Mediated Communication with Transparent Motives

Mediated Communication with Transparent Motives

ROBERTO CORRAO* and YIFAN DAI*, Department of Economics, MIT

We study optimal information mediation in sender-receiver communication games where the sender has transparent motives: she only cares about the receiver's actions and beliefs. An uninformed mediator cannot directly take the relevant decision in place of the receiver, but can credibly commit to information transmission policies. By the revelation principle, the mediator acts "as-if" selecting a *communication equilibrium* outcome of the sender-receiver game to maximize her expected payoff.

We characterize the set of feasible distributions over the receiver's posterior beliefs under mediation in terms of simple moment conditions. This allows us to represent the optimal mediation problem as a linear program under moment constraints. Appealing to linear duality and the minimax theorem, we characterize the value of mediation as the lower envelope of a class of distorted persuasion problems, where the distortion comes from the Lagrange multiplier of the truth-telling constraint. Moreover, we characterize optimal distributions over posteriors in terms of the complementary slackness properties of their supports.

We then compare the optimal outcome under mediation with other communication protocols such as Bayesian persuasion and pure cheap talk. When the sender and mediator are perfectly aligned, the sender can attain her optimal persuasion payoff under mediation if and only if this value can be attained under single-round cheap talk. Geometrically, this happens when the concave and quasi-concave envelopes of her value function coincide when evaluated at the prior. In other words, the comparison of the sender's optimal payoff under communication protocols with and without sender commitment is equivalent to the comparison of the concave and quasi-concave envelope of her value function.

Although mediation may not attain the optimal persuasion value, it can strictly improve communication outcomes by introducing additional randomness into the information structure. When the state is binary, a mediator can strictly improve the sender's payoff only if the sender does not have an incentive to over/under-report the state compared to the optimal cheap talk value. The sender's relative misreport incentive is formalized by a weaker version of single crossing, which is called *mono-crossing*. When the babbling equilibrium is suboptimal under cheap talk, the sender attains her optimal mediation value under cheap talk if and only if her shifted value function is mono-crossing. In other words, the mediator's randomization benefits the sender if and only if the sender does not have a transparent tendency to misreport. When the babbling equilibrium is optimal under cheap talk, our duality result implies that babbling is optimal under mediation if and only if a distorted sender's utility is superdifferentiable at the prior.

The full paper is available at: https://arxiv.org/abs/2303.06244.

CCS Concepts: • **Applied computing → Economics**.

Additional Key Words and Phrases: Mediation, Bayesian persuasion, cheap talk, belief-based approach, duality, single crossing

ACM Reference Format:
Roberto Corrao and Yifan Dai. 2023. Mediated Communication with Transparent Motives. In *Proceedings of the 24th ACM Conference on Economics and Computation (EC '23), July 9–12, 2023, London, United Kingdom.* ACM, New York, NY, USA, 1 page. https://doi.org/10.1145/3580507.3597808

*Both authors contributed equally to this research.

EC '23, July 9–12, 2023, London, United Kingdom

ACM ISBN 979-8-4007-0104-7/23/07.
https://doi.org/10.1145/3580507.3597808