

Reversals in the Relationship between Attention and Choice:

Evidence from eye and mouse tracking across three domains

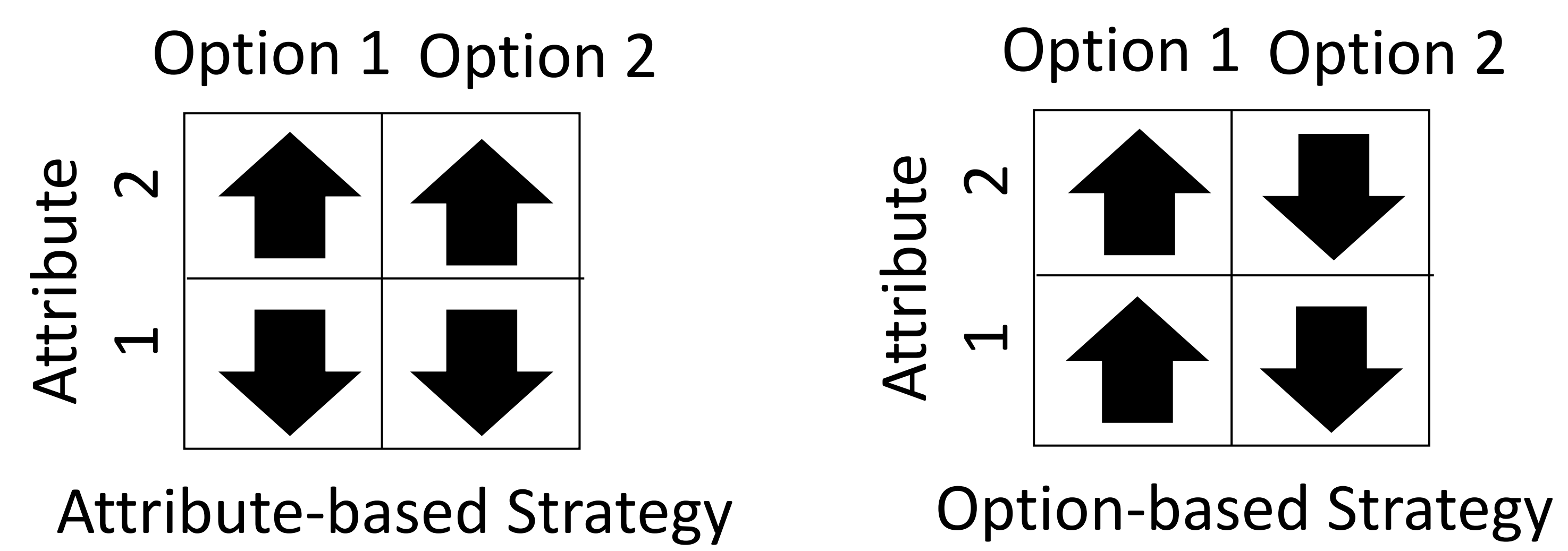


Cornell University, SC Johnson School of Business

Hyejin Kim & Geoffrey Fisher

Introduction

- Binary choice is a common way to measure preferences.
- Two most frequently used binary choice tasks are:
 - Participants have both options available: Both condition (Amasino et al, 2019; Chen et al., 2023; Zhang et al., 2024)
 - Participants have only one option on the screen and choose to accept or reject the offered option: One condition (Hutcherson et al., 2015 ; Kable & Glimcher, 2007; Tom et al., 2007)
- However, it is unclear whether if there are computational differences between these two elicitation formats



