# The Attraction Effect in Risky Choices: Exploring the Impact of Mutable and Immutable Attributes
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Abstract

This study examines the attraction effect in risky decision-making by investigating how mutable (probability) and immutable (payoff) attributes influence choice behavior. Drawing on Norm Theory (Kahneman & Miller, 1986), we hypothesized that individuals are more likely to group options based on immutable attributes, such as payoffs, compared to mutable attributes, such as probabilities. To test this, participants evaluated sets of three gambles: a focal option, a decoy, and a non-focal option (Trueblood et al., 2013). In the Immutable condition, the focal option and decoy shared identical payoffs but differed in probabilities, whereas in the Mutable condition, they shared identical probabilities but differed in payoffs. Contrary to our hypothesis, participants were significantly more likely to select the focal option in the Mutable condition compared to the Immutable condition ($\Delta M = 0.16$, 95% CI [0.09, 0.23], $t(159) = 4.52$, $p < .001$). This suggests that the similarity in probabilities (mutable attributes) was more effective in driving the attraction effect. Moreover, the probability of selecting the non-focal option did not differ across conditions, highlighting that the observed effect was specifically influenced by the type of decoy. Choices in filler trials, where both probabilities and payoffs varied, were evenly distributed, indicating no spillover effects from the treatment trails.

However, this experiment exists certain limitations. The order of information presentation (probability followed by payoff; e.g. *"25% chance to win $12, 75% chance to win $8."*) may have made probability-based similarities more salient, thus amplifying the attraction effect in the Mutable condition. Additionally, response heterogeneity across trials suggests that the decoy's effectiveness diminishes when expected values are easily computable. Future research should explore whether reversing the presentation order or using more complex gambles reduces this potential confound, thereby clarifying the robustness of the observed effects.
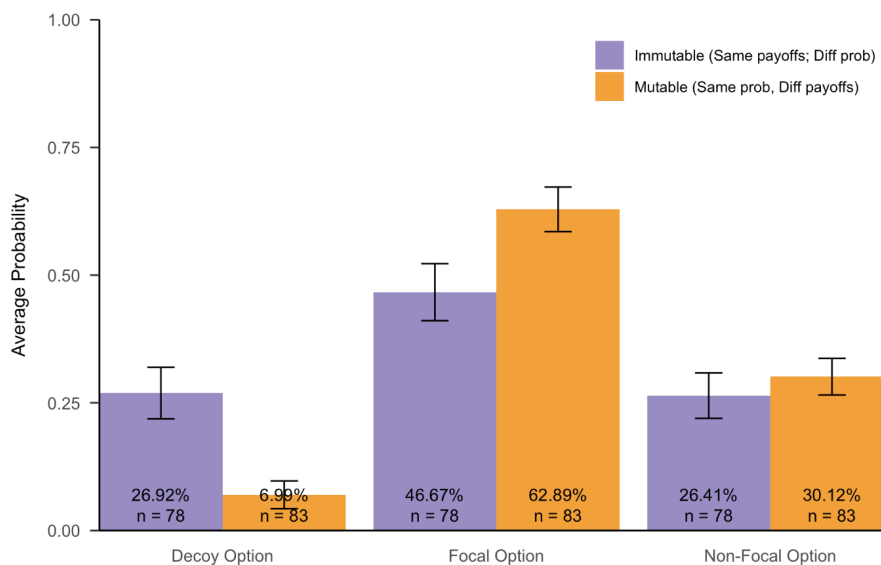
Fig 1. Average Selection Probability. Focal options were more likely to be chosen in the presence of decoy options. The effect was larger when the decoy shared the same probabilities but differed in payoffs with the focal option, compared to when the decoy shared the same payoffs but differed in probabilities. We observed no difference in the probability of selecting the non-focal option across conditions.