

PREFERENCES FOR POWER

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ABSTRACT. Power relations are ubiquitous. While having power and being able to determine the outcomes of others is usually associated with benefits, such as higher compensation or public recognition, we demonstrate that a substantial fraction of individuals seek power even in the absence of such benefits. Such individuals are willing to accept a lower payoff for themselves in exchange for power over others. We show that preferences for power exist in the absence of other components of decision rights, and that they are different than, and cannot be explained by, social preferences. We establish that ignoring such intrinsic preferences for power has large welfare consequences.

Date: **First Version: May 2017. Current version: November 2017.**

Key words and phrases. Preferences for power, private benefits of control, social preferences, other-regarding preferences, laboratory experiment

JEL: C91, D01, D03, M21.

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We thank Nageeb Ali, Gary Bolton, Gary Charness, Emel Feliz-Ozbay, Zack Grossman, Yoram Halevy, Paul J. Healy, Holger Herz, Elena Katok, Tony Kwasnica, Yusufcan Masatlioglu, Ryan Oprea, Erkut Ozbay, Carolin Pflueger, Ran Schorrer, Ron Siegel, Philippe Tobler, Neslihan Uler, Emanuel Vespa, Marie-Claire Villeval, and Sevgi Yuksel for lively discussions and valuable feedback. We also benefited from comments from seminar participants at The Sauder School of Business (University of British Columbia), Simon Fraser University, Pittsburgh University, The Technion (Haifa, Israel), GATE-LSE (Lyon, France), University of Zürich, University of Maryland, The Pennsylvania State University, The Naveen Jindal School of Business at UT Dallas, as well as participants at the following conferences: the Southwest Experimental and Behavioral Economics Workshop (University of California Santa Barbara), the Bay Area Behavioral and Experimental Economics Workshop (Santa Clara University), ESA San Diego, the Tilburg Institute for Behavioral Economics Research Conference and the Center for Experimental Social Science 15th Anniversary Conference (NYU). Pikulina and Tergiman are also very grateful for generous funding from the Social Sciences and Humanities Research Council of Canada (SSHRC).

“When a moderate degree of comfort is assured, both individuals and communities will pursue power rather than wealth: they may seek wealth as a means to power, or they may forgo an increase of wealth in order to secure an increase of power, but in the former case as in the latter their fundamental motive is not economic.”

— Bertrand Russell, *Power*

1. INTRODUCTION

Rational economic agents with standard preferences are interested in controlling the fates of others only as long as such power gives them material benefits, for example, increases their payoffs, expands their choice set, or decreases risk and uncertainty. Here, we eliminate any material benefits of power to the decision-maker and study its intrinsic value instead.

As it relates to the interaction between people, the Oxford Dictionary defines power as “the capacity or ability to direct or influence the behavior of others or the course of events.”¹ In a principal-agent context, or one of manager-employee, two aspects of power are most prevalent. One is a manager’s ability to decide on an employee’s tasks and responsibilities. Another, which we study in this paper, is the manager’s ability to determine an employee’s pay, whether in the form of a bonus or a promotion that would directly affect the employee’s remuneration. Of course, power is not limited to principal-agents settings, and individuals, organizations, and states can have power over each other to varying degrees and in various contexts.² In this paper, we study power as the ability to determine someone else’s compensation.

Authority, power, control, and autonomy are notions that are often confounded. For example, when a manager has authority over employees, her authority includes *power*, the ability to determine their payoffs and responsibilities, *control*, the ability to determine her own payoff and responsibilities, and *autonomy*, the enjoyment of non-interference in her affairs by others.³ Here, we focus solely on power and evaluate it independently of these other factors.

The main challenge in isolating individuals’ preferences for power – the ability to determine payoffs of others – and in estimating their willingness to pay for it comes

¹See Oxford Dictionary <https://en.oxforddictionaries.com/definition/power>.

²For example, in the United States, presidents possess immense powers through their use of executive orders. For example, on January 1, 1863, President Abraham Lincoln issued the Emancipation Proclamation, an order that freed 3 million enslaved people; on February 19, 1942, Franklin D. Roosevelt signed executive order 9066 that cleared the way for Japanese-Americans to be sent to concentration camps for the duration of the World War II. However, the power of the President over individuals’ legal status and mobility is not unlimited, and can be challenged in courts and by the Congress.

³Control and autonomy are not synonymous. Consider, for example, the case where the manager’s payoff is determined randomly. In this case, she has no control but does have autonomy.

from the fact that people may put a non-zero weight on those payoffs. In other words, they may have social preferences that are independent of their preferences for power. For example, someone may not particularly enjoy choosing the payoff of someone else, but may enjoy the resulting payoff distribution. To specifically address this challenge, we propose a new game that allows us to separate an individual's willingness to pay for power from her willingness to pay to implement her social preferences.

We introduce a new game, the "Power Game." In the Power Game, there are two types of players, A and B , who are matched in pairs. Only type A players make decisions, and these decisions determine the payoffs of both the A player and the B player. The Power Game is in two Parts. In Part I, A has the choice between two options. In the first option, B receives a pre-specified amount E_A , and A can choose her own payoff in the $[0, E_A]$ interval. A rational player always chooses E_A for herself, hence, the resulting allocation is (E_A, E_A) . Player A 's second option is to receive a lower payoff, $E_A - p$, and obtain the right to choose a specific payoff for player B in the $[0, E_B]$ interval. In other words, by paying p , A obtains the right to determine the payoff of B . If A pays, $(E_A - p, x_B^*)$ is the resulting allocation, where x_B^* is what A chose for B in the $[0, E_B]$ interval. Because Part I has several rounds and p varies from round to round, we can determine an individual's willingness to pay for the right to determine B 's payoff.

In Part II, player A makes choices between two payoff pairs that determine payoffs for herself and for player B . Some of these pairs are determined by her actions in Part I.⁴ If in Part I a player chose to pay price p , then in the corresponding round of Part II she has to choose between (E_A, E_A) and $(E_A - p, x_B^*)$, where x_B^* is what she chose for B in Part I. In other words, she has the choice between (E_A, E_A) , the allocation that a payoff-maximizing player would have chosen, and the allocation she actually chose in Part I, $(E_A - p, x_B^*)$. If in Part I A chose not to pay price p , then in the corresponding round of Part II she has to choose between (E_A, E_A) and $(E_A - p, E_A + 2p)$. In other words, she has the choice between the allocation she actually chose, (E_A, E_A) , and a more efficient allocation, $(E_A - p, E_A + 2p)$, that she could have chosen.

Two key features in the Power Game allow us to identify subjects who enjoy power, i.e. have power preferences. First, while player A has power over B in both Parts of the Power Game, she faces different trade-offs between power and her own payoff in Parts I and II. It is only in Part I that A can acquire more power. Indeed, in Part I, when A pays p , she obtains the right to choose B 's payoff precisely, and can choose any payoff she pleases within the interval $[0, E_B]$. Thus, there is an explicit trade-off between A 's payoff and A 's power over B , which an individual with power preferences can exploit.

⁴In our experimental implementation, players also make choices between payoff pairs unrelated to their decisions in Part I.

In contrast, Part II of the Power Game does not offer such a trade-off. When A gives up p in Part II and chooses the payoff pair with the lower payoff for herself, it does not change her power over B but simply implies a different, fixed, payoff for B . The second key feature of our design is that all Part I rounds have a corresponding round in Part II that presents player A with her Part I allocation and an alternative she could have chosen. These two features allow us to determine why a player paid in Part I. Did she pay because she desired a specific distributional outcome $(E_A - p, x_B^*)$, i.e. has social preferences? Or did she pay because she enjoyed the power of choosing B 's payoff in $[0, E_B]$ but in fact attached little importance to her actual choice of x_B^* ?

By comparing how much subjects are willing to pay in Parts I and II of the Power Game, we are able to identify their preferences. While players with standard preferences never pay in Part I or in Part II, players who value power or have social preferences pay non-zero prices in Part I. Players with power and social preferences, however, behave differently in Part II. If A 's choices in Part I are the result of her social preferences and she does not place any value on the process by which final allocations are attained, i.e. does not place any value on her ability to choose a specific payoff for B , then in Part II she should still prefer $(E_A - p, x_B^*)$, the allocation she implemented in Part I. In other words, player A should be willing to pay price p to implement her social preferences irrespective of whether she picks B 's payoff herself from the $[0, E_B]$ interval as in Part I, or whether the exact same payoff is exogenously given as in Part II. If, in contrast, in Part I, player A pays only to increase her power over B , then in Part II she should prefer (E_A, E_A) , since paying in Part II does not lead to any additional power but simply lowers her payoff. Thus, if a player reverses her choices in Part II and chooses (E_A, E_A) instead of $(E_A - p, x_B^*)$, then she must have preferences for power.

Our main finding is that a large fraction of our subjects, specifically 42 percent, have preferences for power. In Part I, these subjects are willing to pay over 10 percent of their potential payoff to be able to choose payoffs for B , but they are willing to pay nothing to implement the *same* allocations in Part II, when additional power is not attainable. We also find that about 24 percent of our subjects have standard preferences, i.e. they do not attach any value to power or payoffs of others and never pay in either Part of the Power Game. About 9 percent of our subjects have social preferences and are indifferent towards power, since they have identical willingnesses to pay in Parts I and II of the Power Game. Power and social preferences are not mutually exclusive and 14 percent of our subjects have both. They have positive but different willingnesses to pay in Parts I and II of the Power Game. We therefore show that a substantial majority of our subjects value power beyond its instrumental worth.⁵

⁵We are unable to conclusively determine the preference classes of about 11 percent of our subjects.

We then provide evidence that our Power-Game-based preference classification indeed captures differences in preferences across subjects. Since our classification depends only on the difference in subjects' willingnesses to pay across Parts I and II of the Power Game, we can use it to predict subjects' choices in other dimensions. We show that subjects we classify as having social preferences, regardless of their attitude towards power, are consistent in the amounts they give to type *B* players. In contrast, subjects with power preferences and no social preferences exhibit much more variation in their giving behavior both within and across subjects. In addition, we show that these classes predict subjects' decisions in tasks that are unrelated to Part I of the Power Game. More specifically, in the absence of power, subjects with power preferences and no social preferences behave much like subjects with standard preferences, that is they maximize their own payoff, while those with social preferences do not.

Our experimental results are closely related to the recent experimental literature on individual preferences for control and decision rights. Fehr, Herz and Wilkening (2013) find that principals do not delegate decision rights to agents often enough in games where delegation results in higher monetary payoffs for both parties. Bartling, Fehr and Herz (2014) show that this underdelegation is driven by individuals assigning a positive value to decision rights *per se*. More specifically, principals are willing to give up 16.7 percent of their expected payoff to retain control over their own payoff and the payoff of an agent they are matched with. Similarly, Owens, Grossman and Fackler (2014) find that when asked whether to bet on their own performance or on their partners' performance in a quiz, people prefer to bet on themselves. Moreover, they are willing to sacrifice up to 15 percent of their expected payoff to retain control over their own outcome rather than delegate it to another person.

Our study is the first to separate power from autonomy and control and to show that preferences for power exist and are substantial. In other words, we show that preferences for power are an important component of the intrinsic value of decision rights. Indeed, preferences for decision rights are a compound substance: when a principal retains decision rights she enjoys power, her ability to influence the outcomes of others, as well as control and autonomy, i.e. being able to influence her own payoff while being independent from the actions of others. In fact, in many experimental setups, including those in the above-mentioned papers, participants have to decide between having power, control, and autonomy, or having none of those.

In addition, our findings contribute to the corporate finance and delegation literatures that consider the private benefits of decision-making as one of the main frictions in the principal-agent problem and in optimal organizational design (e.g., Grossman and Hart (1986), Aghion and Bolton (1992), Hart and Moore (2005), Dessein and Holden (2017)).

The theoretical literature has pointed out the possible non-pecuniary nature of private benefits. Hart and Moore (1995), for example, motivate their theory by claiming that "among other things, managers have goals, such as the pursuit of power" (p. 568). By their very nature, non-pecuniary private benefits are difficult to observe and even more difficult to quantify in a reliable way. Instead, the empirical literature has concentrated on measuring pecuniary private benefits by estimating the value of perquisites enjoyed by top executives (Demsetz and Lehn (1985), Dyck and Zingales (2004)). Dyck and Zingales (2004) find substantial evidence that good institutions and corporate governance can significantly curb the amount of monetary private benefits enjoyed by controlling shareholders. However, our results call into question whether even the best institutions would be able to eliminate private benefit frictions in the presence of power-hungry agents.

Our results are also related to the literature on procedures versus outcomes. In strategic games, when evaluating decisions of others, individuals may base their assessments not only on outcomes but also on the procedures that lead to those outcomes. Indeed, past work has shown that including a third party in the decision-making process, changing the distance between a decision-maker and a recipient, varying the possibility of retribution and modifying the interpretation of motives and intentions leads individuals to evaluate outcomes differently. This is the case, for example, in Fershtman and Gneezy (2001), Coffman (2011), Bartling and Fischbacher (2011) and Orhun (2017). In our paper, we show that a large fraction of individuals care about procedures when it comes to how they *themselves* reach decisions concerning *others*, as opposed to how someone else acts towards them or others. This is the case even in the absence of strategic interactions, any possibility of retribution and in situations where beliefs regarding others' subsequent actions are irrelevant.

Finally, our findings have important methodological implications for inferring social preferences from individual choices. For example, Zizzo and Oswald (2001), Abbink and Sadrieh (2009), and Charness, Masclet and Villeval (2014) show that when people can choose by how much to decrease the payoffs of others, many of them are willing to sacrifice their own payoffs in order to "burn" other people's money. However, our study demonstrates that a large fraction of the population has preferences for power, and individuals with such preferences may appear spiteful if their only option is to decrease the payoff of others even though they do not attach any value to those payoffs per se. Our study reconciles results from these above papers with those studies that have shown that when people can only pick between two fixed options, where one of the options gives them less money but also destroys the payoffs of their partners, they behave in a much less malicious way (Charness and Rabin (2002), Chen and Li (2009)).

The remainder of the paper is organized as follows. In Section 2 we detail the Power Game and its experimental implementation. We outline the theoretical framework behind our experimental design in Section 3. Section 4 reports and discusses the experimental results. Section 5 concludes.

2. EXPERIMENTAL DESIGN: THE POWER GAME

2.1. The Power Game. We develop a new game, the "Power Game" and describe it here. The Power Game has two parts. At the beginning of Part I, players are randomly assigned a type, either A or B , with equal number of type A s and type B s. Types are fixed throughout the entire game. In the Power Game, only type A players make decisions.

Power Game, Part I: Part I comprises $N + 1$ rounds. In each round, each type A player is randomly matched with a type B player. In each of the first N rounds, A is faced with the following decision. In round j , a price p_j is revealed to type A players who must then decide whether to pay it or not.

- If player A pays p_j , then the payoffs for the players are $(E_A - p_j, x_{Bj}^*)$, where x_{Bj}^* is what A chooses for B in the interval $[0, E_B]$.
- If player A does not pay p_j , then the payoffs for the players are (x_{Aj}^*, E_A) , where x_{Aj}^* is what A chooses for herself in the interval $[0, E_A]$.⁶

Thus, a round consists of two stages: in the first stage, player A decides whether to pay p_j or not, and then, in the second stage, depending on her first stage decision, she chooses either her own or player B 's payoff, i.e. either x_{Aj} or x_{Bj} . The values of E_A and E_B are known in advance and fixed throughout all the rounds. In the beginning of each round, for each player A , the price p_j is randomly and independently drawn from a discrete set \mathcal{P} , of size N , without replacement, and revealed to players before they make a decision on whether to pay it or not.

After all prices in the set \mathcal{P} have been drawn, A players participate in a final round in Part I, round $N + 1$. In this round, each type A player is given E_A as her payoff and asked to choose how much player B receives, still between 0 and E_B . In other words, here we force all type A players to choose payoffs for type B players, as if they face a price of zero.

Power Game, Part II: Part II lasts for M rounds where $M \geq N$. In each round, player A decides between two payoff pairs: (x_A, x_B) and (x'_A, x'_B) . N of the M rounds correspond to the first N rounds in Part I. These rounds are player-specific as they depend on a player's decisions in Part I of the Power Game. More specifically, for each $p_j \in \mathcal{P}$:

⁶We provide a detailed discussion on this design feature in Section 2.2.