Results

Fig 1. Correlation between Choice and Attention

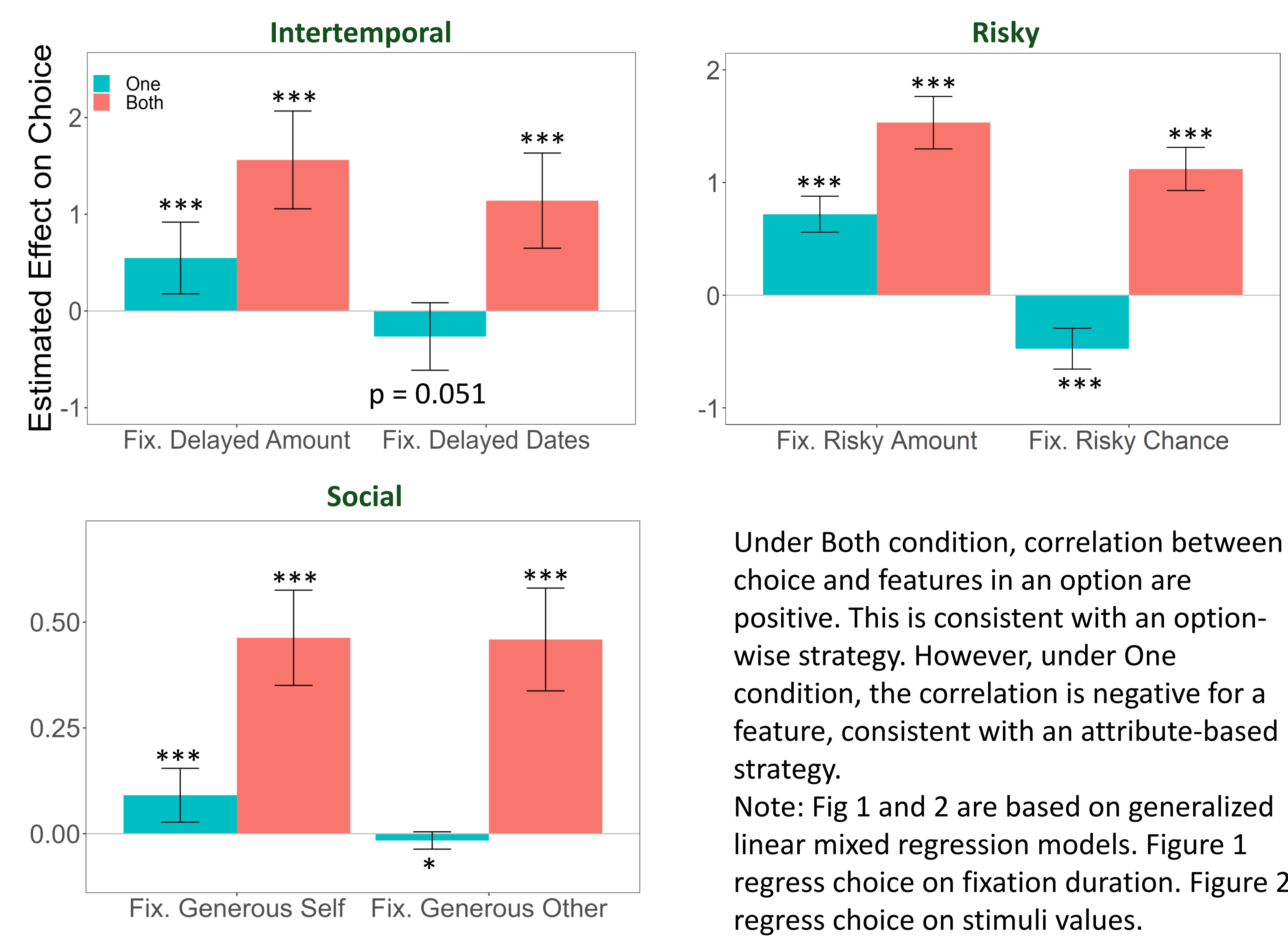
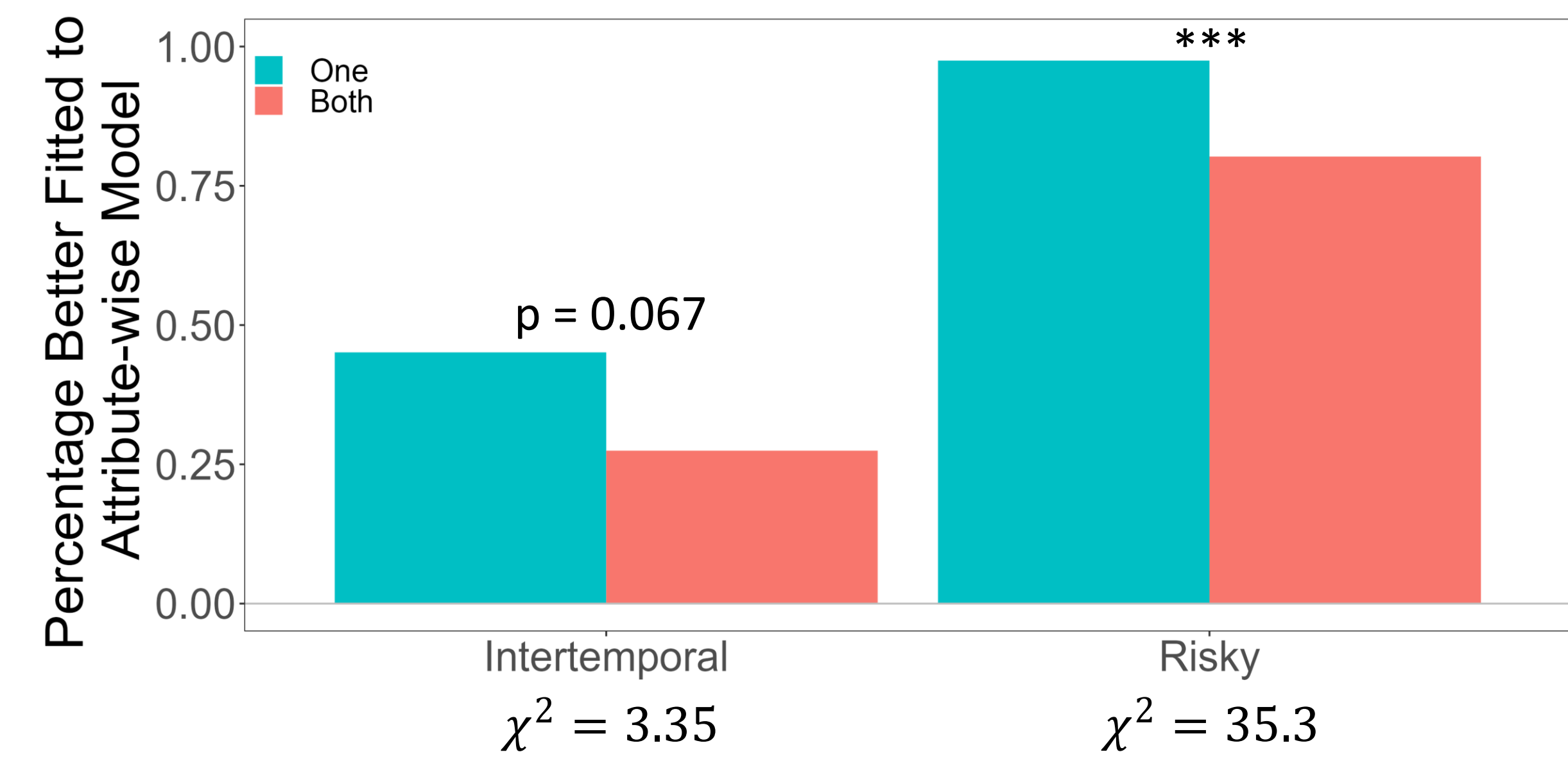


