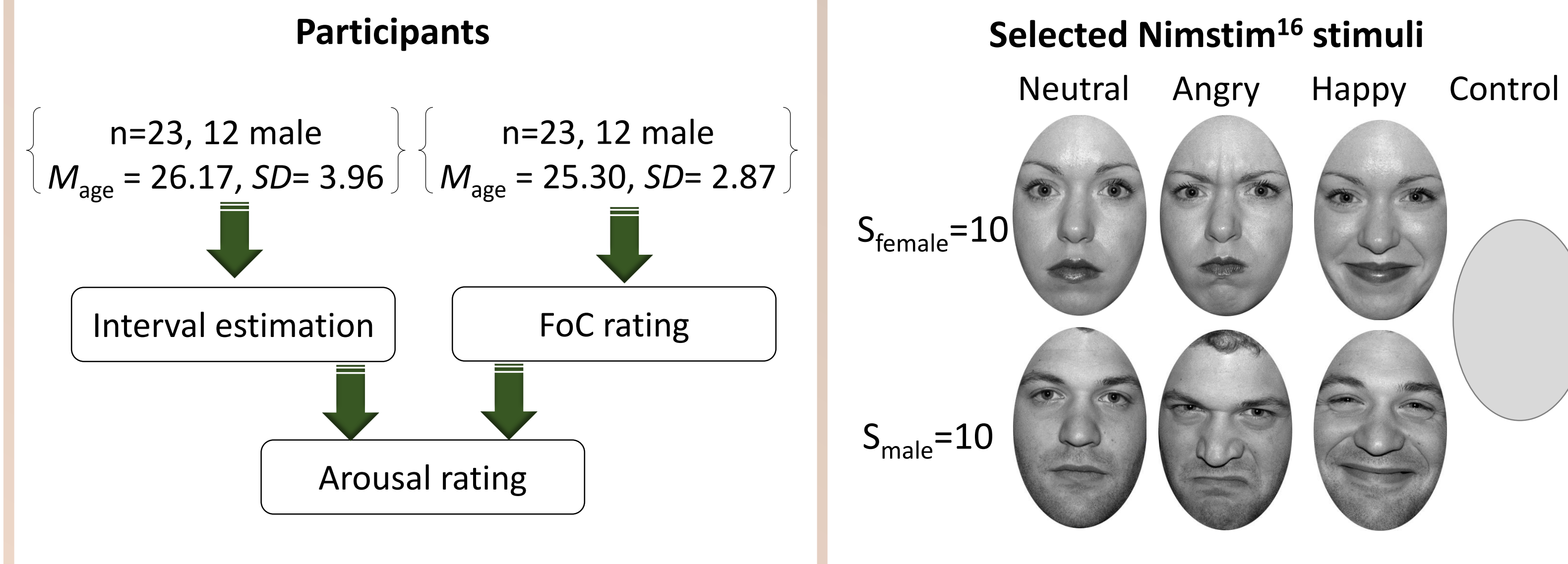
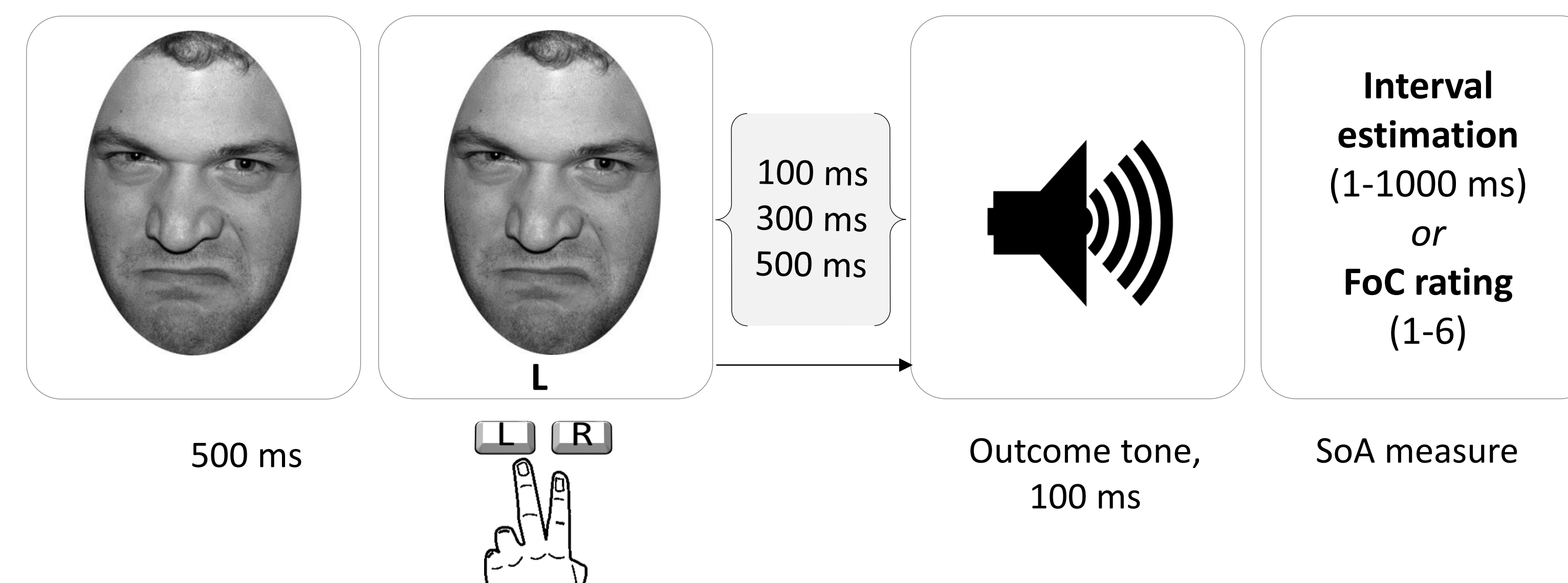