- If in round j of Part I player A paid p_j , then in the corresponding round of Part II, she decides between the following payoff pairs: (E_A, E_A) and $(E_A - p_j, x_{Bj}^*)$, where x_{Bj}^* is the payoff she chose for player B in round j of Part I.
- If in round j of Part I player A did not pay p_j , then she chooses between $(E_A - p_j, E_A + 2p_j)$ and (x_{Aj}^*, E_A) , where x_{Aj}^* is the payoff she chose for herself in round j of Part I. For rational subjects with standard preferences, this choice is effectively between $(E_A - p_j, E_A + 2p_j)$ and (E_A, E_A) , since they always choose the maximum allowable on the interval $[0, E_A]$ in Part I.

Whether or not a player paid p_j in round j of Part I, one of the payoff pairs she faces in the corresponding round of Part II is the pair she actually chose in Part I: $(E_A - p_j, x_{Bj}^*)$ for players who paid and (x_{Aj}^*, E_A) for those who did not. The other payoff pair she faces is one she could have chosen in round j of Part I but rejected: (E_A, E_A) if the player paid p_j and $(E_A - p_j, E_A + 2p_j)$ if she did not pay. (E_A, E_A) is an obvious choice in the former case since it is what a rational agent would have chosen if she had not paid. We adopt $(E_A - p_j, E_A + 2p_j)$ in the latter case because it is an efficient choice for all prices. Importantly, for each p_j a player encountered in Part I, in Part II she faces a choice between two payoff pairs, one of which is *identical in payoff distribution* to the pair that she actually selected in Part I, and the other is a pair she rejected.

Note that player A has power over B in both Parts of the Power Game. However, she faces different trade-offs between power and her own payoff in Parts I and II. If A pays in Part I, she increases her power over B 's payoff since she can select any number in the $[0, E_B]$ interval. On the contrary, in Part II, if A gives up p and chooses $(E_A - p, x_B^*)$ as opposed to (E_A, E_A) , she does not acquire more power, but instead simply lowers her own payoff while B obtains a different pre-specified fixed payoff.

The payoff pairs in the remaining $M - N$ rounds in Part II are chosen independently of Part I and correspond to other choices that may be of a separate interest to the researcher.

2.2. Experimental implementation. All our experimental sessions were conducted in March and April 2017 at the Laboratory for Economic Management and Auctions (LEMA) at the Pennsylvania State University using z-Tree software (Fischbacher (2007)). Subjects were recruited from the general undergraduate population and each subject participated in one session only. We conducted 16 sessions for a total of 292 subjects. Each session lasted at most 45 minutes and on average participants earned \$15. At the start of the experiment, subjects were randomly assigned a type: A or B . Subjects were told that throughout the entire experiment only Type A players' decisions would matter for payment and that types would remain fixed. Instructions for Part I were read out loud and afterwards all subjects participated in two practice rounds for Part I, where they could see what screens would look like if they did or did not decide to pay price p . In each

round, each type A player was randomly matched with a type B player. Subjects moved from one round to the next when all subjects had completed the previous round. Instructions for Part II were handed out and read out loud after Part I was completed. Thus, our subjects were not aware of the contents of Part II when they were making their Part I decisions. After the end of Part II, subjects filled out a questionnaire where we asked them what motivated their choices, as well as demographic and education information. Full instructions and the questionnaire are available in Appendices A and B.

Type assignment: Types were assigned at the beginning of the experiment. However, the subjects were not told what type they were, but were told to make decisions as if they were type A players. If their *true* type was B , none of their decisions would matter for payment. If their true type was A , then one of their decisions, randomly selected, would matter. Thus, regardless of one's true type, it was in one's best interest to make decisions as if one were a type A player. True types were only revealed at the very end of the experimental session.

Parameter values in Part I: We used the following parameter values in Part I. The price set \mathcal{P} contained 9 distinct prices ranging from \$0 to \$2, in increments of 25 cents: $\mathcal{P} = \{\$0, \$0.25, \$0.50, \dots, \$1.50, \$1.75, \$2\}$. Thus, subjects played 9 rounds where prices were drawn without replacement from \mathcal{P} . Each price was randomly and independently drawn for each subject in each round. Subjects then played round 10 in which they were forced to choose the payoff for player B , as if price p_{10} was equal to 0. We used $E_A = \$12.30$ and $E_B = \$16.30$.

Subjects were not aware of the contents of \mathcal{P} , they were simply told that the price would vary from round to round. If A decided to pay, she would receive $\$12.30 - p$ as her payoff and she would obtain the right to choose the payoff for B , and could choose any number between \$0 and \$16.30 (in increments of 5 cents).⁷ If A decided not to pay, B would receive \$12.30 and A could choose how much to give to herself, between \$0 and \$12.30 (in increments of 5 cents).

Before starting Part I of the Power Game, subjects participated in two practice rounds. In those rounds, they were shown the screens that paying and not paying would lead to. Thus, they could familiarize themselves with the game and satisfy any curiosity regarding what paying or not would lead to in terms of screen display.

A few elements of our design are worth elaborating upon.

- Subjects choose their own payoff when they do not pay p . This is done for several reasons. First, in this way, in all rounds of Part I, all subjects make similar decisions: after deciding to pay p or not, they have to select how much to give to

⁷Strictly speaking, by paying p , player A acquires a right to choose any payoff for B among 327 options: $(\$0, \$0.05, \$0.10, \dots, \$16.25, \$16.30)$.

themselves or to the subjects they are matched with. Thus, this design element keeps anonymity fuller: no subject can infer whether another has decided to pay or not since all subjects type after making their first stage decisions. Second, we mitigate any experimenter demand effect where subjects might decide to pay in Part I simply because it is the only option with a subsequent action. Finally, it minimizes decisions to pay that would simply be due to boredom.

- Making $E_A < E_B$. The advantage is three-fold. First, subjects who have preferences for power are not limited in how they can exercise it: they are not constrained to increase or decrease B 's payoff relative to what B would receive if A does not pay. Second, we can explore a broad range of social preferences. Finally, we can better study the interaction of power and social preferences.
- Subjects are not told what type they are. This design feature allows us to collect decisions from all our subjects since they all behave as if they were type A players, as opposed to revealing types and only collect data from half of the subjects in each session. Our instructions carefully describe this design element and subjects are emphatically told that they should act as type A players, since if their true type were B none of their decisions would matter (see Appendix A for the instructions). In one of the rounds of Part II we directly test whether subjects understood their roles and find strong evidence that they did. In that specific round, all subjects are faced with a choice between two payoff pairs, (12.30, 9.60) and (9.60, 12.30). Which pair appears on the left or on the right of the screen is randomly decided (as for all rounds in Part II), yet 96% of our subjects choose (12.30, 9.60). Had there been any doubt on who to make decisions for, the fraction choosing the latter would have been higher.
- Subjects are told that throughout the entire experiment, types are fixed and only A players make decisions that matter for payment. These design elements minimize the possibility that subjects' decisions in Part I are motivated by their belief that those decisions may be rewarded or used against them in some way by other subjects in Part II.
- Unordered prices: p is randomly drawn from \mathcal{P} . In some experimental designs, the experimenter restricts the choices of subjects so that they appear rational and "well-behaved", e.g., such that all subjects have cutoff strategies. In our context this would mean imposing that as soon as for some price a subject decides not to pay, we force that the rest of her decisions be "not pay" for any price greater than that first price. Another way to "encourage" well-behaved choices is to offer an ordered list of prices to the subjects. We however let price p be randomly drawn from \mathcal{P} and ask subjects to make decisions for all prices in \mathcal{P} , regardless of past

behavior. We do so for two reasons. First, we are able to identify the subset of subjects who *are* well-behaved and conduct several analyses: using those subjects only and using the entire sample. We can evaluate whether our results depend on the kind of subjects we are considering.⁸ Second, random price order ensures that our results are not driven by order effects.⁹

Parameter values in Part II: Part II consisted of 20 rounds where subjects decided between two payoff pairs. Which payoff pair was presented on the left or on the right of the screen was randomly determined for each subject in each round. 9 rounds were subject-specific and 11 rounds were identical for each subject. The order of rounds was random for each subject.

In Part II, the 9 subject-specific rounds depended on a particular subject's decisions over the first 9 rounds of Part I. Specifically, subjects decided between the payoff pair they chose in Part I and a pair that was available but that they rejected:

- If a subject paid p_j and chose x_{Bj} in round j of Part I, she had to choose between the following payoff pairs in the corresponding round in Part II: $(12.30 - p_j, x_{Bj})$ and $(12.30, 12.30)$.
- If a subject did not pay p_j and chose x_{Aj} in round j of Part I, she had to choose between the following payoff pairs in the corresponding round in Part II: $(x_{Aj}, 12.30)$ and $(12.30 - p_j, 12.30 + 2p_j)$.

The remaining 11 rounds were identical for each subject. In six of those rounds, the values for the payoffs pairs were inspired by Charness and Rabin (2002)¹⁰ and re-scaled such that the order of magnitudes for payoffs was similar to the values stemming from Part I; see decisions CR1-CR6 of Table 1. Other decision problems were chosen to be similar to some of the problems in Charness and Rabin (2002) but to allow for different trade-offs between the payoffs of players A and B ; see decisions PT1 and PT2 in Table 1. Decision problem PT3 was designed to check whether subjects understood that they were to act as type A players. Finally, problems PT4 and PT5 were chosen to serve as "sanity checks" in our analysis (for more details see Section 4.3.2).

3. THEORETICAL FRAMEWORK

In this section, we derive a set of theoretical predictions for Parts I and II of the Power Game for individuals with different preference classes. We think of individual

⁸In the main text we focus on well-behaved subjects. In Appendix C we re-do the analysis including subjects who skipped one price and in Appendix D include all the subjects. We show that our results are unchanged across the different samples.

⁹Relatedly, Brown and Healy (2016) show that designs in which choices are all listed together on one screen are not incentive compatible, whereas designs in which choices are randomly presented are.

¹⁰See two-person dictator games, Table 1, p. 829.

TABLE 1. Decision Problems in 11 Rounds of Part II.

Decision ^a	First Option ^b	Second Option
CR1	(6.60, 6.60)	(6.60, 12.30)
CR2	(6.60, 6.60)	(6.20, 12.30)
CR3	(3.10, 12.30)	(0.00, 0.00)
CR4	(10.50, 5.30)	(8.80, 12.30)
CR5	(12.30, 3.50)	(10.50, 10.50)
CR6	(12.30, 0.00)	(6.15, 6.15)
PT1	(10.10, 5.20)	(9.10, 9.10)
PT2	(12.30, 5.10)	(10.10, 12.30)
PT3	(12.30, 9.60)	(9.60, 12.30)
PT4	(12.30, 7.80)	(7.80, 5.40)
PT5	(6.15, 6.15)	(0.00, 0.00)

^aThese rounds were presented among the 20 rounds of Part II in random order for each subject.

^bWhat option was presented on the left or on the right of the screen was randomly determined independently for each decision problem and for each subject.

preferences as varying along two dimensions. The first is whether an individual non-trivially incorporates other players' payoffs in her utility function. The second is whether she derives utility from having power over the payoffs of others.¹¹ Thus, we consider the following four types of preferences: standard selfish preferences, social preferences, power preferences, and, since power and social preferences are not mutually exclusive, preferences that have both social and power components.

We start with specifying player A 's utility function in a general form: $U_A = U(x_A, x_B, \lambda)$, where x_A is A 's own payoff, x_B is B 's payoff, and λ is a parameter indicating the amount of power that A has over B 's payoff. Without loss of generality, we normalize λ to zero when B 's potential payoff is pre-specified, i.e. when A receives no additional power from her choice, as is the case in all Part II rounds as well as if she doesn't pay in Part I. Similarly, we impose $\lambda = 1$ when A chooses B 's payoff from the interval $[0, E_B]$. We make the following assumptions about A 's utility function.

Assumption 1. $U(x_A, x_B, \lambda)$ is continuous in all three arguments.

Assumption 2. For all x_B and all λ , $U(x_A, x_B, \lambda)$ is strictly increasing in x_A .

¹¹In the main text, we focus on players who derive positive or no utility from power as opposed to deriving negative utility from it. We nevertheless, when appropriate, describe how to modify the theory for such players.

Assumption 3. $U(x_A, x_B, \lambda) = V(x_A, x_B) + f(\lambda)$, where $f(\lambda) = 0$ for players who do not care about power and $f(\lambda)$ is strictly increasing in λ for power-hungry players.

Assumption 1 simply states that player A 's utility function is continuous for all values of its arguments x_A , x_B , and λ . In Assumption 2 we impose that all else equal, A 's utility function is strictly increasing in her own payoff, but we allow for a large set of preferences as they relate to other players' payoffs.¹² Assumption 3 states that preferences for power enter the utility function in an additively separable manner and that they are monotonic.

Before we derive predictions about an individual's willingness to pay in Parts I and II of the Power Game we show that her demand function is well-behaved.

Lemma 1. *Player A has a well-behaved demand function in both Parts of the Power Game.*

Proof. Here we concentrate on behavior in Part I of the Power Game as the proof for Part II is similar and therefore omitted here for the sake of brevity. First, we prove that if a subject pays p' , then she pays for all $p < p'$. We then prove that if a subject does not pay p'' , then she does not pay for any $p > p''$. These steps suffice to show that demand functions are well-behaved.

Suppose A pays p' . Since A pays p' , we must have that $U(E_A - p', x_B^*, 1) \geq U(E_A, E_A, 0)$, where x_B^* is what A chooses for B . Since $U(x_A, x_B, \lambda)$ is strictly increasing in x_A , for any $p < p'$, we have that $U(E_A - p, x_B^*, 1) > U(E_A - p', x_B^*, 1) \geq U(E_A, E_A, 0)$. In other words, at price $p < p'$ player A is better off choosing x_B^* than not paying. Thus, for all $p < p'$, A pays and A 's demand function is well-behaved for all $p < p'$.

Suppose A does not pay p'' . Then, $U(E_A - p'', x_B^{**}, 1) \leq U(E_A, E_A, 0)$, where x_B^{**} is what A chooses for B at $p = p''$. By monotonicity of $U(x_A, x_B, \lambda)$ in x_A , for any $p > p''$ we have, for all x_B , that $U(E_A - p, x_B, 1) < U(E_A - p'', x_B^{**}, 1)$. Thus, for all $p > p''$, player A does not pay and A 's demand function is well-behaved for all $p > p''$. \square

Lemma 1 shows that in each Part of the Power Game players follow one of three paying behaviors: (1) a player never pays a positive price; (2) a player pays up until a cutoff price \bar{p}_I but does not pay for any price above it; or (3) a player pays at all prices. Note that to guarantee a finite cutoff price, additional constraints are needed: for example, if A faces a budget constraint then \bar{p}_I is finite. Heretofore, we call player A 's willingness to pay in Part I \bar{p}_I and call A 's willingness to pay in Part II \bar{p}_{II} .

We now turn to modeling the behavior of players in different preference classes. We begin with a player who has "standard" (completely selfish) preferences and who does

¹²Examples of utility functions that incorporate social preferences can be found in Rabin (1993), Levine (1998), Fehr and Schmidt (1999), Bolton and Ockenfels (2000), Charness and Rabin (2002), Falk and Fischbacher (2006), Cox, Friedman and Gjerstad (2007), Cox, Friedman and Sadiraj (2008), and Chen and Li (2009).

not derive any utility from having power: $U(x_A, x_B, \lambda) > U(x'_A, x'_B, \lambda')$ for all $x_A > x'_A$, all x_B and x'_B , and all λ and λ' . Proposition 1 states that a player with standard preferences always chooses to maximize her own payoff. Such a player never pays positive prices in either part of the Power Game.

Proposition 1. *For a player with standard preferences, $\bar{p}_I = \bar{p}_{II} = 0$.*

Proof. In Part I, if player A pays $p > 0$, then her payoff is equal to $E_A - p$. If she does not pay, her payoff is E_A . Since she only cares about her own payoff, she does not pay for any $p > 0$ and pays for all $p < 0$. Thus, $\bar{p}_I = 0$, and similarly $\bar{p}_{II} = 0$. \square

Next, we consider the behavior of players with non-standard preferences, i.e. players with social preferences or power preferences or both. We make two additional assumptions about the utility function of such players. We assume that if a player is indifferent between two options, she always chooses the one that gives her the highest monetary payoff. In particular, if a player pays p , this represents a strict preference ordering. We include this assumption for convenience and it is innocuous vis-à-vis our results. Finally, we assume that if A has social preferences, then her utility is highest at a single point in the interval $[0, E_B]$. That is, for a given x_A there are no two different payoffs for B that give A that highest utility. Assumptions 4 and 5 formalize these notions.