Fig 3. Attribute vs. Option-based Strategy

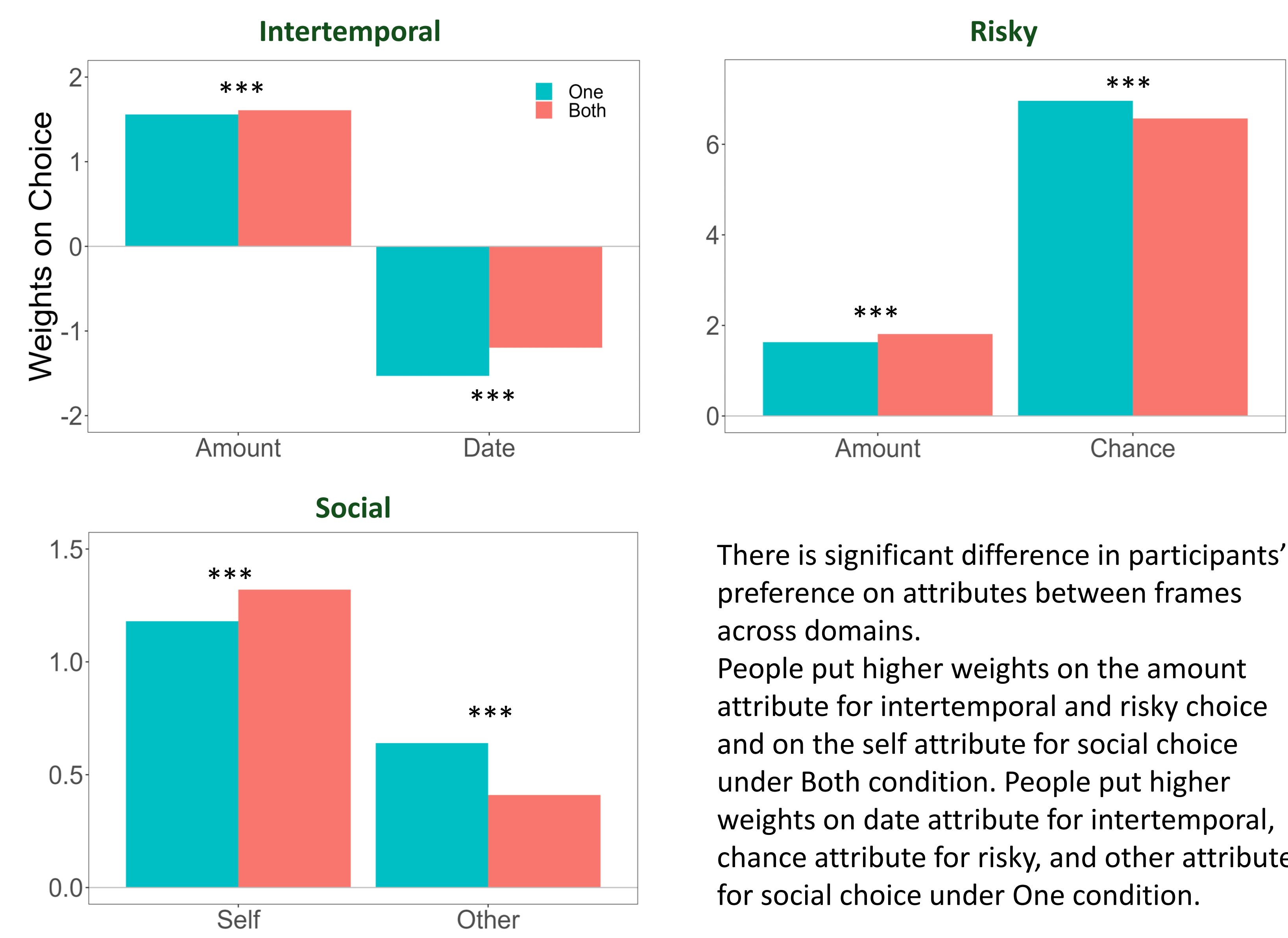


Percentage of participants better fit by an attribute-wise (vs. Option-wise) drift diffusion model is significantly higher in the One condition compared to the Both condition. This is consistent with Figure 1. Social choice attribute and option-wise model have the same analytic form. Hence, not shown.

Note: p-value *** < 0.001

Figure 3 calculates a better fit to a model based on DIC of drift diffusion models. We compare proportions using Chi-square tests.

Fig 2. Weights on Attributes



Methods (All Preregistered)

Domain	Both	One	N
Intertemporal Constant option: \$25 in 0 day VS. Larger Later option (ex. \$40 in 10 days)	Left: \$25, 0 Day Right: \$40, 10 Days	Accept: \$40 Reject: 10 Days	51
Risky Constant option: \$5 for sure VS. Larger Riskier option (ex. \$39 with 20%).	50 %	Accept: \$39 Reject: 20%	238
Social Constant option Self: \$10 and Other: \$2 VS. Generous option (ex. Self : \$ 8.70, Other: \$ 3.20)	Other: \$2.00	Accept: Self: \$8.70 Reject: Other: \$3.20	135

For intertemporal choice study, we measured fixation duration with eyetracking on each feature. For all other studies, we used MouselabWEB to measure open duration of each boxes.

Summary

- There are significant differences between two common decision frames used to elicit preferences
- The correlation between attention to attributes and choices reverses for one feature
- Attribute weights consistently change between frames
- More likely to employ an attribute-based strategy in one vs. both
- Researchers/Policymakers/Businesses should be aware of these changes when eliciting preferences

References

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