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Proceedings of the Annual Meeting of the Cognitive Science Society

Title

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Journal

Proceedings of the Annual Meeting of the Cognitive Science Society, 41(0)

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Publication Date

2019

Peer reviewed

Decoy Effect and Violation of Betweenness in Risky Decision Making: A Resource-Rational Mechanistic Account

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Abstract

A wealth of experimental evidence shows that, contrary to normative models of choice, people's preferences are markedly swayed by the context in which options are presented. In this work, we present the first resource-rational, mechanistic account of the decoy effect—a major contextual effect in risky decision making. Our model additionally explains a related, well-known behavioral departure from expected utility theory: violation of betweenness. We demonstrate that, contrary to widely held views, these effects can be accounted for by a variant of normative expected-utility maximization—sample-based expected utility model (SbEU; Nobandegani et al., 2018)—which acknowledges cognitive limitations. Our work is consistent with two empirically well-supported hypotheses: (i) In probabilistic reasoning and judgment, a cognitive system accumulates information through sampling, and (ii) People engage in pairwise comparisons when choosing between multiple alternatives.