Assumption 4. *If $x_A > x'_A$ and $U(x_A, x_B, \lambda) = U(x'_A, x'_B, \lambda')$, then a player chooses the (x_A, x_B, λ) option.*

Assumption 5. *For a player with social preferences, for any x_A and λ , there exists a unique x_B^* that maximizes her utility, that is $\operatorname{argmax}_{x_B \in [0, E_B]} U(x_A, x_B, \lambda) = \{x_B^*\}$.*

Let us first consider a player who has social preferences and no power preferences. Such a player incorporates B 's payoff in her utility in a non-trivial manner, but because she is indifferent towards power, her utility from a particular allocation (x_A, x_B) is not affected by how that allocation is obtained. In other words, this player's utility is the same whether she chooses a particular payoff for B from the interval $[0, E_B]$ or whether it is exogenously given. For this player, $U(x_A, x_B, \lambda) = U(x_A, x_B, \lambda')$ for any λ, λ' , that is, for all λ , $f(\lambda) = 0$.

Social preferences that satisfy our assumptions can be divided into two categories that are mutually exclusive and together comprise the entire set of social preferences:

- (1) Social preferences where player A maximizes her utility by choosing something other than E_A for player B when $p = 0$. That is, there exists $x_B^\otimes \neq E_A$ such

that for all λ and λ' , A strictly prefers $(E_A, x_B^\otimes, \lambda)$ to (E_A, E_A, λ) , i.e. $E_A \neq \operatorname{argmax}_{x_B \in [0, E_B]} U(E_A, x_B, \lambda)$.¹³

- (2) Social preferences where player A maximizes her utility by choosing E_A for player B when $p = 0$. That is, for all λ and λ' , player A strictly prefers (E_A, E_A, λ) to (E_A, x_B, λ) for any $x_B \neq E_A$, i.e. $E_A = \operatorname{argmax}_{x_B \in [0, E_B]} U(E_A, x_B, \lambda)$.¹⁴

In Proposition 2 and Corollary 1 we derive predictions regarding the paying behavior of players with social preferences and no power preferences in the Power Game.

Proposition 2. *For a player with social preferences and no power preferences, $\bar{p}_I > 0$ if and only if she does not choose E_A for player B when $p = 0$. In Part II, player A has the same paying behavior as in Part I: $\bar{p}_I = \bar{p}_{II}$.*

Proof. Let us start by showing that if a player does not choose E_A for B when $p = 0$, then there exists some positive price $p' > 0$ such that A pays p' .

Let x_B^\otimes be what A chooses for B when $p = 0$, i.e. $x_B^\otimes = \operatorname{argmax}_{x_B \in [0, E_B]} U(E_A, x_B, 1)$, which is a singleton by Assumption 5. Since A does not choose E_A for B at $p = 0$, we know that $x_B^\otimes \neq E_A$, and thus $U(E_A, x_B^\otimes, 1) > U(E_A, E_A, 0)$. By continuity and monotonicity of $U(x_A, x_B, \lambda)$ in x_A , there exists $p' > 0$ such that $U(E_A, x_B^\otimes, 1) > U(E_A - p', x_B^\otimes, 1) > U(E_A, E_A, 0)$. Thus, there exists $p' > 0$ such that A pays p' . By Lemma 1, since A pays a positive price at least once, her willingness to pay \bar{p}_I is strictly positive.

Now we show the opposite direction: if $\bar{p}_I > 0$, then A does not choose E_A for B at $p = 0$. Since $\bar{p}_I > 0$, by continuity and monotonicity of $U(x_A, x_B, \lambda)$ in x_A , there exists some positive price $p < \bar{p}_I$, such that $U(E_A - p, x_B^*, 1) > U(E_A, E_A, 0)$, where $x_B^* = \operatorname{argmax}_{x_B \in [0, E_B]} U(E_A - p, x_B, 1)$ and $x_B^* \neq E_A$. By monotonicity, we have that $U(E_A, x_B^*, 1) > U(E_A - p, x_B^*, 1) > U(E_A, E_A, 0)$. In other words, at $p = 0$, player A is better off when she chooses x_B^* as player B 's payoff than when she chooses E_A . Thus, at a price of 0, player A pays and does not choose E_A for player B .

The second statement of the proposition follows directly from the fact that $U(x_A, x_B, \lambda) = V(x_A, x_B) + f(\lambda)$ and that A doesn't care about power, i.e. $f(\lambda) = 0$. Thus, for all x_A, x_B , $U(x_A, x_B, 1) = U(x_A, x_B, 0)$. Therefore, the Part I logic holds for Part II and $\bar{p}_{II} = \bar{p}_I$. \square

Proposition 2 shows that players whose preferences fit within a large class of social preferences, e.g., social-welfare preferences or competitive preferences, have a strictly positive willingness to pay in Part I of the Power Game. Their willingness to pay, \bar{p}_I ,

¹³For example, competitive or spiteful preferences and social-welfare preferences as in Levine (1998), Charness and Rabin (2002) and Cox, Friedman and Gjerstad (2007) are in this category.

¹⁴Preferences for equality in Fehr and Schmidt (1999) and Bolton and Ockenfels (2000) are example that fall into this category of preferences.

depends on the strength of their preferences with respect to the payoff of player B as well as on the available payoff options for B , i.e. the interval $[0, E_B]$. Moreover, in Part II such players choose to implement the same allocations as in Part I and thus pay the same positive prices, i.e. $\bar{p}_I = \bar{p}_{II}$.

Corollary 1. *For a player with social preferences and no power preferences, $\bar{p}_I = 0$ if and only if such a player chooses E_A for player B when $p = 0$. Moreover, $\bar{p}_{II} = \bar{p}_I = 0$.*

Corollary 1 is the transpose of Proposition 2 and so is directly implied by it. One direct implication of Corollary 1 is that players with preferences for equality should never pay positive prices in either Part of the Power Game.

We now consider players who like power. If a player enjoys being able to choose payoffs for others, her utility has to incorporate not only final payoffs, but also whether those payoffs are attained via increased power: for $\lambda > \lambda'$, $U(x_A, x_B, \lambda) > U(x_A, x_B, \lambda')$ for all x_A and x_B . In other words, for such players, $f(\lambda)$ is strictly increasing in λ . Such players may or may not have social preferences. We start with those who do not.

Proposition 3. *For a player with power preferences and no social preferences, $\bar{p}_I > 0$ and $\bar{p}_{II} = 0$.*

Proof. Since player A derives a positive utility from having power and does not have social preferences, then in Part I of the Power Game, for all x_B , $U(E_A, x_B, 1) > U(E_A, E_A, 0)$. By continuity and monotonicity of $U(x_A, x_B, \lambda)$ in x_A , there exists $p' > 0$ such that $U(E_A, x_B, 1) > U(E_A - p', x_B, 1) > U(E_A, E_A, 0)$, and A pays $p' > 0$. By Lemma 1, we conclude that $\bar{p}_I > 0$.

In Part II of the Power Game, paying does not lead to any increase in power for A , since in either case the potential payoff for B is fixed. Therefore, for any $p > 0$ and any x_B, x'_B , $U(E_A, x_B, 0) > U(E_A - p, x'_B, 0)$. Thus, A never pays a positive price in Part II: $\bar{p}_{II} = 0$. \square

Proposition 3 states that a player with power preferences and no social preferences is willing to pay positive prices in Part I of the Power Game. In Part II however she instead chooses the payoff-maximizing option and never pays a positive price.

Finally, we consider subjects who have both social and power preferences.

Proposition 4. *For a player with power and social preferences, $\bar{p}_I > 0$ and $0 \leq \bar{p}_{II} < \bar{p}_I$.*

Proof. Let's first consider the social component of A 's utility function. By Assumptions 3 and 5, for a given payoff of player A , there is a unique optimal allocation for B that is independent of her preferences for power. That is, for every λ, λ' , $x_B^* = \operatorname{argmax}_{x_B \in [0, E_B]} U(x_A, x_B, \lambda) = \operatorname{argmax}_{x_B \in [0, E_B]} U(x_A, x_B, \lambda') = \operatorname{argmax}_{x_B \in [0, E_B]} V(x_A, x_B)$.

In particular, if her payoff is $E_A - p$, the allocation for B that maximizes her utility is the same in Part I and in Part II. By Proposition 2 and Corollary 1, a player with a social component to her utility is willing to trade-off $p_s \geq 0$ to maximize her utility and obtain the $(E_A - p_s, x_B^*)$ allocation instead of the (E_A, E_A) allocation, i.e. $V(E_A - p_s, x_B^*) \geq V(E_A, E_A)$, where $x_B^* = \underset{x_B \in [0, E_B]}{\operatorname{argmax}} V(E_A - p_s, x_B)$.

In a setting of increased power, her choice for B is identical and her utility is then $V(E_A - p_s, x_B^*) + f(1)$. Because she enjoys power, that utility is strictly greater than $V(E_A - p_s, x_B^*) + f(0)$. By continuity and monotonicity of $V(x_A, x_B)$ in x_A , there exists $p' > p_s$ such that $V(E_A - p_s, x_B^*) + f(1) > V(E_A - p', x_B^*) + f(1) > V(E_A - p_s, x_B^*) + f(0) \geq V(E_A, E_A) + f(0)$. Equivalently, $U(E_A - p_s, x_B^*, 1) > U(E_A - p', x_B^*, 1) > U(E_A - p_s, x_B^*, 0) \geq U(E_A, E_A, 0)$. Thus, A is willing to pay more to implement both her social and power preferences than to implement her social preferences only. As a result A is willing to pay more in Part I than in Part II.¹⁵ \square

Proposition 4 states that if a player enjoys power and has social preferences, she is willing to sacrifice a larger fraction of her payoff in order to both obtain power and implement her social preferences as in Part I than in order to only implement her social preferences, as in Part II.

3.1. Experimental predictions and empirical identification of preference classes. In our theory, we have established the correspondence between paying behavior in the Power Game and preference classes. Before we outline how our theoretical predictions translate to the empirical identification of preference classes, we discuss two caveats.

The first caveat regards the experimental implementation of the Power Game. Since in the experiment subjects face a menu of prices in increments of 25 cents, it is possible that we are unable to observe the willingness to pay for those subjects with relatively weak power and/or social preferences. Indeed, their willingness to pay may be below 25 cents. In this case, we may underestimate the fraction of people with power and/or social preferences as these may instead appear to us as having standard preferences.

Next, while subjects with power preferences are clearly identified in the Power Game, for a set of social preferences, isolating subjects who exclusively care about power from those who care about power *and* have those specific social preferences poses a challenge. Subjects with those social preferences choose \$12.30 as B 's payoff when their own payoff is \$12.30, that is when $p = 0$ and in Round 10 of Part I. Such subjects pay positively in Part I but not in Part II, exactly like subjects who have power preferences only.¹⁶ We

¹⁵If a player is averse to power, then the inequalities are reversed and we may have that $\bar{p}_I < 0$ but in any case, $\bar{p}_{II} > \bar{p}_I$.

¹⁶See Corollary 1 and Proposition 4.

choose to categorize subjects who only pay positively in Part I as having power preferences only, with the caveat that a small fraction may in fact also have social preferences.¹⁷ Importantly, this choice does not impact the overall fraction of subjects who have a power component to their preferences.

TABLE 2. Empirical identification of preference classes.

Preference class	\bar{p}_I	\bar{p}_{II}
Standard ^a	0	0
Power +	$\bar{p}_I > 0$	0
Social Preferences	$\bar{p}_I > 0$	$\bar{p}_{II} = \bar{p}_I$
Social Preferences & Power +	$\bar{p}_I > 0$	$\bar{p}_{II} < \bar{p}_I$
Social Preferences & Power –	$\bar{p}_I \geq 0$	$\bar{p}_{II} > \bar{p}_I$
Unclassified	.	Any

^aPlayers with $\bar{p}_I = \bar{p}_{II} = 0$ might have social preferences such that they choose \$12.30 as *B*'s payoff when their own payoff is \$12.30, that is when $p = 0$ and in Round 10 of Part I. However, in our empirical analysis, we find that none of these subjects do so.

Table 2 summarizes the correspondence between preference classes and paying behavior across Parts I and II of the Power Game in our experimental setup. We expect subjects with standard preferences to never pay positive prices in either Part I or Part II. Subjects with social and/or power preferences pay strictly positive prices in order to choose the payoffs for others. Note that in both cases subjects' willingness to pay depends on the strength of their power and social preferences relative to their own payoff. While subjects with power or social preferences behave similarly in Part I, they are different in Part II: subjects with social preferences pay the same prices in Parts I and II, whereas subjects with power preferences never pay positive prices in Part II. Subjects who have social preferences and value power are willing to pay higher prices in Part I than in Part II, but still pay positively in Part II. If subjects have social preferences but dislike power, they pay more in Part II than in Part I. Finally, subjects who never pay in Part I, including at a price of zero, may be motivated by different factors that we are unable to separate with our experimental design. These subjects may have standard preferences and make a random decision on whether to pay at a price of zero or not. They may instead have preferences for equality when *A* herself receives \$12.30 and since both paying and not paying at zero leads to both players receiving \$12.30 they may choose not to pay. Finally, these subjects may dislike power and refuse to pay for it, even at a price of zero.

¹⁷Empirically, the fraction of subjects who may have power preferences and those social preferences is at most 3% of our sample, since this is the proportion of subjects who choose \$12.30 as *B*'s payoff when their own payoff is \$12.30. This small percentage represents an upper-bound on the fraction of subjects who may have this type of social preferences, insomuch as \$12.30 is a rather obvious focal point.

4. EXPERIMENTAL RESULTS

In our analyses, we restrict our sample to those subjects who prefer to earn more rather than less, all else equal. That is, we use Assumption 2 in Section 3 as a guiding principle. Subjects violate Assumption 2 if in Part I they decide not to pay and choose a payoff for themselves that is lower than \$12.30. Out of our initial 292 subjects, 242 always give themselves \$12.30 and 16 subjects give themselves \$12 or more. We have 6 subjects who give themselves less than \$12 at least once, 13 do that twice, and 15 do that three or more times. For our analyses, we consider those 258 subjects, or 88.4% of our original sample, who always give themselves at least \$12.^{18,19}

4.1. Preferences for power: the aggregate level.

4.1.1. *Demand for choosing payoffs of others in Part I.* We begin by exploring the relationship between prices and subjects' decisions to pay for the right to choose precise payoffs of others in Part I. Figure 1 presents the fraction of subjects who agree to pay in Part I for each given price, including the price of zero. Two features deserve emphasis. First, the fraction of subjects who pay to choose others' payoffs is decreasing in price, or in other words, the demand function is downward sloping. Second, at the price of \$0, over 90% of our subjects decide to choose the payoff for player *B*. Both elements show that our subjects understand that there is a real cost to choosing the other player's payoff, which is perhaps not surprising since they were explicitly asked whether they were willing to "pay p " in order to choose the payoff for *B*. The existence of an aggregate downward-sloping demand function shows that the demand for choosing payoffs of others is well-behaved at the aggregate level.

In Table 3 we present additional evidence on the participants' decisions to pay depending on price. For each subject, we calculate how many times he or she decides to pay for each of the nine prices from the set \mathcal{P} . The overwhelming majority of subjects, just over 80%, decide to pay a positive price at least once. Recall that before the start of Part I, subjects go through two practice rounds in which they are able to satisfy any curiosity regarding what such a choice would lead to in terms of screen display. Further, 70.2% of our participants pay at least twice and about 10.5% pay at all prices, including the maximum offered price of \$2, which represents a loss of over 16% of what they could

¹⁸We retain the 16 subjects that give themselves between \$12 and \$12.30, allowing that some subjects may have a preference for not receiving multiple coins as part of their final cash payment. For example, out of those 16 subjects, 11 subjects consistently give themselves exactly 12 dollars and three subjects choose 12 dollars and a quarter as their payoff.

¹⁹All our conclusions are robust to including all subjects as well as only including subjects who strictly adhere to Assumption 2.

