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Journal

Proceedings of the Annual Meeting of the Cognitive Science Society, 48(0)

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Publication Date

2026

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Peer reviewed

Strategic Algorithmic Advice Taking

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Abstract

As algorithms increasingly mediate competitive decision-making, their influence extends beyond individual outcomes to shaping strategic market dynamics. In a preregistered experiment, we examined how algorithmic advice affects human behavior in a classic economic game with a unique, non-collusive, and analytically traceable equilibrium. Participants ($N = 129$) played a Cournot quantity competition with equilibrium-aligned or strategically biased algorithmic recommendations. While individualized equilibrium advice supported stable convergence, collusively downward-biased advice led to sustained underproduction and supracompetitive profits—hallmarks of tacit collusion. Participants responded more strongly and consistently to individualized advice than collective advice, potentially due to greater perceived ownership of the former. These findings demonstrate that algorithmic advice can function as a strategic signal, shaping coordination even without explicit communication. The results echo real-world concerns about algorithmic collusion and underscore the need for careful design and oversight of algorithmic decision-support systems in competitive environments.

Keywords: advice taking, algorithmic collusion, quantity competition, strategic signal, judgment and decision-making