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The Long-Term Impact of Cognitive Training on Risk-Reward Trade-Offs

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Abstract

Decision-making often involves a trade-off between risks and rewards, for which humans are susceptible to biases. Cognitive training could facilitate these processes, but, for applicability outside the lab, it needs to persist over time. In this double-blind study, participants were split into treatment and control groups to complete a decision-making task involving monetary gambles. All participants completed pre-training (Day 1), training (Day 2-7), and several post-training sessions (up to 6 months). During training, one group was given feedback to promote risk-neutral choice (treatment), whereas the other merely practiced the task (control). Following training, choices in the treatment group were significantly more risk-neutral than in the control group (with no improvements), and this pattern was replicated up to 6 months without any top-up training. Computational modeling revealed a complex pattern of change in the feedback group – whereby participants' initial risk preferences partially determined the effect of training on their post-training preferences.