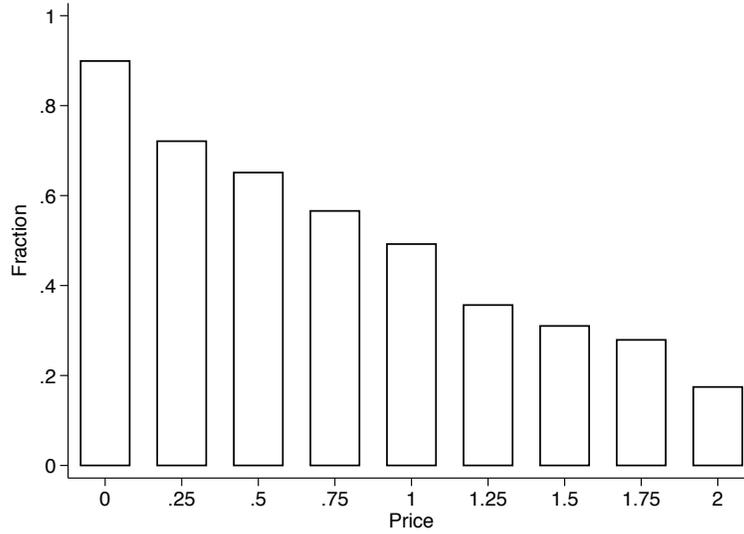


FIGURE 1. Fraction of subjects who pay to choose payoffs of others in Part I by price, in USD.

have earned had they not paid. In fact, the median number of strictly positive payments is 3, and the mean is slightly higher at 3.6.

TABLE 3. Fraction of subjects paying to choose payoffs of others in Part I.

	Subjects	Percentage
Never paid, including at price of zero	15	5.8%
Paid only at price of zero	35	13.6%
Paid a positive price at least once	208	80.6%
Paid a positive price at least twice	181	70.2%
Paid at all prices, including at price of zero	27	10.5%
All subjects	258	100.0%

4.1.2. *Allocations chosen in Part I.* In Part I of the Power Game, our 258 subjects make 2,322 different decisions over the courses of the 9 prices they face. In 1,174 (or 50.6%) of the cases, subjects don't pay, i.e. choose the $(12.30, 12.30)$ allocation. Here we concentrate on the remaining 1,148 (or 49.4%) of the allocations, when subjects choose to pay p , i.e. $(12.30 - p, x_B^*)$. We depict those chosen allocations on the $x_A x_B$ plane in Figure 2.

Figure 2 clearly demonstrates that there is substantial heterogeneity in terms of the payoff allocations chosen by our subjects. The surface of each circle is proportional to the number of subjects who choose a specific allocation. For example, when price

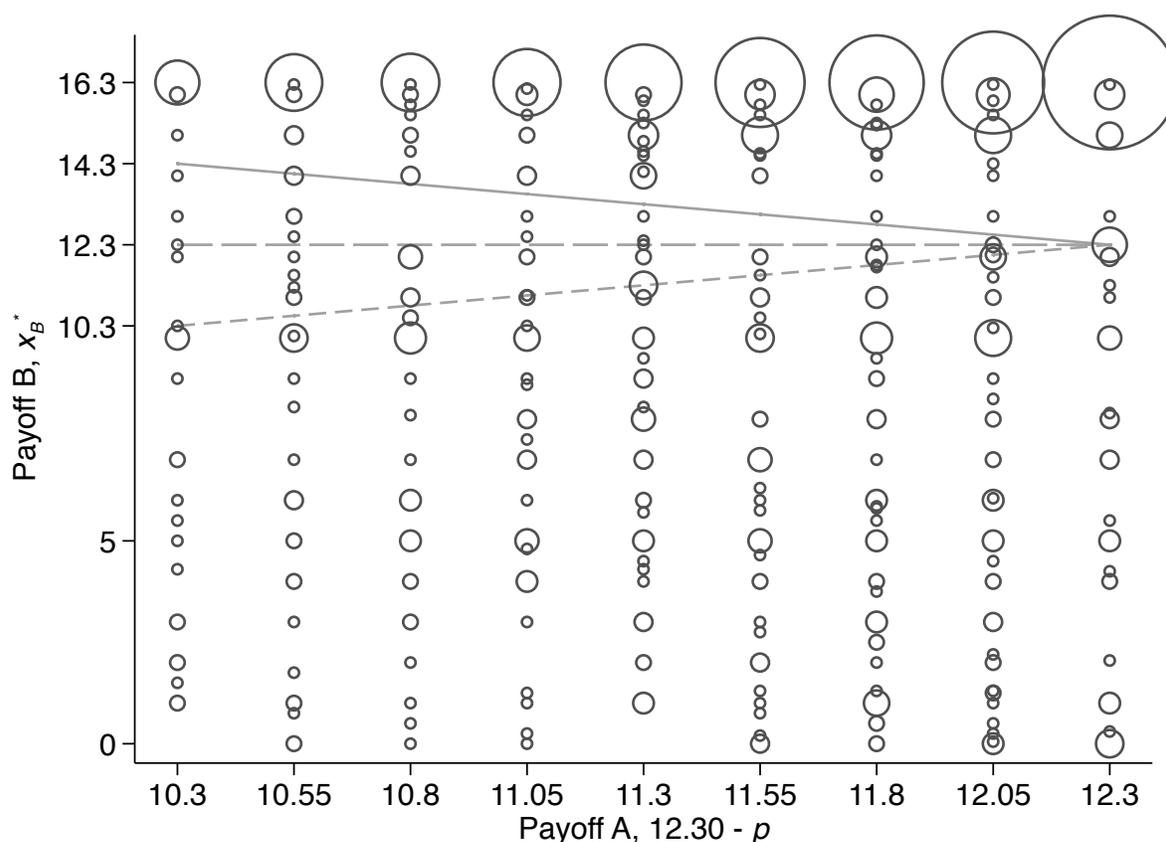


FIGURE 2. Payoff allocations $(12.30 - p, x_B^*)$ chosen by subjects in Part I.

p is 25 cents, 97 of our subjects decide to pay and to give \$16.30 to B , i.e. choose the $(12.05, 16.30)$ allocation, while when the price is 2 dollars, 18 subjects choose the $(10.30, 16.30)$ allocation. All the allocations lying above the downward-sloping solid line are efficient in that player A pays less money than she gives to B beyond \$12.30. More formally: $x_B > 12.30 + p$. All the allocations below the upward-sloping dashed line are competitive²⁰ in that player A decreases the payoff of B by more than what she pays. More formally: $x_B < 12.30 - p$. In other words, player A decreases her own payoff in order to decrease the payoff of B even further. In terms of allocation distribution, 66.1% are efficient, and the most efficient allocation of $(12.30 - p, 16.30)$ comprises 51.9% of the ones our subjects are willing to pay for. Competitive allocations, where a subject gives less to B than she receives herself, amount to 25.2% of the allocations. The remaining 8.7% of the allocations cannot be attributed to either category.²¹

²⁰We adopt this terminology from Charness and Rabin (2002).

²¹Note that we use a strict relationship to attribute allocations to either being efficient or competitive ($x_B > 12.30 + p$; $x_B < 12.30 - p$). If we allow for equality, then the percentages of efficient, competitive, and unclassified allocations are 67.5%, 26.1%, and 7.3% respectively.

In Table 4 we aggregate observations at the subject level. For each subject, we compute the average and maximum prices paid as well as the average amount given to player B across all decisions. In Panel A, we present the above statistics for all decisions, including at a price of zero, while in Panel B we do so only for decisions done at positive prices. Among our 258 subjects, 243 pay at least once, including at zero, and for them the median maximum price paid is \$1.25. In other words, the majority of those who pay are willing to give up substantial amounts of money to obtain the right to choose the precise payoff for B . Obviously, conditional on paying positive prices, the median maximum price paid is even higher. It reaches \$1.50 and constitutes 16% of the subjects' potential payoffs. Thus, not only are subjects willing to pay in order to choose B 's payoffs (as seen in Table 3), but they are also willing to pay relatively large amounts in order to do so.

TABLE 4. Subjects' paying behavior in Part I of the Power Game.

	Subjects	Mean	St.Dev.	Min.	p25	Median	p75	Max.
Panel A: At all prices								
Mean price paid	243	0.54	0.34	0.00	0.25	0.62	0.88	1.21
Max. price paid	243	1.11	0.71	0.00	0.50	1.25	1.75	2.00
Mean payoff for B	243	13.46	4.37	0.00	11.22	16.20	16.30	16.30
Panel B: Only at positive prices								
Mean price paid	208	0.79	0.31	0.25	0.50	0.85	1.00	2.00
Max. price paid	208	1.30	0.58	0.25	0.75	1.50	1.75	2.00
Mean payoff for B	208	12.85	4.70	0.00	10.10	15.65	16.30	16.30

Additionally, there is substantial variation among subjects in terms of the payoff chosen for player B . In both Panels A and B, the minimum average amount is zero and the maximum is \$16.30. That is, at least one subject always gives nothing, and one subject always gives the maximum allowable amount to B . In addition, the distributions shows that most participants tend to be generous rather than petty, and they tend to be especially nice when it costs them nothing. In fact, 117 out of 243 and 86 out of 208 subjects always give \$16.30 to player B , for all prices and strictly positive prices, respectively.

We now turn to comparing subjects' paying behavior across both parts of the Power Game at the aggregate level and show that it differs substantially.

4.1.3. *The Power Game: Part I versus Part II behavior.* In this section we analyze subjects' behavior in the 9 subject-specific rounds of Part II.²² In these 9 rounds, subjects are faced with choices that are determined by their decisions in Part I. For example, if in one of the

²²The remaining 11 rounds are identical for all subjects and analyzed in Section 4.3.

rounds in Part I, a subject pays \$1 and gives \$16.30 to B , then it means that she prefers $(11.30, 16.30)$ to $(12.30, 12.30)$. In the corresponding Part II round, she faces a choice between those two allocations: $(11.30, 16.30)$ and $(12.30, 12.30)$. More generally, if in Part I she pays p and choose x_B^* for B over the $(12.30, 12.30)$ allocation, then in Part II she has to choose between the following two payoff pairs: $(12.30 - p, x_B^*)$ and $(12.30, 12.30)$. In other words, in Part II, subjects face a choice between the allocation they chose in Part I and an alternative allocation they could have chosen but didn't.

If in Part II A retains her choice of $(12.30 - p, x_B^*)$ over $(12.30, 12.30)$, then we say that she pays p in Part II to implement her desired allocation from Part I. Note that while the $(12.30 - p, x_B^*)$ allocation is identical to what A chose in Part I, in Part II paying p does not lead to additional power, it just leads to implementing this specific payoff distribution. Indeed, whether or not A pays p in Part II, the choice she faces is between two payoff pairs that are fixed, whereas in Part I, paying p allowed A to increase her power over B by choosing a precise payoff for B in $[0, 16.30]$. If a subject's preferences are on distributional outcomes only, she should choose the same allocation in Part II as in Part I: the subject should choose $(12.30 - p, x_B^*)$.

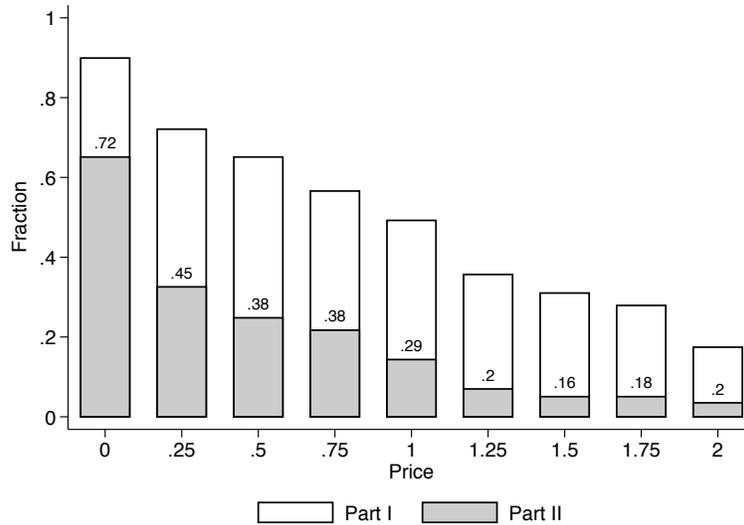


FIGURE 3. Fraction of subjects who pay in Part I and Part II, by price in USD.

Figure 3 adds shaded bars to Figure 1 that represent the fraction of subjects who pay in Part II conditional on paying in Part I.²³ The conditional fraction of subjects paying in Part II for each price is written at the top of each shaded area. For example, only 29.1% of subjects who pay a price of \$1 in Part I also pay in Part II, i.e. they choose the

²³Recall from Section 2.2 that which payoff pair appeared on the left of the screen and which appeared on the right was randomly determined by the computer. So there is no bias coming from the $(12.30, 12.30)$ allocation being constantly on the same side of the screen.

same allocations as in Part I. There is a stark difference between subjects' willingness to pay in Parts I and II at the aggregate level for each price. For every p in \mathcal{P} , conditional on having paid in Part I, far fewer subjects in Part II are willing to pay the same price to ensure the payoff distribution they chose in Part I. Interestingly, there is a difference at the price of zero, which means that some subjects prefer the $(12.30, x_B^*)$ allocation to $(12.30, 12.30)$ when x_B^* is chosen by the subjects themselves but prefer $(12.30, 12.30)$ to $(12.30, x_B^*)$ when the same value of x_B^* is fixed. Thus, even at no cost to themselves, they do not implement their Part I allocations in Part II.²⁴

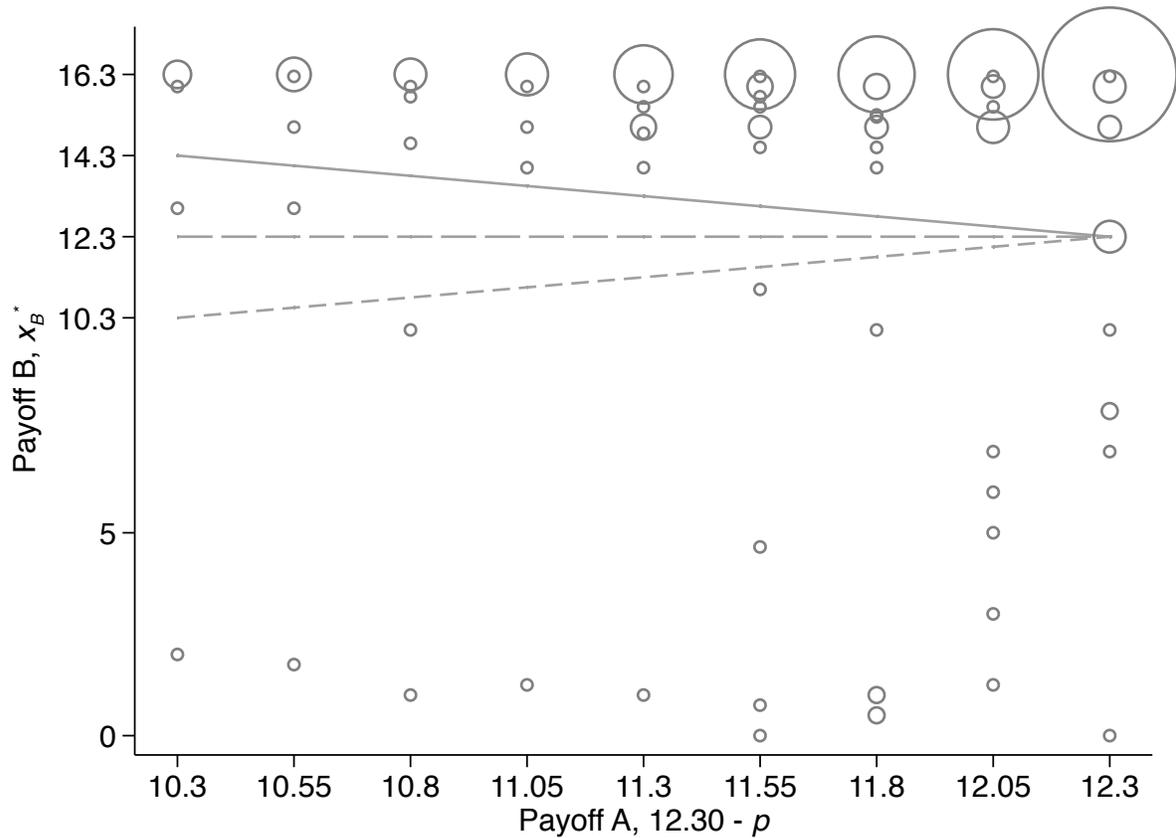


FIGURE 4. Payoff allocations $(12.30 - p, x_B^*)$ preserved by subjects in Part II.

