The Impact of Audience Size on Image Concerns: Evidence from a Dictator Game

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Abstract

Can the mere presence of noninteractive observers motivate prosocial behavior? Are audience effects monotonic in the number of onlookers? The empirical literature provides mixed findings to these questions. We address them through clean experimental evidence from a modified dictator game involving an external, noninteractive audience of variable size. The simplicity of our design allows us to isolate audience effects from confounding features of experimental designs (the methodological moderators in Bradley et al., 2018 [1]).

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1 Research Question and Contribution

The main aim of this study is to test rigorously if an external noninteractive audience can induce image concerns which motivate prosocial behavior and, if present, whether these audience effects vary with the number of observers.

Our intuition is that people have intrinsic motivations to perform good deeds as well as image concerns which can be manipulated in the laboratory. To lay out our hypotheses, we present an extension to a model by Battigalli & Dufwenberg, 2022 [2] (B&D) for opinions about good traits. Our model remains general, simply extending their formula to multiple players and allowing for heterogeneity in the parameter θ_{ij}^R , meaning that one could care more about the opinion of some coplayers than others. The decision maker's utility is thus represented by the following utility function:

$$u_i(z, \alpha_{-i}, \theta_i) = \pi_i(z) + \theta_i^I[\mathbb{1}^G(z) - \mathbb{1}^B(z)] + \sum_{j \neq i} \theta_{ij}^R \mathbb{E}_{\alpha_j}[\tilde{\theta}_i^I \mid z]$$

The first term in the formula is the material payoff at the end of the game (terminal node z). The second term represents the intrinsic motivation to do good deeds, parameterised by a private intrinsic-motivation trait θ_i^I and with $\mathbb{1}^G(z)$ (resp. $\mathbb{1}^B(z)$) being an indicator function equal to one if i's own actions associated with the terminal history z are good (resp. bad). We remain agnostic over what constitutes a 'good' action in the general case (e.g., could be altruism, conformity, or reducing inequity and so on), but we argue that our experimental design clearly frames one action as unambiguously good (prosocial) and one as bad (antisocial). Being an intrinsic-motivation, this term is unaffected by the presence of others. The last and most relevant term models how much the player cares about the opinion of others about her intrinsic trait. This third positive addenda increases with the number of observers and give us testable predictions.

Our main contributions are:

- proposing and testing a very general model of image concerns based on B&D, 2022 [2],
- providing novel evidence on size-dependent image concerns,
- and testing audience effects in a clean and controlled environment with minimal manipulation, providing insights on how they may confound outcomes in other experiments.

2 Design

Game Form

- Dictator mini-Game: 10 EUR endowment to be split in two ways by the Dictator: 5-5 (fair) or 8-2 (greedy)[1]
- 5 independent rounds with no feedback in between. Roles as assigned randomly at the beginning and remain fixed during the whole duration of the experiment

Roles

- Dictator: 10 participants
- Receiver: 10 participants
- Audience: from 0 to 6, varies across treatments

Matching

- Typed Absolute Stranger Matching: Each dictator is matched with every recipient once and only once
- Audience members observe every dictator's action

Treatments

- Control: No Audience
- Treatment I: 2 participants in the audience
- Treatment II: 6 participants in the audience

Between subject design. Each participant plays in only one treatment.

Payment

- Dictator's and Receiver's payoffs are determined by Dictator's choice. One round is selected at random for payment (same round for every one to avoid confusion)
- Audience receives a fixed amount of 5 EUR
- Everyone receives a show-up fee of 5 EUR
- Payments are provided through Amazon gift cards

[1] Neutral wording will be used during the experiment

3 Running the experiment

The Bocconi Experimental Laboratory for the Social Sciences (BELLS) has up to 27 interconnected terminals, allowing each session to fit 10 dictators + 10 receivers and 6 audience members. With this configuration and five rounds, we can gather 5 data points for each dictator, for a total of 50 per session. With the current payoffs each participant will receive on average 5 EUR + 5 EUR (the participation fee) for a total of 10 EUR per participant or 260 EUR per session.

4 Brainstorming

- We use a mini-Dictator instead of a Dictator game because there is mixed evidence on giving slightly more/less than the equitable split. We want that actions are universally perceived as good/bad.
- It is possible to add an additional *placebo* task to strengthen the internal validity (whilst taking care of minimizing any spillover/contamination from repeated tasks) in which actions are rather socially neutral and decisions are not due to strategic considerations related to image concerns. For instance, a choice between risky lotteries could signals one's risk aversion, a trait arguably less socially sensible than altruism/fairness.

Bibliography

[1] Bradley, A., Lawrence, C., Ferguson, E. (2018). Does observability affect prosociality? Proceedings of the Royal Society B: Biological Sciences, 285. https://doi.org/10.1098/rspb.2018.0116

[2] Pierpaolo Battigalli and Martin Dufwenberg (2022). Belief-dependent motivations and psychological game theory. Journal of Economic Literature, 60.https://doi.org/DOI: