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# Probability matching in choice behavior influenced by virtual rewards

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**Abstract:** We recognize the amount of "reward" according to our choices. In repeated binary choice tasks, human behave according to the theoretical basis of "probability matching" (Shanks et al., 2002), which has been advocated in several studies. However, the quality of reward may influence their choice-behavior. It is acknowledged that the sensitivity of values for gains or losses differs among individuals because of risk aversion (Kahneman & Tversky, 1979). We conducted a series of experiments to investigate how participants' choices change when the ratio of hit-items was set up. Virtual rewards, -3/0, -3/+3, and 0/+3 point for each choice, were given to participants. The results showed that the choice-ratio of the weighted correct side was higher in conditions involving losses, suggesting that participants' choices indicate risk aversion even though rewards were virtual. Our results suggest that probability matching can be found only when people implicitly recognize their choices have no loss.