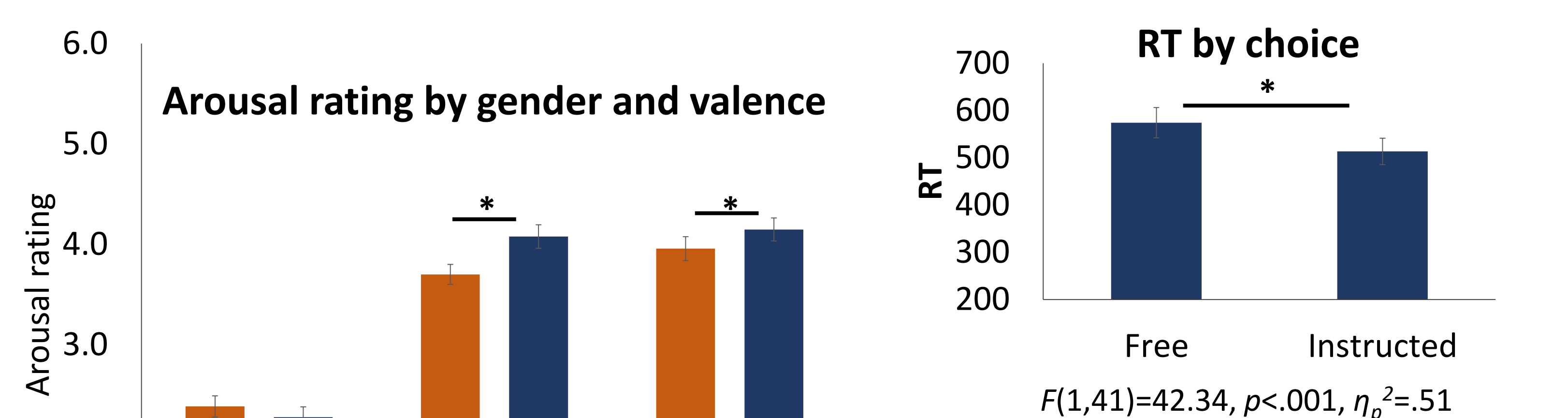
