

Nudging for increased participation: competitive public good games

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Extended abstract [800 words]

This paper addresses the questions of what happens when teams of players face each other in a competitive game, as opposed to individuals. In particular, we study a public good game in which the two teams compete in the creation of the public good and we show the relevance of our results for a specific example of public policy design. Our research belongs to streams of literature in public choice, social psychology and behavioral and experimental economics studying the effect of intergroup competition in various kind of games. In several experiments, for instance, Bornstein and co-authors show that intergroup competition increases cooperation in the prisoner's dilemma, and even more in the step-level public good game where groups need to contribute more than a given threshold in order to reap benefits. Intergroup competition also improve efficiency in weak-link games. To the best of our knowledge, experimental evidence on intergroup competition (with the exception of threshold public good games) focuses on the *simultaneous* case, in which team-members deliberate individually (with or without communication) without knowledge of others' strategic choices. In our paper, we also address the question of whether *sequential* choice matters for cooperation in the public good game with intergroup competition. We propose a 2x2 experimental design in which subject play a public good game either individually or in a team competing with another team and do so simultaneously or sequentially.

Before describing the game and its strategic elements, we show its relevance to nudging by referring to a real-world policy situation that shares relevant characteristics with our experimental framework. The analysis of the impact of regulation is an essential theme in European guidelines for better regulation. Public consultations play a crucial role in the improvement of impact analysis, as they may allow regulators to become aware of unforeseen contingencies, to better their quantitative analyses, to increase public awareness and participation, and so on. The advantages brought about by public consultations are directly related to the extent of the involvement of the public itself, hence nudges to increase such an involvement could reasonably be expected to result in an increase of the quality of regulation. Because individual citizens or interest groups only have a limited amount of time, effort, resources, knowledge etc. that they can bring into the consultation, and because, to some extent, the more time, effort, resources, knowledge etc. an individual or an interest group spends in the consultation, the more they will sway the regulation to their advantage, we see that the consultation process shares salient characteristics with a public good game, so that the latter can be seen as a toy model of the former. Thus, the two dimensions of our experimental design would provide us with relevant

directional results towards policy design. The first dimension (individual versus group competition) addresses the question whether a more polarized participation (intergroup competition) results in increased participation. The second dimension (simultaneous versus sequential choice) addresses the question whether making comments public as they come in as opposed to making them public at the end of the consultation results in increased participation. In both cases "increased participation" means that individuals, be them individual players or team members, exert more effort than they otherwise would.

To better understand what we mean by "competitive public good game", we describe some of its salient features. Each participant is assigned to one of two groups of 5 players and receives an endowment e of 10 units that they can contribute to the public good. The payoff for each player is given by

$$u_{A_i}(c_{A_i}) = e - c_{A_i} + .4 \left(\sum_{i=1}^5 c_{A_i} - \sum_{i=1}^5 c_{B_i} \right) + 16$$

The payoff thus includes a component that is given by the *difference* between the total amount of contributions of a player's group and the total amount of contributions of the other group. In particular, this means that if a player's group contributes more than the other group, this payoff component will be positive, while if it contributes less, this payoff component will be negative (or it will be zero if both groups contribute equally). Strategically, just as in a canonical public good game, it is in the best interest of each individual player to contribute as little as possible, and the best outcome for an individual obtains when she contributes nothing while everyone else in her group contribute all. These two points hold true regardless of the level of total contributions of the other group, thus, strategically speaking, there is no difference between a competitive or non-competitive game. Yet, we expect participants to contribute individually more in the competitive case, and even more so in the sequential condition. Were our predictions to be confirmed, our experiment would not only contribute substantially to the behavioral game-theoretic literature, but would also indicate a nudge for increased participation in public consultations.