Figure 4 shows the Part I $(12.30 - p, x_B^*)$ allocations that subjects preserved in Part II. Recall that in Part I, subjects decide to pay p in 1,148 cases. In Part II however they choose

²⁴It is possible that a subject in Part I pays because she is indifferent between the two choices, and any choice reversal in Part II is the result of this indifference. If this were the case, and if subjects were only interested in final outcomes (as opposed to power), we would expect 50% of reversals in Part II. A two-sided test of proportion shows that the probability of paying in Part II conditional on having paid in Part I is statistically different than 50% with a p -value less than 0.01. This is also true if one looks at each price individually, with the exception of $p = 0.25$. In Section 4.2, we use the individual level data to provide further evidence that these switches are not due to indifference.

not to pay in 686 or 59.8% of those cases, i.e. they revert to the (12.30,12.30) allocation. Subjects revert 43.5% and 92.0% of efficient and competitive allocations, respectively.

Our aggregate results provide strong evidence that preferences for power are non-trivial. Many subjects are willing to pay if paying increases their power over the payoffs of others as is the case in Part I. However, they are much less willing to pay to implement the same payoff allocations when paying does not lead to additional power as is the case in Part II. If subjects' decisions to obtain the right to choose payoffs of others in Part I were driven entirely by their social preferences then there should be no reversals in Part II. Thus, our results suggest that (1) preferences for power exist and are substantial and (2) that they are different than and cannot be explained by social preferences. In the next section, we continue our analysis at the individual level and explore the broad categories of preference classes among our subjects.

4.2. Preferences for power: the individual level.

4.2.1. *Definition.* We say that someone has preferences for power if she exhibits different paying behaviors in Part I and Part II. Specifically, someone has preferences for power if her willingness to pay is different in Part II than in Part I, i.e. $\bar{p}_I \neq \bar{p}_{II}$ (see Section 3).

4.2.2. *Demand functions.* In the main text we focus on those subjects who have well-behaved demand functions in Parts I and II. That is, we only consider subjects who have a single switching point in each Part, that is have step demand functions. Figure 5 graphically visualizes these well-behaved demand functions. Note that Figure 5 depicts the demand functions of a subject whose willingness to pay is a lower in Part II than in Part I, i.e. for whom $\bar{p}_{II} < \bar{p}_I$, but we include subjects for whom $\bar{p}_{II} > \bar{p}_I$ and $\bar{p}_{II} = \bar{p}_I$ in our analyses.

We have 126 subjects (48.8% of our sample) who have well-behaved demand functions in both Parts I and II. This proportion is relatively large given that prices are randomly drawn from the set \mathcal{P} in every round in Part I and that the 9 rounds that correspond to Part I are randomly presented in Part II among the 20 Part II rounds.²⁵ There are no significant differences, either in terms of magnitude or statistically, in the distribution of skips in both Parts of the Power Game. For example, the fraction of subjects who make no skips in Part I (Part II) is 67.8% (67.8%, identically), who make one skip is 15.1% (11.6%), and who make two skips or more is 17.1% (20.5%). Thus, subjects understand Parts I and II equally well. In Appendices C and D we expand our sample to individuals

²⁵A total of 175 subjects (67.8% of our sample) skip one price or less across both Parts. For example, in Part I a subject may have a well-behaved demand function, but in Part II she pays all the way up to \$1, and then never pays for prices greater than \$1 except for \$1.50. Since such a subject has "skipped" the price of \$1.25, we call that a single skip across both Parts. If that subject instead does not pay for \$1.25 or \$1.50 but does for \$1.75, we call that two skips.

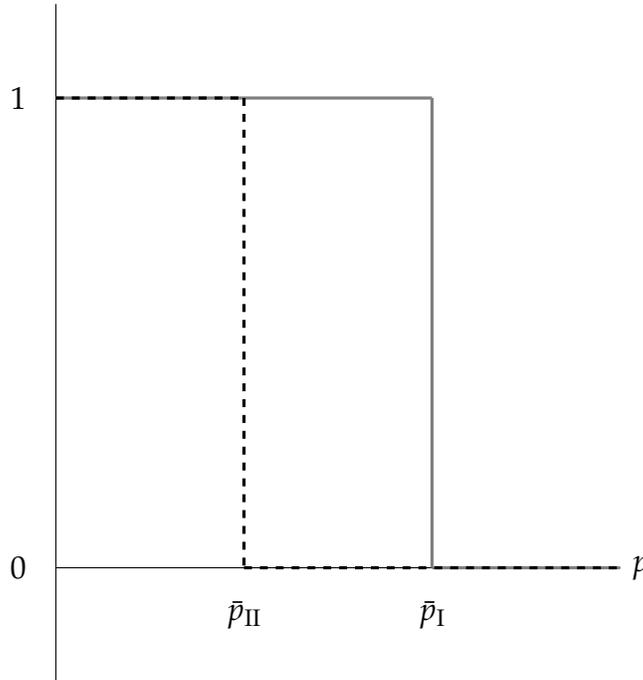


FIGURE 5. Well-behaved demand functions in Part I and Part II.

who make one and any number of skips and show that our results are robust to these changes.

4.2.3. *Difference in willingness to pay across parts: preference classes.* Figure 6 shows the joint distribution of the subjects' willingnesses to pay in Parts I and II, \bar{p}_I and \bar{p}_{II} , for those subjects who pay at least once. For example, for 3.97% of our subjects, $\bar{p}_I = 0.25$ and $\bar{p}_{II} = 0.25$, while for 11.1% of our subjects $\bar{p}_I = 2$ and $\bar{p}_{II} = 0$. Subjects who are willing to pay more (less) in Part I than in Part II of the Power Game, i.e. for whom $\bar{p}_I > \bar{p}_{II}$ ($\bar{p}_I < \bar{p}_{II}$), appear below (above) the 45-degree line. Subjects whose willingness to pay is the same across Parts lie on the 45-degree line. Note that the joint distribution of the willingnesses to pay in Parts I and II is not concentrated nor symmetric around the 45-degree line. This provides evidence that our results are not due to mistakes, indifference or confusion.

We use our theoretical predictions (see Table 2 in Section 3) to sort our subjects into different preference classes. Recall that these are only based on their willingnesses to pay in Parts I and II of the Power Game: different preference classes correspond to different relationships between \bar{p}_I and \bar{p}_{II} .

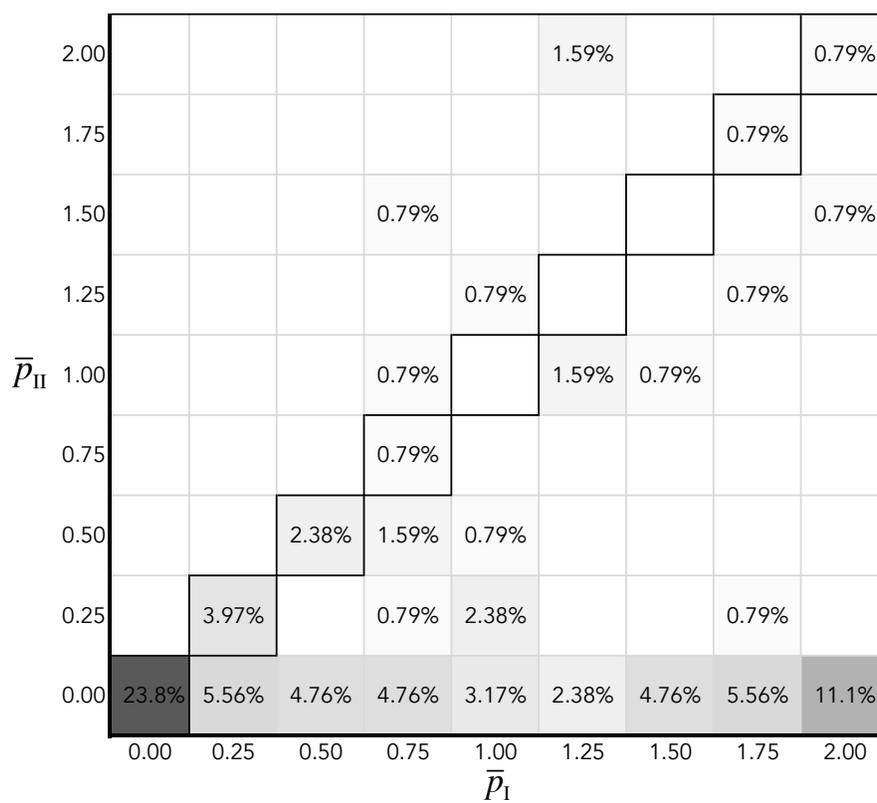


FIGURE 6. Joint distribution of the willingnesses to pay in Part I and Part II, \bar{p}_I and \bar{p}_{II} .

Subjects with standard preferences only care about their own payoff. These subjects are never willing to decrease it to affect the payoff of others. Thus, for them $\bar{p}_I = 0$ and $\bar{p}_{II} = 0$.²⁶ We see from Figure 6 that 23.8% of our subjects have standard preferences.²⁷

In Figure 6 subjects with power and no social preferences are located along the horizontal axis and together represent 42.1% of our sample. Indeed, in Part I they are willing to pay up to $\bar{p}_I > 0$ to choose the payoff of B , but in Part II they never pay to implement the allocations they chose in Part I and maximize their own payoff instead. As we can see from Figure 6, these subjects' willingnesses to pay in Part I spans the entire range of prices, from \$0.25 to \$2. In fact, 11.1% are willing to pay up to the maximum price.

Subjects who have the same willingness to pay across both Parts of the Power Game, i.e. subjects for whom $\bar{p}_I > 0$ and $\bar{p}_I = \bar{p}_{II}$, have social preferences and no power

²⁶We acknowledge here that the discreteness of \mathcal{P} means that among these subjects some might have paid to choose others' payoffs, but the lowest positive price (\$0.25) is still too high for them.

²⁷In principle, these subjects might instead have strong preferences for equality. If subjects only pay at a price of zero because they have preferences for equality, then they should consistently give \$12.30 both in that round as well as in round 10 of Part I, where they are forced to choose B 's payoff. We find that none of these 30 subjects do so.

preferences. They derive no additional utility from power but instead care about pay-off distributions, independently of how those are attained. In particular, whether they choose x_B from an interval or not does not affect their utility. These subjects lie on the 45-degree line in Figure 6 and represent 8.7% of our sample.

Subjects who have positive but different willingnesses to pay across Parts I and II of the Power Game have preferences for power and social preferences. For 10.3% of our subjects $\bar{p}_I > \bar{p}_{II} > 0$. These subjects clearly have social preferences since they pay positive prices in Part II. However, they are unwilling to pay up to \bar{p}_I because in Part II paying does not lead to additional power. In other words, in Part I these subjects derive utility from the act of choosing a specific amount for B , as well as from the resulting distribution itself. In Part II however, they can only derive utility from the resulting distribution and so are willing to pay less. There are also subjects who pay more in Part II than in Part I: $\bar{p}_{II} > \bar{p}_I > 0$. These subjects have social preferences, dislike power and comprise 4% of our sample.

Finally, 11.1% of our sample never pay in Part I, even at a price of zero. Several preference classes are consistent with this behavior. These subjects may have social preference but dislike power more than they care about others; they may like equality and dislike power or be indifferent to it; they may have standard preferences and dislike power or be indifferent to it. Since we cannot say with certainty how these subjects treat others or what their preferences for power are, we group them into an "unclassified" category.²⁸ This implies that the fraction of subjects with standard preferences represent a minimum of 23.8% of our sample, but could be as high as 34.9%. Similarly, subjects who have social preferences and dislike power are a minimum of 4.0% of our sample, but this fraction could be as high as 15.1%.

In Figure 7 we show the distribution of preference classes among our subjects. The most common class are preferences for power without social preferences, the Power+ preference class. These subjects represent 42.1% of our sample. The second largest class is the Standard preference class: these subjects neither care about power nor about others. They represent 23.8% of our sample. Together, these two categories comprise about two thirds of the sample. Grouping together subjects who have social preferences in any capacity (the Social, Social&Power+ and Social&Power- classes) leads to roughly 23.0% of our subjects. Subjects who have preferences for power in any capacity (the Power+, Social&Power+ and Social&Power- classes) represent about 56.4% of our subjects.²⁹

²⁸Subjects with strong preferences for equality can represent at most 3.2% of our sample since this is the fraction of subjects who give \$12.30 in round 10 of Part I. In addition, we can rule out the possibility that some have preferences for efficiency and dislike power because out of these unclassified subjects none pay in Part II.

²⁹Here we have assumed that subjects' choices reflect their strict preferences. Given the coarseness of \mathcal{P} , it is unlikely that indifference is attained at one of the discrete price points subjects face. However, here

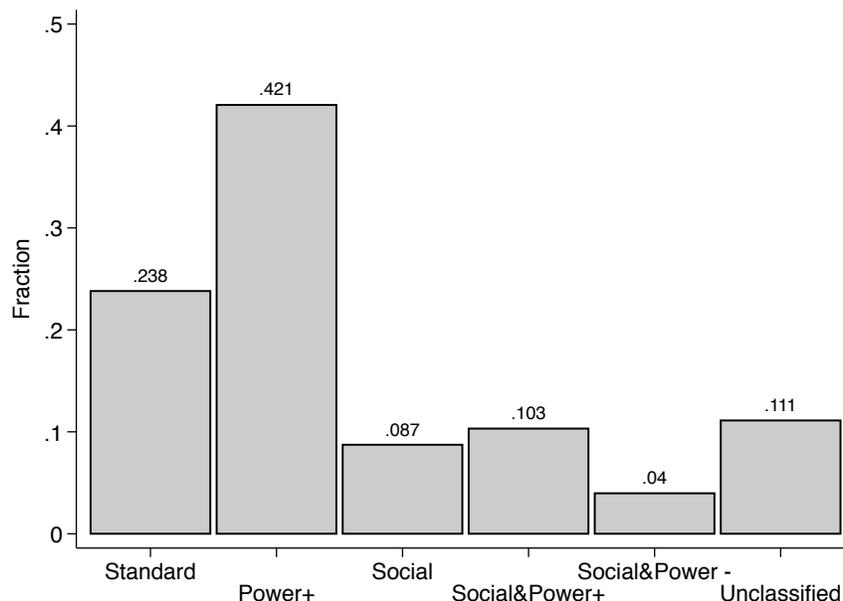


FIGURE 7. Distribution of preference classes.

Regarding how much subjects are willing to pay in order to implement their preferences, we can glean from Figure 6 that subjects in the Power+ preference class are willing to pay the most, on average \$1.25, or over 10% of their potential payoff. In fact, more than half of our Power+ subjects are willing to pay \$1 or more in Part I. On average, subjects in the Social preference class are willing to pay \$0.66 to implement their preferences, while those in the Social&Power+ and Social&Power- classes are willing to pay \$1.21 and \$1.00, respectively.³⁰

4.3. Preference classes and predicted behavior in other dimensions.

Our preference classification depends only on the difference in subjects' willingnesses to pay across Parts I and II of the Power Game. If our classification indeed captures differences in preferences across subjects, then the identified preference classes should

we still consider whether subjects' indifference at \bar{p}_I or \bar{p}_{II} might affect our results. For example, consider a subject with "true" willingnesses to pay of \$1.20 and \$1.00 in Parts I and II, respectively. Then, in Part I she would pay up to \$1.00, not pay at \$1.25, and for her $\bar{p}_I = \$1.00$. Meanwhile, in Part II she might pay or not pay at \$1.00, since she is indifferent at that price and therefore \bar{p}_{II} may be either \$0.75 or \$1.00. Thus, this subject's indifference may lead to her being classified as belonging to either Social&Power+ preference class or to the Social preference class. As such, some subjects for whom $|\bar{p}_I - \bar{p}_{II}| \leq 0.25$ may be mis-classified. However, since decisions made by subjects for whom $|\bar{p}_I - \bar{p}_{II}| > 0.25$ cannot be explained by indifference, the Power+ preference class still would remain significant at 36.5%.

³⁰This provides additional evidence that choices are deliberate. Indeed, if, for example, most of these subjects were willing to pay only up to 25 or 50 cents in Part I, one may have wondered if these decisions were driven by curiosity or mistakes. However, as is evident from Figure 6, the distribution subjects' willingnesses to pay is not such.

predict subjects' choices in other dimensions. Here we provide evidence that it is indeed the case. First, subjects we have classified as having social preferences, regardless of their attitude towards power, are consistent in the amounts they give to type B players. In contrast, subjects in the Power+ preference class exhibit much more variation in their giving behavior both within and across subjects. Second, we show that these classes also predict subjects' decisions in tasks that are unrelated to Part I of the Power Game. More specifically, in the absence of power, subjects in the Power+ class behave much like subjects with standard preferences, that is they maximize their own payoff, while those with social preferences do not.