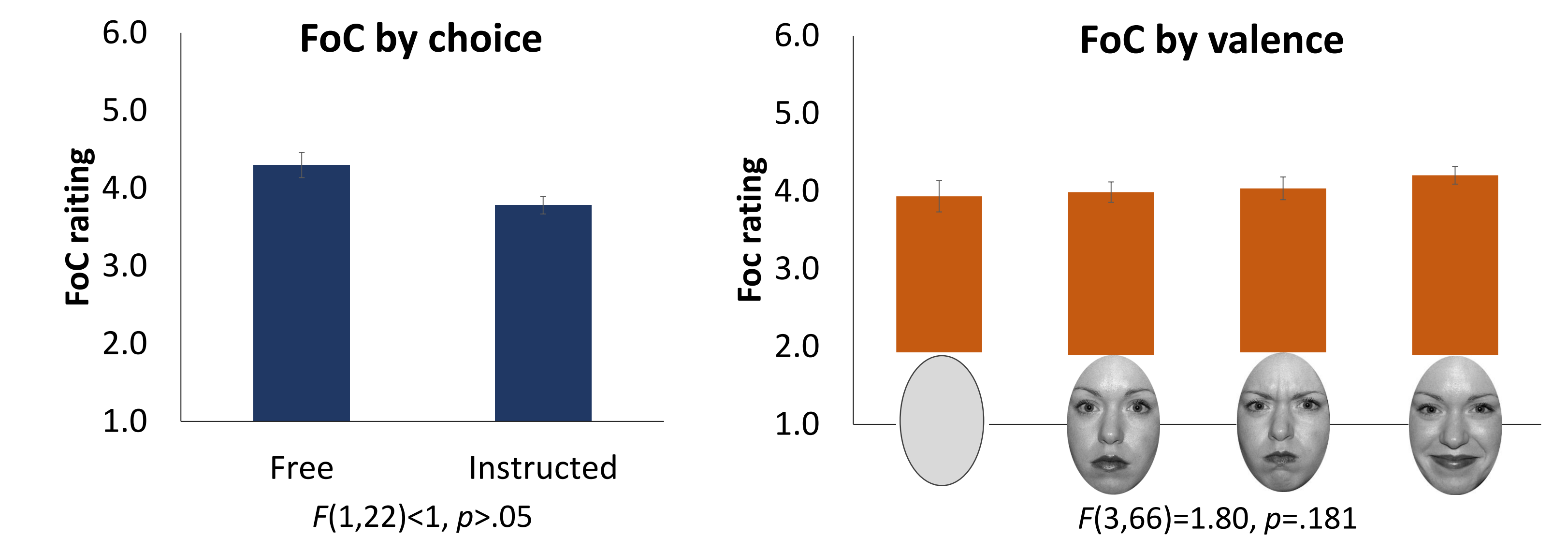
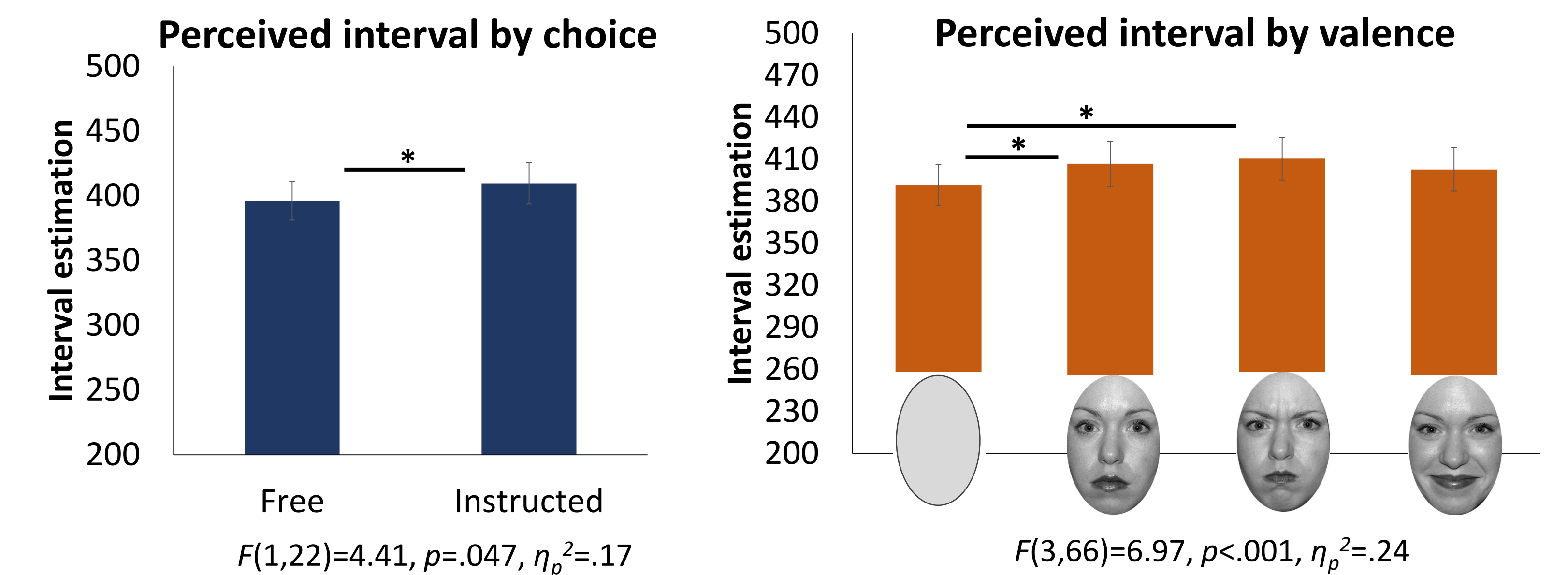


