Individual Differences in the Asymmetric Dominance Effect

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Background

- The asymmetric dominance effect (ADE) refers to the increase in the choice share of a dominating option when an asymmetrically-dominated decoy is added to the choice set.
- This phenomenon has been replicated across different domains and even organisms[1,2].
- This study explores individual differences in susceptibility to the ADE, and uses eye-tracking to examine decision strategies.

Participants and Methods

Participants:

83 participants (mean age = 23.0, SD = 5.85, 55 females, 28 males) completed one of three similar behavioral pilots or one eye-tracing experiment.

Methods:

1. Screening of a delay-discounting task consisting of 51 choices between a smaller amount now or larger amount in the future.

2. Asymmetric dominance task of at least 50 intertemporal choice stimuli (tailored to each participant's indifference point except the 1st pilot), presented once with and once without a decoy option. The decoy option was always dominated by the Target option.

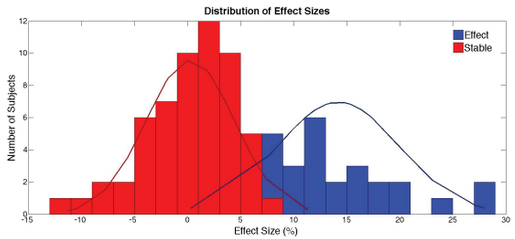
3. ADE is measured as the change in the percentage of patient choices in the three-option trials from two-option trials.

4. Eye-tracking results compared 6 regions of interest (ROI): each of the two attributes (Amount and Delay) for the three options (Now, Target, and Decoy).

Results

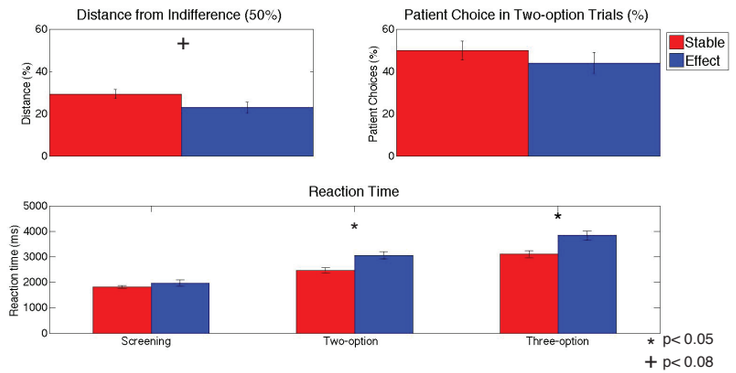
Bimodal distribution of effect sizes

- The ADE was replicated for the discounting task: increased patient choices in three-option trials vs. two-option trials ($t(82) = 5.24$, $p < 0.001$)
- Two distinct groups within the effect size distribution: Stable (69% of subjects; mean = 0%, SD = 4%) and Effect (31% of subjects; mean = 14%, SD = 6%)

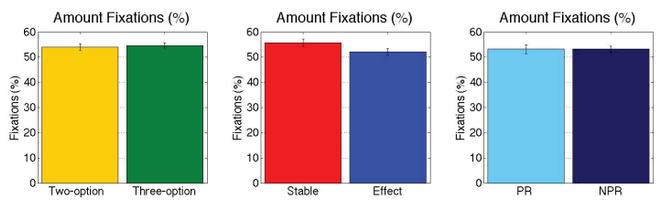


Group differences

The Effect group:
- is closer to their indifference point (50%)
- is not different in overall preference or discounting rate
- has longer reaction times

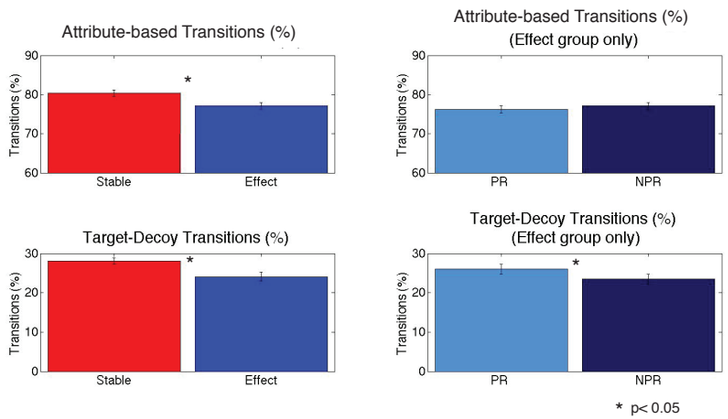


No group differences between amount fixations



The Effect group uses fewer attribute-based comparisons

The Effect group:
- makes more comparisons within an option than between options
- compares less between the Target and Decoy overall, except in trials where they made a preference reversal (PR)



Discussion

- Some people are more influenced by the asymmetric dominance effect than others
- These individuals tend to take longer to reach a final decision and are closer to their indifference point, regardless of discounting rates or percentage of patient choices
- Eye-tracking reveals distinctions in decision strategies. The Effect group's transition patterns suggest that the presence of the decoy influenced their final decision
- This distinction is not driven by favoring one attribute over the other
- Our results suggest that the ADE is driven by the observed dominance relationship, rather than the use of heuristic decision strategies

REFERENCES

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2. Latty, T. & Beekman, M. (2011). Irrational Decision Making in an amoeboid organism: Transitivity and context-dependent preferences. *Proceedings. Biological Sciences / The Royal Society*, *278*, 307-312. doi:10.1098/rspb.2010.1045

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