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## Guilt in voting and public good games<sup>☆</sup>

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#### 1. Introduction

Many morally problematic acts and decisions require the support of several people to become implementable, and often, morally difficult tasks are delegated to groups instead of one individual alone. Extreme examples are so-called "execution teams," juries deciding about death penalties, and group military activity such as shooting squads. There may be different reasons for these arrangements. Certainly, they causally affect moral responsibility in people involved. An expert in military psychology, Dave Grossman, stresses that individual barriers towards morally problematic activity often break when people become part of teams or groups.<sup>1</sup> In a related vein, studies from social psychology (compare the overviews in Bandura, 1999; 2016) document that diffusion of responsibility and shared guilt reduce moral conscience in people. In addition, a diffused

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<sup>1</sup> Compare Grossman (1996): "The individual is not a killer, but the group is" (p. 149).

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#### ABSTRACT

This paper analyzes how moral costs affect individual support of morally difficult group decisions. We study a threshold public good game with moral costs. Motivated by recent empirical findings, we assume that these costs are heterogeneous and consist of three parts. The first one is a standard cost term. The second, shared guilt, decreases in the number of supporters. The third hinges on the notion of being pivotal. We analyze equilibrium predictions, isolate the causal effects of guilt sharing, and compare results to standard utilitarian and non-consequentialist approaches. As interventions, we study information release, feedback, and fostering individual moral standards.

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notion of being pivotal can decrease moral feelings (compare Falk and Szech, 2014). Various studies from economics and related fields further document that people are heterogeneous in their moral behavior. Some personalities adhere to higher moral standards than others, even across different institutional contexts.<sup>2</sup>

Motivated by these findings, we analyze how moral costs affect individual support and outcomes in morally difficult group decisions. For this purpose, we study a threshold public good game with moral costs. We assume that agents are heterogeneous, and that moral costs consist of three terms. The first one is a standard cost term. The second, shared guilt, decreases in the number of supporters. The third hinges on the notion of being pivotal. We analyze equilibrium predictions, isolate the causal effects of guilt sharing, and compare results to standard utilitarian and non-consequentialist approaches. As interventions, we study information release, feedback, and fostering individual moral standards.

We first prove existence and uniqueness of a symmetric Bayesian Nash equilibrium in which transgression can happen with positive probability. We focus on this equilibrium throughout. Its outcome "Pareto dominates" the outcome of the trivial equilibrium in which all agents remain passive.<sup>3</sup> We find that this Bayesian Nash equilibrium takes the form of a threshold equilibrium. Above a certain moral cost type, agents stay out, while agents below this threshold support moral transgression actively.

An increase in individual moral standards, e.g. through training moral virtues, unambiguously reduces moral transgression. Yet releasing additional information to the agents, such that moral views become more spread out, can have different effects. If selfish benefits from transgression are high, information release can fight transgression. The opposite is true if selfish benefits are low. The reason behind is that information release shifts probability mass both into the upper and into the lower tail of the distribution of the agents' moral types. Morally "good" agents tend to become better, "bad" agents tend to become worse. A transgression that is only appealing to the morally worst agents can thus materialize more likely if information is released, while a transgression that requires the support of high moral types can become prevented more easily.<sup>4</sup>

Information on the exact number of fellow supporters affects feelings of moral responsibility as guilt can be shared with these members. Yet in many situations, this precise information may not become viable. For example, in a shooting squad, it may be that only the outcome itself can be seen. Therefore, we also analyze the case in which feedback on the number of supporters is not provided. Again, non-trivial, symmetric Bayesian equilibria exist. These are all in threshold strategies. We find that these thresholds are all larger than the threshold in the corresponding setting with feedback. Transgression therefore becomes more likely if feedback is lacking. The technical reason behind is Jensen's inequality. Moral costs diffuse better if agents can only build a conditional expectation about how many other agents supported the transgression. This prediction could be directly tested in an economic experiment.

We further contrast our findings with the case in which guilt does not diffuse in the number of agents. The quantitative predictions differ drastically. The impact of guilt diffusion is roughly comparable to multiplying the selfish benefit by the number of required supporters: We observe a kind of 'strategic equivalence' between the game in which guilt diffuses in the number of supporters, and the comparison game with a much smaller selfish benefit. Precisely, the selfish benefit is divided by the number of supporters needed, one agent less is required, and the total group size is one agent less.

Finally, we compare our predictions to those of the companion model in which agents' moral reasoning follows a purely non-consequentialist approach. What matters for feelings of guilt is now the intention, not the outcome. If agents act as supporters, they face moral costs – regardless of whether transgression materializes or not. In this model, symmetric equilibria in which transgression occurs with positive probability only exist if the selfish benefit from transgression is sufficiently high. If the benefit is large, there exist multiple equilibria, all in threshold strategies. The equilibrium with the highest transgression probability Pareto dominates.

#### 1.1. Related literature

Many previous applications of discrete public good games to morally relevant action have studied so-called bystanding. Bystanders are people who observe a crime or accident. Often they do not help the person in distress. A rich empirical literature has documented that helping becomes less likely if others could help as well. Helping drastically decreases in the number of bystanders, see e.g. Darley and Latané (1968), Latané and Nida (1981), and Fischer et al. (2011) for an overview. For a victim, in order to receive help, it is often much better to have just one or few observers than many. This finding has been coined as the "bystander effect."

In social psychology and in sociology, guilt diffusion and reduced feelings of breaking a norm have been put forward as explanations for the bystander effect (see also Zimbardo, 2007). Diffusion of guilt has also been found to operate in committee situations (compare Bandura, 1999; 2016; Bandura et al., 1975). In a related vein, empirical studies have shown

<sup>&</sup>lt;sup>2</sup> See O'Fallon and Butterfield (2005) and Loe et al. (2000) for reviews of questionnaire and hypothetical scenario studies. Economic evidence comes from Albrecht et al. (2017) and from Deckers et al. (2016). Another related economic study focusing on social behavior is Bruhin et al. (2016).

<sup>&</sup>lt;sup>3</sup> Pareto domination appears here in the sense that all agents strictly prefer the expected outcome of the symmetric Bayesian Nash equilibrium to the outcome of the trivial equilibrium. Pareto improvements here go together with a larger likelihood of moral transgression.

<sup>&</sup>lt;sup>4</sup> These results consider information release that tends to foster more extreme opinions in agents who already hold different views. In contrast, information that fosters consensus in the population of agents leads to the reversed effects.

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