

Supplemental Material to

A Genetic Determinant of the Preference Reversal Phenomenon

Analysis of the data in the loss domain

1. Does the preference reversal exist in the loss domain?

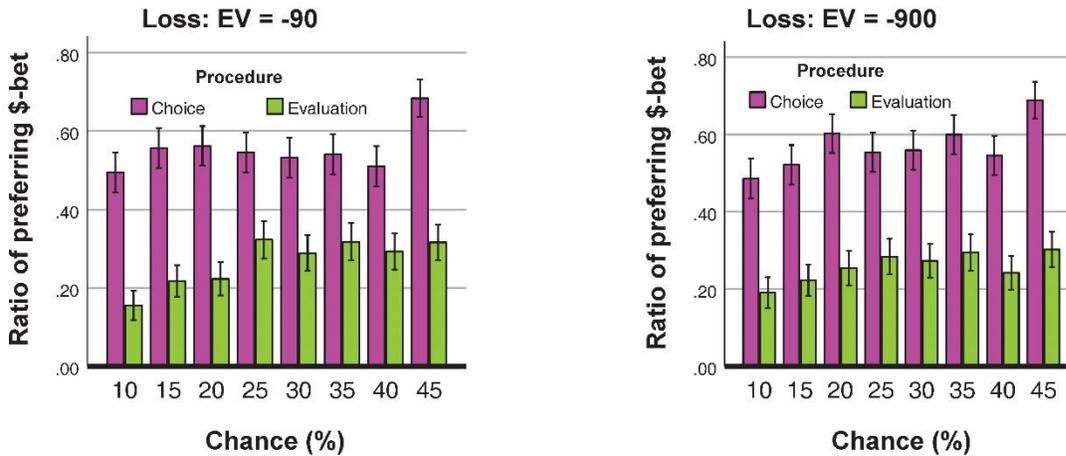


Figure S1. Ratio of preferring \$-bet in the loss domain. EV: expected value. Error bars represent 95% confidence intervals.

From Figure S1, it is clear that the ratio of preferring \$-bet in the choice condition was generally much larger than that in the evaluation condition in the loss domain. This contrast was reversal to that in the gain domain.

This is understandable. Suppose you evaluate 10% to gain 900 yuan (\$-bet) as gaining 120 yuan for sure and 55% to gain 160 yuan (P-bet) as gaining 70 yuan for sure, then you prefer the \$-bet (120 yuan > 70 yuan). Now let's add a sign of minus in front of each monetary amount, then you prefer the P-bet now (-70 yuan > -120 yuan).

Accordingly, in the gain domain the preference reversal means that people prefer \$-bet in the evaluation condition more than in the choice condition; in the loss domain, it means the converse.

We performed a repeated-measurement ANOVA with the dependent variable being the preference score, and independent variables being procedure (choice vs evaluation), expected value (-90 vs -900) and probability in \$-bet (from 10% to 45%). The main effect of procedure was significant: $F(1, 358) = 246.38$, $\eta^2 = .408$, $p < 0.1^{40}$, indicating the preference reversal phenomenon existed in our experiment. The main effect of probability was significant: $F(7, 2506) = 19.556$, $\eta^2 = .052$, $p < 0.1^{23}$. The interaction between procedure and probability was significant: $F(7, 2506) = 5.304$, $\eta^2 = .015$, $p < 0.1^{5}$. All other main effect and interactions were insignificant.

2. Does the genotype impact the preference reversal in the loss domain?

The preference reversal scores were calculated according to the final column in Table 1 except that we multiplied them by -1 (see why in the paragraph under Figure 1.)

We performed a repeated-measurement ANOVA with the dependent variable being the score of preference reversal, and within-subject independent variables being expected value (-90 vs -900) and probability of \$-bet (from 10% to 45%) and between-subject independent variables being genotype of rs806379 (A/A vs A/T). We found no significant main effect and interaction at all, possibly because subjects became more alerted in the loss domain. Nevertheless, Figure S2 reveals a pattern similar to that in the gain domain: When the chance was small

(10% and 15% in the loss domain), people of AA genotype had higher preference reversal score than people of AT genotype.

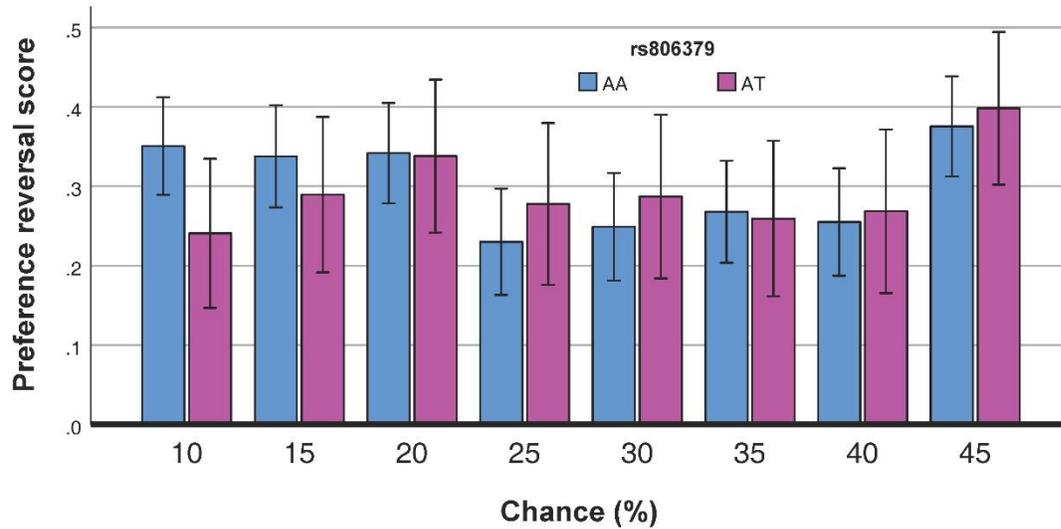


Figure S2. The impact of genotype on preference reversal score in loss domain. Chance: the probability of losing an amount of money in a \$-bet. Error bars represent 95% confidence intervals.