4.3.1. *Choice for player B's payoff.* In this section, we compare subjects identified as having social preferences and power preferences in terms of their giving behavior in rounds 1 through 9 in Part I of the Power Game. Subjects with social preferences belong to the following preference classes: Social, Social&Power+, Social&Power-. In other words, these subjects may be indifferent towards, like, or dislike power, but they all have preferences towards B 's payoff. In contrast, subjects in the Power+ preference class are indifferent towards the payoffs of others, that is they do not have social preferences. If subjects in the Power+ preference class are correctly identified, then we should see them behaving differently in terms of how they give to B compared with subjects who have social preferences in any capacity.

Figure 8 shows the cumulative distribution function of the amounts given to player B , averaged per subject, separately for subjects in the Power+ preference class and those who have social preferences. Figure 8 shows that there are clear differences between subjects in terms of what they choose to give to B and that these differences are consistent with their preference class. What is visually different is also different statistically.³¹

In addition, subjects with social preferences are very homogeneous: 89.7% of them always give the maximum allowable amount of \$16.30, and 96.6% always give more to B than they themselves receive. In contrast, subjects in the Power+ preference class are very heterogeneous in terms of what they give to B and these amounts span almost the entire choice space, that is, the $[\$0, \$16.30]$ interval. Further, at the individual level, among Power+ subjects there is much more variation within each subject's choice compared with subjects who have social preferences: the within-subject mean standard deviation of choices for B 's payoff is higher for subjects in the former category than in the latter

³¹Kolmogorov-Smirnov and Wilcoxon-Mann-Whitney tests show that the distribution of amounts given by subjects in the Power+ preference class is statistically different than that of those who have social preferences, with p -values of less than 0.001. The unit of observation is the average amount given by each subject.

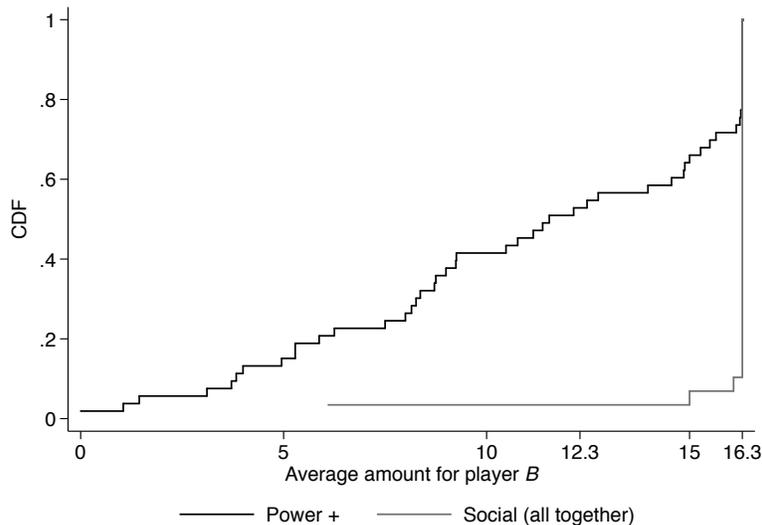


FIGURE 8. Distribution of the average amount given to player B .

(1.63 versus 0.15).³² In other words, it is not the case that Power+ subjects have strong but very different preferences towards B . Instead, they seem to have very weak preferences regarding B 's payoff, as our classification implies.

We also compare subjects' giving behavior in the round in which price is zero with behavior in round 10 of Part I where all subjects are forced to choose for B . In both of these rounds, A players receive \$12.30. If subjects have social preferences, we expect them to give the same amount to type B players in these two rounds since their own payoff is identical in both cases. Among those subjects that we classify as having social preferences, 93.1% give the same amount in those two rounds while only 67.9% of Power+ subjects do so.³³

The above results indicate that subjects in the Power+ preference class seem indeed to attach little importance to what B players earn. Their apparent indifference towards the payoffs of others, displayed both at the aggregate and individual levels, is in sharp contrast with the homogeneous and coherent giving behavior of those identified as having social preferences. These systematic differences in giving behavior between identified preference classes provide convincing evidence that the Power Game yields a meaningful preference classification.

4.3.2. *Behavior in a separate task.* Recall that in Part II of the Power Game, we present our subjects with 11 decision problems that are unrelated to their choices in Part I. Six

³²A two-sided test comparing these standard deviations shows that they are statistically different with a p -value less than 0.001.

³³A two-sided test of proportions shows that these are statistically different with a p -value of 0.015.

of those problems (CR1 through CR6) are inspired by Charness and Rabin (2002).³⁴ In Table 5 we compare our subjects to those of Charness and Rabin (2002) and Chen and Li (2009) by presenting the proportion of subjects who choose the first option in each decision problem. The way we present the decision problems in this table is such that the first option always yields a higher payoff for *A* players, except in problem CR1 where payoffs for *A* are identical across the two options. In the experiment, which option was presented on the left or on the right side of the screen was randomly and independently determined for each subject and for each decision problem. Our sample is largely similar to those in other institutions.³⁵ If anything, our subjects seem to choose the payoff-maximizing option more often than in Charness and Rabin (2002) and Chen and Li (2009).

TABLE 5. Fraction of subjects choosing the first option in the Charness and Rabin (2002) task across three samples: Charness and Rabin (2002), Chen and Li (2009), and our sample.

Decision	First Option	Second Option	CR2002	CL2009	Our Subjects
CR1	(6.60, 6.60)	(6.60, 12.30)	31%	33%	31%
CR2	(6.60, 6.60)	(6.20, 12.30)	51%	82%	56%
CR3	(3.10, 12.30)	(0.00, 0.00)	100%	NA	98%
CR4	(10.50, 5.30)	(8.80, 12.30)	67%	76%	85%
CR5	(12.30, 3.50)	(10.50, 10.50)	27%	50%	68%
CR6	(12.30, 0.00)	(6.15, 6.15)	78%	64%	82%

In Table 6 we split our sample according to our subjects' preference classes. We present the fraction of subjects who choose the first option in decision problems CR1-CR6 as well as the 5 remaining independent choice problems (PT1-PT5) for subjects with different preferences: Standard, Power+, and social preferences.³⁶

Importantly, as in all Part II rounds, in each of these decision problems subjects cannot increase their power by sacrificing some of their payoff, since the payoff for *B* is fixed in both options. That is, the amount of power subjects have is the same irrespective of which option they choose. Thus, any difference in behavior across subjects with different preference classes can only be due to their preferences beyond those for power.

³⁴They are re-scaled so that the numbers are similar to those our subjects face in Part I.

³⁵Here we present the results only for those subjects who have well-behaved demand functions in Parts I and II of the Power Game. In Appendices C and D we expand our sample to individuals who make one or any number of skips and show that none of our results change.

³⁶This last category includes Social, Social&Power+, Social&Power- subjects.

When additional power is not attainable, our theory (see section 3) predicts that individuals in the Power+ preference class should behave similarly to individuals in the Standard preference class. That is, subjects with Standard and Power+ preferences should be equally likely to choose the first (payoff-maximizing) option. In contrast, subjects with social preferences should not choose the first option more often than subjects with no social preferences. Note that a subject with social preferences does not necessarily always choose the second option since her choices depend on her marginal rate of substitution between her own and B 's payoff. The last two columns of Table 6 are populated with check marks and crosses. A check mark indicates that a test of proportion comparing specific groups is consistent with the theory. Specifically, comparing the behavior of subjects in the Power+ and Standard preference classes, for all decision problems but CR1, a check means that we cannot reject the null that the two proportions are equal in favor of the alternative that they are different, or in other words, that the two-sided p -values are greater than 10%. For CR1, since A 's payoff is identical across both options, any proportion is consistent with the theory. When comparing Power+ subjects and those with social preferences, a check means that we cannot reject the null in favor of the alternative that Power+ subjects choose the first option less often than subjects with social preferences, or in other words, that the one-sided p -values are greater than 10%.

TABLE 6. Fraction of subjects choosing the first option in the independent tasks by preference class.

Decision	Option		Preference Class			Consistent w/ Theory	
	First	Second	Standard	Power +	Social (All)	P+ vs. Std	P+ vs. Soc
CR1	(6.60, 6.60)	(6.60, 12.30)	13%	49%	7%	✓	✓
CR2	(6.60, 6.60)	(6.20, 12.30)	63%	74%	7%	✓	✓
CR3	(3.10, 12.30)	(0.00, 0.00)	97%	98%	100%	✓	✓
CR4	(10.50, 5.30)	(8.80, 12.30)	97%	85%	76%	✗	✓
CR5	(12.30, 3.50)	(10.50, 10.50)	80%	72%	41%	✓	✓
CR6	(12.30, 0.00)	(6.15, 6.15)	90%	79%	79%	✓	✓
PT1	(10.10, 5.20)	(9.10, 9.10)	87%	70%	52%	✗	✓
PT2	(12.30, 5.10)	(10.10, 12.30)	90%	81%	66%	✓	✓
PT3	(12.30, 9.60)	(9.60, 12.30)	100%	98%	100%	✓	✓
PT4	(12.30, 7.80)	(7.80, 5.40)	100%	96%	100%	✓	✓
PT5	(6.15, 6.15)	(0.00, 0.00)	100%	100%	100%	✓	✓

As is clear, across almost all decision problems, subjects make choices that are consistent with our preference classification and our theory. Indeed, the fraction of subjects

with social preferences who choose the first option is never greater than that of Power+ subjects, as the last column shows. In fact, it is statistically smaller in 5 of the 6 decision problems in which the second option is more efficient than the first (CR1, CR2, CR5, PT1 and PT2).³⁷ Further, Power+ and Standard subjects behave similarly in most cases, as shown in the penultimate column. There are two exceptions, CR4 and PT1, where we find that the fraction of subjects choosing the first option in the two groups is different, though the statistical significance is marginal with p -values at 0.098 and 0.085, respectively.

Aggregating behavior for each subject across all decision problems, we find that the fraction of subjects who always choose the payoff-maximizing option among those with standard preferences is 53.3%. For Power+ subjects this fraction is 47.2% and it is 6.9% for those who have social preferences. The fractions for the Power+ and Standard preference classes are not statistically different, while the fraction for subjects who have social preferences is significantly smaller than either of the two other categories.³⁸

Finally, we note that in PT3-PT5, almost all subjects choose the first option, irrespective of their preference class. These decision problems are included in our design to test whether subjects understand our game and instructions. For example, PT3 serves a specific role as it allows us to show that subjects understand that they are to act as type A players. This is the case since if they had any doubts more subjects would have chosen the second option. PT4 and PT5 are chosen to make sure that subjects care about payoffs. Overall, our results in PT3-PT5 demonstrate that subjects with different preferences understand our experiment equally well. Thus, the differences in subjects' behavior across preference classes cannot be explained by misunderstanding or confusion regarding roles or payments.

4.4. Discussion.

Here we discuss whether the behavior that we identify as evidence of preferences for power may in fact be due to other factors. Since subjects that we identify as having preferences for power pay in Part I and not in Part II (or pay differently in Part II if we consider those subjects who also have social preferences), we must consider whether other factors could lead to such behavior.

4.4.1. *Uncertainty regarding type assignment.* Recall that in our experimental implementation, subjects are not informed of their true type until the very end of the experiment.

³⁷In these problems we can reject the null that the two fractions are equal in favor of the alternative that the fraction for subjects with social preferences is strictly smaller than that for Power+ subjects. The p -values range from less than 0.001 to 0.058.

³⁸The p -value for a two-sided test of proportions comparing the first two is 0.589, while the p -values for each pairwise comparison between social and the others are smaller than 0.001.

Subjects are asked to make decisions as if they were type A players, since if their true type turns out to be B , none of their decisions matter for their payment. Subjects' uncertainty about their type might create two potential problems. The first is that it might generate confusion and lead subjects to incorrectly believe that their decisions might matter for their payoff even if their true type turns out to be B . Such a subject would incorrectly believe that if she pays, she receives $\$12.30 - p$ or x_B^* , depending on her realized type, and receives $\$12.30$ for sure if she doesn't pay.³⁹ The second potential problem is that not knowing what type one is might make a subject more likely to empathize with a type B player, and possibly exacerbate her social preferences. However, if either of these two factors affects a subject's decisions in Part I, it should also affect her decisions in Part II in the same way. In other words, these subjects' paying behavior should be identical across Parts. Thus, type uncertainty has no impact on our identification of power preferences, but might lead us to over-identify social preferences relative to Standard preferences compared with a design with no type uncertainty.

4.4.2. *Differences in the number of stages across Parts.* Here we consider whether the fact that Part I has two stages while Part II has a single stage may explain our results. Indeed, in Part I, subjects must first decide whether to pay or not and only then choose how much to give to player B or themselves. If subjects are confused by the additional stage, they may pay more often in Part I than in Part II. To assess this, we take our entire sample and look at the distribution of skips in Parts I and II. We see that they are no different. Remember that a subject has well-behaved demand functions in Parts I and II if in each of those Parts she pays up to a certain price and then switches to not paying. If a subject makes one skip, e.g., pays up to $\$1.00$, does not pay at $\$1.25$, pays at $\$1.50$, and never pays afterwards, we say that she makes one skip. If, instead, she does not pay at $\$1.25$ and $\$1.50$ but pays at $\$1.75$ and then never again, we call that two skips, etc.

The fraction of subjects who make one skip in Part I (Part II) is 15.1% (11.6%), who make two skips or more in Part I (Part II) is 17.1% (20.5%). A Wilcoxon matched-pairs signed-rank test (Wilcoxon (1945)) shows that subjects are not more likely to skip prices in Part I than in Part II.⁴⁰ Further, the fractions of subjects who have well-behaved demand functions in Part I and II are exactly the same, 67.8%. Thus, there are no differences in the subjects' understanding of Parts I and II of the Power Game that might affect our preferences classification.

4.4.3. *Mistakes explain preference classes.* While there are no differences in the number of skips across the two Parts of the Power Game for all subjects, one might argue that price

³⁹If such a subject pays, she would choose to give B $\$16.30$, the maximum allowable amount, incorrectly believing that this could be herself. If she doesn't pay, both A and B receive $\$12.30$.

⁴⁰The p -value on that test is greater than 10%.

skips could be concentrated within subjects in the Power+ class. In other words, one might say that what we mis-identify preferences, in particular those for power, and that these are simply due to noise and randomness in subjects' paying behavior. This point is moot in the main text since in our main text we focus only on those subjects who have well-behaved demand functions and make no skips. However, this issue might exist if we consider all subjects and allow any number of skips. Here we address this potential concern.⁴¹

In the entire sample, we use two different methods to determine subjects' willingness to pay: *local* and *global maximum* methods. In the *local maximum* method, a subject's willingness to pay is defined as the maximum price p at which she pays before making her first skip, or 0 if she does not pay at a price of 0. In the *global maximum* method, a subject's willingness to pay is defined as the global maximum price she pays. Which preference class a subject fits into depends on which method is used. For example, suppose that in Part I a subject pays all prices until \$1.00 and then pays once more at \$1.75, i.e. makes two skips, at \$1.25 and \$1.50. Suppose further that in Part II she pays only at a price of \$1.75, i.e. makes seven skips, one at each price up to \$1.50. This subject thus makes a total of 9 skips. According to our *local maximum* method, this subject's willingnesses to pay in Part I and Part II are \$1.00 and \$0, respectively, and she has Power+ preferences, since $\bar{p}_I > 0$ and $\bar{p}_{II} = 0$. According to our *global maximum* method however, this subject's willingnesses to pay in Part I and Part II are the same and equal \$1.75, and she has Social preferences, since $\bar{p}_I = \bar{p}_{II} > 0$.

In Panel A of Table 7, we report the distribution of total skips by preference class identified using the local maximum method. Using a series of pairwise Kolmogorov-Smirnov tests, we show there is no difference in the distribution of total skips between those classified as having standard preferences, those in the Power+ class and those who have social preferences.^{42,43} In Panel B of Table 7, we report the distribution of Part I skips by preference class defined using the global maximum method. Note that in this case, by construction, only subjects who never pay in both Parts of the Power Game are identified as having standard preferences and so for all these subjects the number of skips is zero. Also by construction, Power+ subjects make no skips in Part II. Thus, we report Part I skips only, and compare Power+ subjects with subjects who have social preferences. We find no different in Part I skips across these preference classes.⁴⁴

⁴¹The detailed analyses of our entire sample can be found in Appendix D.

