The Role of Information in Strategic Interactions: Experimental Evidence

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Abstract

Strategic interactions hinge crucially on what agents know and believe about others' preferences, actions, and the underlying state of the world. We synthesize recent experimental advances that probe how information asymmetries, attention allocation, and signaling shape behavior in games. Drawing on controlled laboratory and field experiments, we show in this paper that (1) confidence signals can be manipulated strategically to deceive counterparts, (2) boundedly rational agents adjust attention in response to others' strategies, (3) information gaps persist even under repeated play among equally sophisticated learners, (4) information itself can be priced and traded as a commodity, and (5) social feedback timing drives sophistication in observational learning. These findings collectively underscore information's dual role as both a strategic lever and a cognitive constraint.

The paper ends with "The End"

1 Introduction

Game-theoretic models have long emphasized information structures - complete vs. incomplete, symmetric vs. asymmetric - as central determinants of equilibrium outcomes. Yet until recently, experimental tests largely confined themselves to complete-information settings. The last few years have witnessed a surge of studies deliberately introducing informational frictions to better align theory with real-world strategic behavior. In this article, we review five frontier experiments that illuminate how information availability, processing costs, and signaling influence decisions in games ranging from simple dyads to multi-agent markets.

2 Deceptive Confidence Signaling

Pulford et al. (2025) investigate whether better-informed players exploit confidence signals - such as response latency - to mislead counterparts in mixed-motive Deadlock games. They find that informed agents deliberately delay their initial suggestions to feign uncertainty, thereby inducing less-informed opponents to follow their misleading cues. This strategic misrepresentation yields higher payoffs for deceivers at the expense of their counterparts, revealing that the 'confidence heuristic' identified in cooperative coordination can be weaponized under conflicting interests [1].

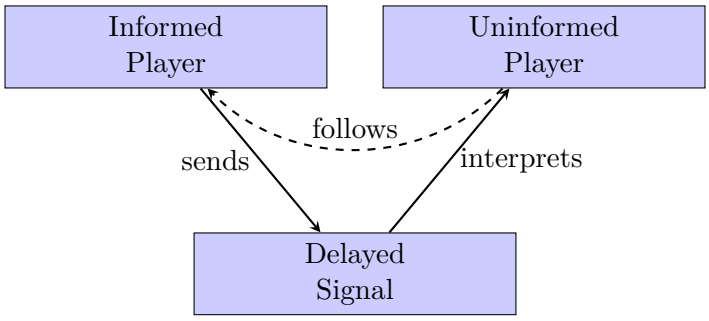

Figure 1: Deceptive signaling via delayed confidence cues.

3 Rational Inattention in Buyer–Seller Games

Caplin and Dean (2025) implement a buyer–seller game where sellers, after learning a product's value, make take-it-or-leave-it offers. Buyers can perform a costly cognitive task to discover the value. By varying sellers' outside options, the authors show that buyers adjust attention rationally: when sellers face high outside options (and thus high-price incentives), buyers process information more accurately, reducing acceptance mistakes on low-value, high-priced offers. However, behavior deviates from Shannon-cost rational inattention models, suggesting that strategic priors interact with information-processing costs in nuanced ways [2].

4 Persistence of Information Asymmetries

Ananthakrishnan et al. (2024) examine whether an uninformed player can learn and achieve her Stackelberg value through repeated interactions with a fully informed opponent. In a meta-game where each commits to a learning algorithm, they prove that while the informed player always attains her Stackelberg payoff in some pure Nash equilibrium (PNE), there exist distributions over games for which no PNE allows the uninformed player to reach her Stackelberg value. Thus, informational asymmetries can persist even under rational, long-term play [3].

5 Information as a Tradable Commodity

Piccioli and Vivo (2025) propose a game-theoretic pricing framework for data in markets with $N \geq 3$ players betting on a stochastic process. Better-informed agents choose between exploiting private signals or selling data to less-informed rivals. Equilibrium analysis reveals symbiotic regimes where sharing data for free can boost a seller's payoff by altering competitive dynamics. Paradoxically, increased rivalry among informed players can "bless" uninformed agents with positive profits despite informational disadvantages [4].

6 Social Feedback and Observational Learning

Gneezy et al. (2021) explore how the timing of social feedback influences sophistication in observational learning. When feedback about others' choices is provided before a player's own decision, strategically skilled agents increase their level of strategic reasoning. Delayed feedback, by contrast, yields minimal gains in sophistication. This highlights that information's temporal structure critically shapes learning trajectories in strategic environments [5].

7 Conclusion

These experiments collectively demonstrate that information is not merely a passive input in strategic decisions but an active instrument that can be managed, priced, and manipulated. Key unresolved issues include designing mechanisms to mitigate deceptive signaling, integrating emotional and cognitive costs into rational inattention models, and understanding how market size influences information trade. As digital platforms generate ever-more granular data, experimental game theory must continue evolving to capture the complex interplay of incentives, attention, and learning.

References

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