Illustration of a trial in the interval estimation and FoC rating tasks.



RESULTS



Pearson Correlations	Arousal rating	RT
Interval estimation	$r = -.14, p = .510$	$r = .29, p = .176$
FoC rating	$r = -.40, p = .056$	$r = .03, p = .878$
RT	$r = .03, p = .825$	

DESIGN

2 x 4 x 3 x 2 mixed-design ANOVA with:

- ❖ **Choice: Free vs. instructed**
 - Stimulus – Choice mapping**
 - L (instructed choice): Press the left key
 - R (instructed choice): Press the right key
 - X (free choice): Press either right or left key
- ❖ **Emotional valence:** Control, Neutral, Angry, Happy
- ❖ **Key press-tone delay:** 100 ms, 300 ms, 500 ms
- ❖ **SoA measure [between subjects]:** Interval estimation (to quantify intentional binding), FoC rating

RESULTS SUMMARY

- ❖ Negative and neutral emotions during action selection reduced the intentional binding effect.
- ❖ Binding was stronger when actions were freely selected compared to when they were instructed.
- ❖ Subjective judgment of control was not influenced by emotional valence.
 - ❖ *Perhaps, varying the action-outcome delay has overridden the effect of valence.*
- ❖ Arousal ratings, RTs, and the SoA measures were not correlated.
- ❖ RTs were indifferent across valence conditions but longer for free compared to instructed actions.
- ❖ **The current results suggest that independent from the mode of action selection (i.e., free vs. instructed), the presence of negative emotions during action selection might weaken the SoA at least on the implicit level.**

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Acknowledgements:

This work was supported by the Cluster of Excellence Cognitive Interaction Technology "CITEC" (EXC 277) at Bielefeld University, funded by the German Research Foundation (DFG)

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