⁴²All p -values are strictly greater than 10%.

⁴³In addition, using a series of pairwise Kolmogorov-Smirnov tests, we find that there is no difference in terms of distribution of skips in Part I or in Part II across our preference classes.

⁴⁴The p -value in a Kolmogorov-Smirnov test is greater than 10%.

TABLE 7. Number of skips in the Power Game by preference class identified using the *local* and *global maximum* methods.

Preferences Class	Subjects	Mean	St.Dev.	Min.	p25	Median	p75	Max.
Panel A: Total skips, <i>local maximum</i> method								
Standard	59	1.98	2.81	0	0	0	3	12
Power +	104	1.52	2.34	0	0	0	2	9
Social (All)	80	1.60	1.91	0	0	1	2.5	9
Social	25	2.24	2.63	0	0	1	4	9
Social & Power +	41	1.17	1.22	0	0	1	2	5
Social & Power –	14	1.71	1.86	0	0	1	4	5
Panel B: Part I skips only, <i>global maximum</i> method								
Standard	30	0	0	0	0	0	0	0
Power +	87	0.77	1.23	0	0	0	1	5
Social (All)	126	0.88	1.48	0	0	0	1	7
Social	31	0.48	1.00	0	0	0	1	4
Social & Power +	55	1.22	1.71	0	0	1	2	7
Social & Power –	40	0.73	1.40	0	0	0	1	6

Thus, it is not the case that subjects in the Power+ preference class are simply those who make more mistakes than others.

4.4.4. *Time trends.* A fourth potential confound is that our results are simply due to time trends. This may be the case if, for example, individuals' power or social preferences can be satiated.⁴⁵ Two elements rule out this possibility. First, the instructions were very clear that only a single round in the experiment would be chosen for payment. Thus, actual power or generosity can only happen if a subject consistently implements her preferences in every round. Second, in our main text and analyses we focus on individuals who have well-behaved demand functions. This de facto controls for time. Indeed, if a subject were to decide to stop paying after a certain number of rounds (regardless of the reason why), it is very unlikely that her demand function would be well-behaved since prices are randomly drawn from the set \mathcal{P} .⁴⁶ Further, in Appendices C and D we show that our results are robust to allowing any number of skips. Thus, our findings are not due to time trends.

4.4.5. *Warm glow.* Finally, one may also wonder whether elements such as "warm glow" can explain our results. In Andreoni (1990), the author defines warm glow in a public

⁴⁵This may occur if after a few round subjects feel that they've exercised enough power or feel that they've done enough good deeds for the day.

⁴⁶The same reasoning holds if subjects suddenly have an epiphany, for example suddenly realize that paying actually lowers their payoff.

good context and shows that an individual may contribute to a public good not because she cares about the public good *per se*, but because giving makes her feel good about herself. This brings about the possibility that we mis-identify our subjects' motives when making decisions. In Andreoni (1990) or papers that test his theory,⁴⁷ warm glow is directly related to the level of contribution. In our experiment, this means that subjects who experience warm glow would experience the same level of it for a given x_B^* . Thus, strictly speaking, an individual who makes decisions because she is motivated by warm glow should make the same decisions in both Parts of the Power Game. In our classification these subjects have social preferences. As such, they may in fact be motivated by warm glow.

Moving away from a strict interpretation of Andreoni's concept, one may wonder whether the level of warm glow increases with the size of the choice set. For example, someone paying in Part I who is generous to player *B* might experience warm glow because she knows there were many lower payoffs that she could have chosen for *B* but didn't. In Part II of our game the intensity of warm glow could be lessened by the fact that there are only two fixed alternatives for *B*'s payoff. If this motivated the decision to pay in Part I and not pay in Part II, as our Power+ subjects do, we should see that they give higher amounts to *B* in Part I relative subjects with social preferences. However, we observe quite the opposite. Subjects with social preferences, i.e. those who pay positive prices in Parts I and II, give an average of \$15.95, while subjects with Power+ preferences, i.e. those who only pay in Part I, give far less at \$10.70. This difference is large both in magnitude and statistically.⁴⁸ In fact, more than half of the subjects who only pay in Part I, i.e. our Power+ subjects, give less than \$12.30 to *B*, which is what *B* would have received had *A* not paid. This fraction is only 3.5% among those subjects who pay in both Parts.

Thus, warm glow, whether in a strict sense or not, cannot explain the behavior of our Power+ subjects.

5. CONCLUSION

In this paper we introduce a new game, the Power Game, and use it to identify individuals who have preferences for power without confounding other elements that may exist in the presence of power. Our work is the first to identify such preferences. We find that over half of the population values power *per se*, beyond its instrumental value. We

⁴⁷See, for example, Andreoni (1995), Crumpler and Grossman (2008).

⁴⁸Both Kolmogorov-Smirnov and Wilcoxon-Mann-Whitney tests show that the distributions of amounts given to *B* are different with $p < 0.001$, where the unit of observation is the average amount given per subject.

show that these preferences for power are different than, and cannot be explained by, social or other-regarding preferences. In particular, the vast majority of subjects who value power, do so in the absence of social preferences: they attach little value to other people's outcomes and instead enjoy being the ones to choose those outcomes. Given that individuals with social preferences tend to be generous rather than petty and spiteful, our results imply that social welfare is likely to decrease when individuals with power preferences are the ones allocating resources.

Power can be a motive in multiple spheres of society and ignoring individuals' power motives in reaching the upper echelons of power may have important economic, social and political implications. For example, one may question why a CEO proposes an acquisition. Is it to increase shareholder value, or is it for the purposes of empire building? Similarly, when an individual runs for a political office, is it because he or she wishes to improve social welfare, or is it part of a quest for power?

Up until now, desires for autonomy, control and power had not been disentangled. Disentangling power preferences from other non-pecuniary motives marks an important step towards understanding why individuals may seek positions of power. We show that a large fraction of individuals seek power even if it does not grant them more control or autonomy from others. This suggests that while these may be present, a desire for control and non-interference from others are not the only motivation to climbing the ladder to power. Consequently our findings provide strong reasons for incorporating non-pecuniary benefits in the design of contracts that relate to power.

Understanding people's preferences as they relate to others is a challenging task and great strides have been made towards gaining a better understanding of them. Up until now, the study of other-regarding or social preferences has been the main focus of such work. We show that a substantial fraction of the population enjoys the *process* of choosing payoffs, rather than the resulting distribution itself, and is willing to give up substantial amounts of money in order to engage in this process. We hope that our work will serve as a catalyst for new empirical and theoretical research in this area.

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APPENDIX A.

Below we present the instructions that the subjects received in our experiment.

INSTRUCTIONS

This experiment is in two parts. In each part you will participate in a number of Rounds. Only one part will be chosen for payment and only one Round in that part will count towards payment. Therefore, it is in your best interest to treat each Round independently and to treat it as if it were the one that mattered for payment. In addition to what you will earn in the experiment, you will get a 5-dollar participation fee if you complete the experiment.

Before we begin this experiment, you will be assigned a Type. You will be a Type A Player or a Type B Player. Your Type will remain fixed throughout this entire experiment.

At the start of each round, each Type A Player will be randomly rematched with a Type B Player. You will not know who you are matched with. In this experiment, only Type A players make decisions that matter for payment, and these decisions affect the payoff of both the Type A Player and the Type B Player he/she is matched with.

Even though your Type is determined at the start of the experiment and will remain fixed for the entire experiment, you will not know which Type of Player you are, until the end of the experiment. Since you do not know which Type of Player you are assigned to be, and since only Type A Players make decisions that matter for payment, we will ask everyone to make decisions as if they were Type A players. Your Type will be revealed to you only at the end of the experiment.

Please note that your Type will remain fixed throughout this entire experiment and at no point will you change roles. Your "true" Types have already been determined by the computer, and your decisions when acting as Player A CANNOT affect you or anyone else in this room if your "true" Type turns out to be Type B. In other words, if it turns out

you are a Type B Player, no decision you make here can affect anyone's payoff, including your own. If it turns out your "true" Type is A, there is nothing that anyone else can do that will affect your payoff, and your decisions affect both your payoff and the payoff of the Type B Player you are matched with. Therefore, when making decisions, you should act as Player A. Further, since only "true" Type A Players make decisions that matter for payment in this experiment, in the remainder of the instructions we will assume you are a Type A Player.

Part I and Part II are different and independent of each other. We will give you the instructions for Part II of the experiment once you have completed Part I of the experiment. Below are the instructions for Part I of the experiment.

Part I

In this part of the experiment, you will make decisions over the course of 10 Rounds. As a Type A Player, in each Round, you can choose to pay a certain amount of money to obtain the right to choose the payoff of the Type B Player you are matched with. The price of that right will vary from Round to Round.

If you choose to pay this amount, you will be given \$12.30 and the price will be subtracted from the \$12.30 you have. If you obtain the right to choose the payoff for the Type B Player you are matched with, you can choose any number between 0 and \$16.30, both included, by increments of 5 cents.

If you choose to not pay that amount of money, you do not obtain the right to choose Type B's payoff. In this case, Player B will earn \$12.30 and you will choose your own payoff that can be any number between 0 and \$12.30, both included, by increments of 5 cents.

Example

Suppose in one of the Rounds the price of obtaining the right to choose the payoff for Player B is \$1.

- If you choose to pay \$1 then you can choose Player B's payoff between \$0 and \$16.30:
 - Suppose you choose \$3 as Player B's payoff. In this case, if this Round is chosen for payment, you will earn $\$12.30 - \$1 = \$11.30$ and the Type B Player you are matched with will earn \$3.
 - If instead you choose \$14.55 as Player B's payoff, and if this Round is chosen for payment, you will still earn $\$12.30 - \$1 = \$11.30$ and the Type B Player you are matched with will earn \$14.55.
- If you choose not to pay \$1 then you cannot choose Player B's payoff. Player B will earn \$12.30 and you will choose your own payoff between 0 and \$12.30:
 - Suppose you choose \$5.10 for yourself. In this case, if this Round is chosen for payment, you will earn \$5.10 and the Type B Player you are matched with will earn \$12.30.

- Suppose you choose \$10 for yourself. In this case you will earn \$10 and Player B will earn \$12.30.

You will play 10 Rounds of this game.

Remember that you will not change roles in this experiment. So as a Type A Player, your payoff will never be determined by someone else in this room. Also remember that only one Part of the experiment will be chosen to count for payment. If this Part is chosen to count, only **one** Round will matter for payment. So it is in your best interest to treat each Round as if it were the one that mattered for payment.

Before we start the 10 Rounds, I will show you two screens so that you can familiarize yourselves with the interface. The first screen will be what you would see if you **did** pay for the right to choose Type B's payoff. The second screen will be what you would see if you **did not** pay for the right to choose Type B's payoff. These "practice" screens do not count towards payment.

Part II

In each Round of this part of the experiment, you will be asked to choose between two options that will determine payoffs for both you and the Type B Player you are matched with. Here is an example of such a choice you can encounter in one of the Rounds (the choices you face will be different):

Your Payoff: \$12.30
Type B's Payoff: \$12.30

Your Payoff: \$9.15
Type B's Payoff: \$12.00

Here is an example, assuming that Part II and this Round was chosen for payment. If you choose the pair on the left, you will earn \$12.30 and the Type B Player you are matched with will earn \$12.30. If choose the pair on the right, you will earn \$9.15 and the Type B Player you are matched with will earn \$12.

You will play 20 Rounds of this game.

APPENDIX B.

Below we list the questions that we asked all subjects to answer at the end of the experiment.

I. Demographics

- (a) Please, enter your age:
- (b) Which gender do you identify with?
 - Male
 - Female
 - Other
- (c) How many years of university education have you received?
- (d) Are you a native English speaker?
- (e) Which faculty best describes your field of study?
 - Science
 - Social science
 - Arts
 - Engineering
 - Business
 - Other
- (f) What is the ZIP code of the place where you grew up?
- (g) What is the highest degree your mother has?
 - Less than high school
 - High school or equivalent
 - Some college
 - College
 - More than college
 - Other
 - Not sure
- (h) What is the highest degree your father has?
 - Less than high school
 - High school or equivalent
 - Some college
 - College
 - More than college
 - Other
 - Not sure
- (i) Have you ever participated in similar experiments before?

II. Understanding of the game

- (a) Was anything confusing?
- (b) What motivated your choices in this experiment?
- (c) What do you think the experiment was about?

III. For the statements below, please indicate how they apply to you on a scale from 1 to 7:

1. I prefer a job where I have a lot of control over what I do and when I do it.
2. I prefer a job where I have a lot of control over what others do and when they do it, for example manager's job.
3. I enjoy political participation because I want to have as much of a say in running government as possible.
4. I try to avoid situations where someone else tells me what to do.
5. I would prefer to be a leader rather than a follower.
6. I enjoy being able to influence the actions of others.
7. I prefer a job where I have a say on promotion and pay of others.
8. I am careful to check everything on an automobile before I leave for a long trip.
9. Others usually know what is best for me.
10. I enjoy making my own decisions.
11. I enjoy having control over my own destiny.
12. I would rather someone else took over the leadership role when I'm involved in a group project.
13. I consider myself to be generally more capable of handling situations than others are.
14. I'd rather run my own business and make my own mistakes than listen to someone else's orders.
15. I like to get a good idea of what a job is all about before I begin.
16. When I see a problem I prefer to do something about it rather than sit by and let it continue.
17. When it comes to orders, I would rather give them than receive them.
18. I wish I could push many of life's daily decisions off on someone else.
19. When driving, I try to avoid putting myself in a situation where I could be hurt by someone else's mistake.
20. I prefer to avoid situations where someone else has to tell me what it is I should be doing.
21. There are many situations in which I would prefer only one choice rather than having to make a decision. I like to wait and see if someone else is going to solve a problem so that I don't have to be bothered by it.

APPENDIX C.

Here we redo all Figures and Tables that appear in Section 4.2 and Section 4.3 of the Main text, but allow for at most a single skip in the demand functions across the two Parts of the Power Game. For example, suppose that in Part I a subject pays all prices until \$1.00 and then pays once more at \$1.50, "skipping" the price of \$1.25. Suppose this subject has a well-behaved demand function in Part II and pays for all prices up until \$1.00 and never after. We then say that this subject made a single skip across both Parts of the Power Game. In our sample 126 subjects make no skips and an additional 49 subjects skip one price across both Parts.

In this sample of 175 subjects, we use two different methods to determine subjects' willingness to pay: the *local* and *global maximum* methods. In the *local maximum* method, a subject's willingness to pay is defined as the maximum price p at which she pays before making her first skip, or 0 if she does not pay at a price of 0. In the *global maximum* method, a subject's willingness to pay is defined as the global maximum price she pays. Which preference class a subject fits into depends on which method is used. Take our example above, where a subject makes a single skip in Part I of the Power Game. According to our *local maximum* method, this subject's willingnesses to pay in Part I and Part II are identical and equal \$1.00, and she has Social Preferences, since $\bar{p}_I > 0$ and $\bar{p}_{II} = \bar{p}_I$. According to our *global maximum* method, however, this subject's willingnesses to pay in Part I and Part II are \$1.50 and \$1.00, respectively. She would therefore be classified as having Social&Power+ preferences, since $\bar{p}_I > \bar{p}_{II} > 0$.

For those subjects who make no skips we calculate their willingness to pay in the same way as in the Main text. That is, in each Part we use the maximum price at which they decide to pay before switching to not paying.

Figures C1 and C2 show the joint distribution of the willingnesses to pay in Part I and Part II, \bar{p}_I and \bar{p}_{II} , defined using the *local maximum* and *global maximum* methods. These figures complement Figure 6 from the Main text. Figures C3 and C4 show the proportion of subjects with various preference classes based on their willingnesses to pay in Part I and Part II, \bar{p}_I and \bar{p}_{II} , where the preferences classes are defined using our *local* and *global maximum* methods. These figures complement Figure 7 of the Main text.

Figures C5 and C6 show the cumulative distribution function of the amounts given to player B , averaged per subject, separately for subjects in the Power+ preference class and those who have social preferences. Subjects with social preferences belong to the following preference classes: Social, Social&Power+, and Social&Power-. These figures complement Figure 8 of the Main text. In Table C1 we compare our subjects to those of

Charness and Rabin (2002) and Chen and Li (2009) by presenting the proportion of subjects who choose the first option in decision problems CR1-CR6. This table complements Table 5 of the Main text.

Finally, in Tables C2 and C3 we compare subjects' behavior in the independent task (decision problems CR1-CR6 and PT1-PT5) across subjects with different preferences: Standard, Power+, and social preferences (we group together Social, Social&Power+, and Social&Power- preference classes). The preference classes are defined using our *local* and *global maximum* methods. These tables complement Table 6 of the Main text. The last two columns of Tables C2 and C3 are populated with check marks and crosses. A check mark indicates that a test of proportion comparing specific groups is consistent with the theory. Specifically, comparing the behavior of subjects in the Power+ and Standard preference classes, for all decision problems but CR1, a check means that we cannot reject the null that the two proportions are equal in favor of the alternative that they are different, or in other words, that the two-sided p -values are greater than 10%. For CR1, since A 's payoff is identical across both options, any proportion is consistent with the theory. In almost all decision problems, we cannot reject the null hypothesis that the subjects in the Power+ preference class behave similarly to those in the Standard preference class. The null is rejected in decision problems CR4, PT1, PT2 in Table C2 and in decision problem PT1 in Table C3. The p -values for CR4, PT1 and PT2 in Table C2 range from 0.042 to 0.056, and for PT1 in Table C3 the p -value is 0.095.

When comparing Power+ subjects and those with social preferences, a check means that we cannot reject the null in favor of the alternative that subjects with social preferences choose the first option more often than Power+ subjects, or in other words, that the one-sided p -values are greater than 10%. In all decision problems, Power+ subjects choose the first option at least as often as subjects with social preferences. In fact, for both the *local* and *global maximum* methods, Power+ subjects choose the first option in statistically greater proportion in 5 of those decision problems (CR1, CR2, CR4, CR5, PT1 and PT2) with one-sided p -values that are at most 0.020.

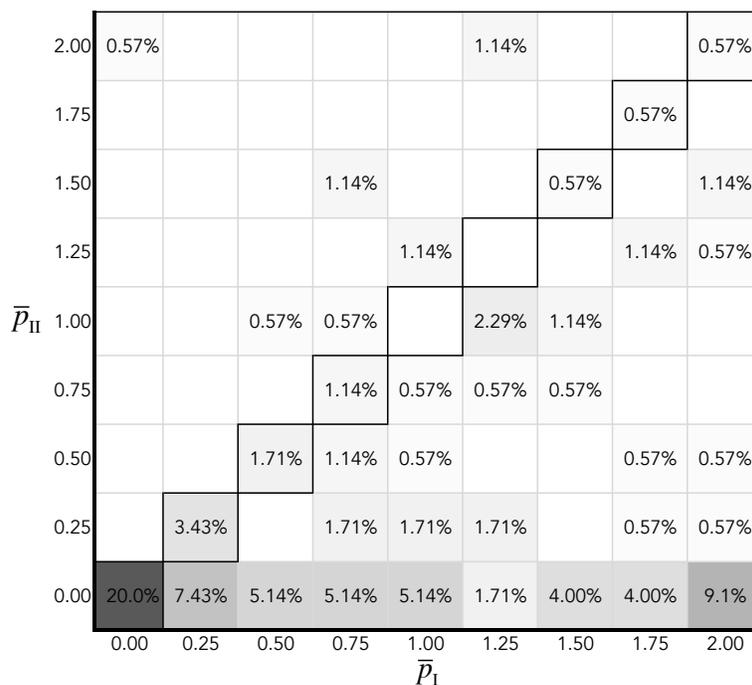


FIGURE C1. Joint distribution of the willingnesses to pay in Part I and Part II, \bar{p}_I and \bar{p}_{II} , defined using the *local maximum* method.

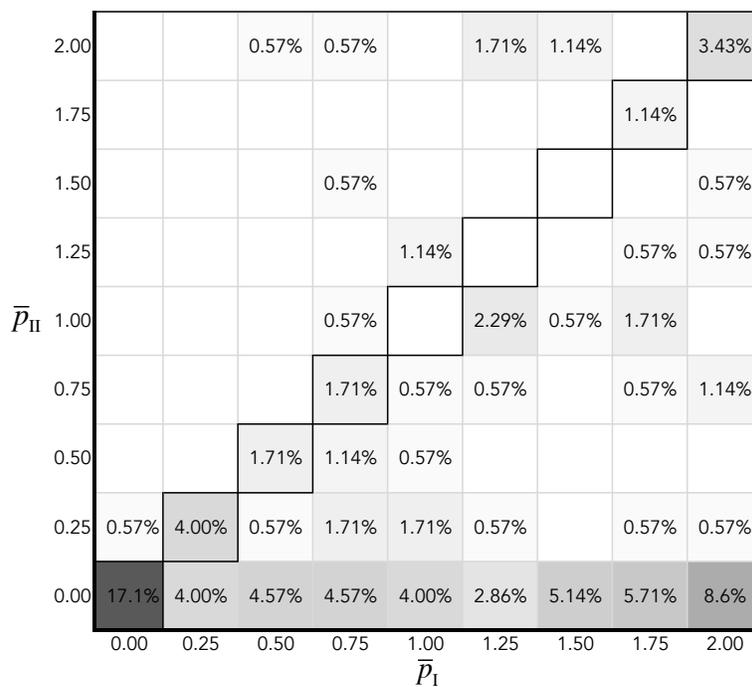


FIGURE C2. Joint distribution of the willingnesses to pay in Part I and Part II, \bar{p}_I and \bar{p}_{II} , defined using the *global maximum* method.

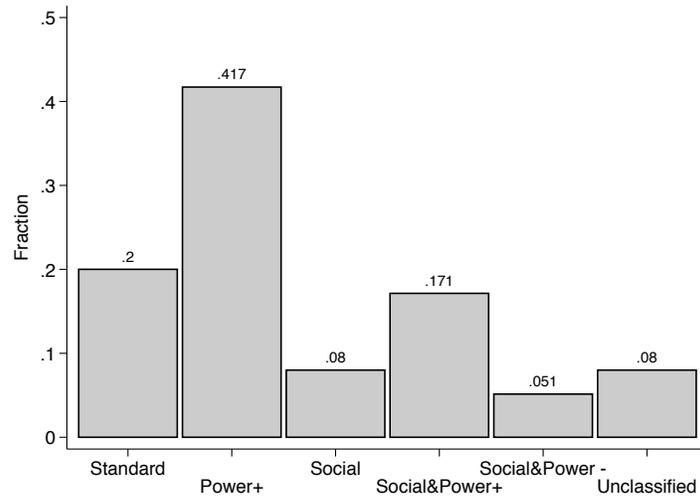


FIGURE C3. Distribution of preference classes based on the willingnesses to pay in Part I and Part II, \bar{p}_I and \bar{p}_{II} , defined using the *local maximum* method.

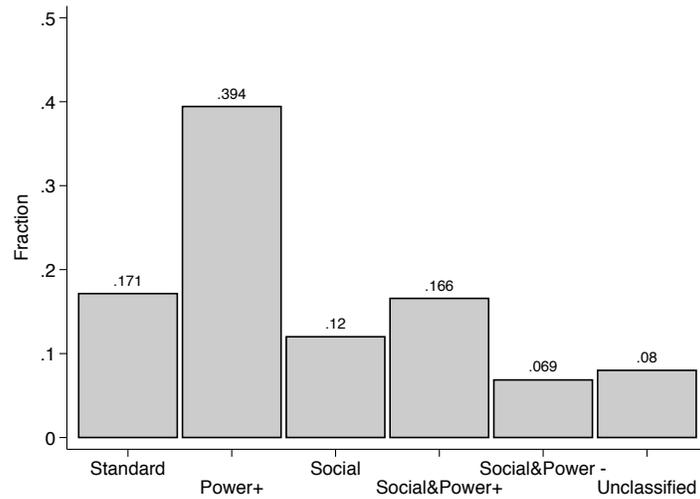


FIGURE C4. Distribution of preference classes based on the willingnesses to pay in Part I and Part II, \bar{p}_I and \bar{p}_{II} , defined using the *global maximum* method.

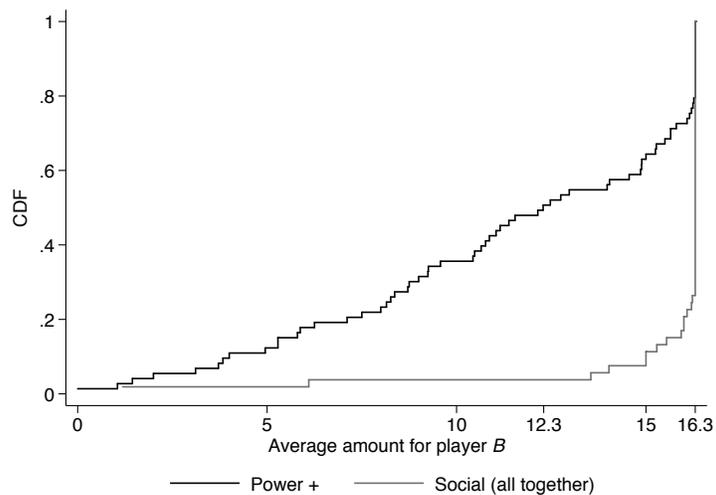


FIGURE C5. Distribution of the average amount given to player B , where preference classes are defined using the *local maximum* method.

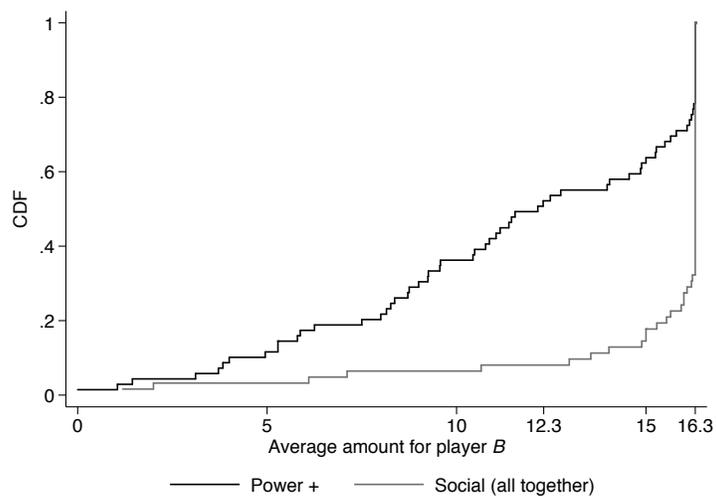


FIGURE C6. Distribution of the average amount given to player B , where preference classes are defined using the *global maximum* method.

TABLE C1. Fraction of subjects choosing the first option in the Charness and Rabin (2002) task across three samples: Charness and Rabin (2002), Chen and Li (2009), and our sample.

Decision	First Option	Second Option	CR2002	CL2009	Our Subjects ^a
CR1	(6.60, 6.60)	(6.60, 12.30)	31%	33%	30%
CR2	(6.60, 6.60)	(6.20, 12.30)	51%	82%	53%
CR3	(3.10, 12.30)	(0.00, 0.00)	100%	NA	97%
CR4	(10.50, 5.30)	(8.80, 12.30)	67%	76%	81%
CR5	(12.30, 3.50)	(10.50, 10.50)	27%	50%	59%
CR6	(12.30, 0.00)	(6.15, 6.15)	78%	64%	78%

^aThe sample includes 175 subjects who make one or no skips across both Parts of the Power Game.

TABLE C2. Fraction of subjects choosing the first option in the independent task by preference class, defined using the *local maximum* method.

Decision	Option		Preference Class			Consistent w/ Theory	
	First	Second	Standard	Power +	Social (All)	P+ vs. Std	P+ vs. Soc
CR1	(6.60, 6.60)	(6.60, 12.30)	20%	48%	6%	✓	✓
CR2	(6.60, 6.60)	(6.20, 12.30)	63%	74%	11%	✓	✓
CR3	(3.10, 12.30)	(0.00, 0.00)	97%	97%	98%	✓	✓
CR4	(10.50, 5.30)	(8.80, 12.30)	97%	84%	68%	✗	✓
CR5	(12.30, 3.50)	(10.50, 10.50)	80%	67%	30%	✓	✓
CR6	(12.30, 0.00)	(6.15, 6.15)	89%	77%	72%	✓	✓
PT1	(10.10, 5.20)	(9.10, 9.10)	86%	68%	38%	✗	✓
PT2	(12.30, 5.10)	(10.10, 12.30)	91%	75%	51%	✗	✓
PT3	(12.30, 9.60)	(9.60, 12.30)	100%	97%	100%	✓	✓
PT4	(12.30, 7.80)	(7.80, 5.40)	100%	97%	100%	✓	✓
PT5	(6.15, 6.15)	(0.00, 0.00)	100%	100%	100%	✓	✓

TABLE C3. Fraction of subjects choosing the first option in the independent task by preference class, defined using the *global maximum* method.

Decision	Option		Preference Class			Consistent w/ Theory	
	First	Second	Standard	Power +	Social (All)	P+ vs. Std	P+ vs. Soc
CR1	(6.60, 6.60)	(6.60, 12.30)	13%	49%	11%	✓	✓
CR2	(6.60, 6.60)	(6.20, 12.30)	63%	72%	21%	✓	✓
CR3	(3.10, 12.30)	(0.00, 0.00)	97%	97%	98%	✓	✓
CR4	(10.50, 5.30)	(8.80, 12.30)	97%	86%	69%	✓	✓
CR5	(12.30, 3.50)	(10.50, 10.50)	80%	71%	32%	✓	✓
CR6	(12.30, 0.00)	(6.15, 6.15)	90%	77%	73%	✓	✓
PT1	(10.10, 5.20)	(9.10, 9.10)	87%	71%	40%	✗	✓
PT2	(12.30, 5.10)	(10.10, 12.30)	90%	78%	53%	✓	✓
PT3	(12.30, 9.60)	(9.60, 12.30)	100%	99%	98%	✓	✓
PT4	(12.30, 7.80)	(7.80, 5.40)	100%	98%	100%	✓	✓
PT5	(6.15, 6.15)	(0.00, 0.00)	100%	100%	100%	✓	✓

APPENDIX D.

In this Appendix we show that our results are robust to using the whole sample. Even allowing for any number of skips and using different mechanisms to determine willingness to pay, we obtain the same results.

We redo all Figures and Tables that appear in Section 4.2 and Section 4.3 of the Main text, but using all 258 subjects of our sample. 126 subjects made no skips, 49 subjects skip one price across both Parts, 22 subjects make two skips, 15 subjects make three skips, and 46 subjects make four skips or more across both Parts of the Power Game. For those subjects who make no skips we calculate their willingness to pay in the same way as in the Main text. In Parts I and II, we use the maximum price at which they decided to pay before switching to not paying.

As in Appendix C, for those subjects who make skips, we consider two different ways to calculate their willingnesses to pay: the maximum price at which they pay before making their first skip, or 0 if they don't pay at a price of zero (*local maximum* method) and the global maximum price at which they pay (*global maximum* method). Which preference class a subject fits into depends on which method is used. For example, suppose that in Part I a subject pays all prices until \$1.00 and then pays once more at \$1.75, that is makes two skips, at \$1.25 and \$1.50. Suppose further that in Part II she pays only at a price of \$1.75, that is makes seven skips, one at each price up to \$1.50. This subject thus makes a total of 9 skips. According to our *local maximum* method, this subject's willingnesses to pay in Part I and Part II are \$1.00 and \$0, respectively, and she has Power+ preferences, since $\bar{p}_I > 0$ and $\bar{p}_{II} = 0$. According to our *global maximum* method however, this subject's willingnesses to pay in Part I and Part II are the same and equal \$1.75, and she has Social preferences, since $\bar{p}_I = \bar{p}_{II} > 0$.

Figures D1 and D2 show the joint distribution of the willingnesses to pay in Part I and Part II, \bar{p}_I and \bar{p}_{II} , defined using our *local* and *global maximum* methods. These figures complement Figure 6 from the Main text. Figures D3 and D4 show the proportion of subjects with various preference classes based on their willingnesses to pay in Part I and Part II, \bar{p}_I and \bar{p}_{II} , where the preferences classes are defined using our *local* and *global maximum* methods. These figures complement Figure 7 of the Main text.

Figures D5 and D6 shows the cumulative distribution function of the amounts given to player B, averaged per subject, separately for subjects in the Power+ preference class and those who have social preferences. Subjects with social preferences belong to the following preference classes: Social, Social&Power+, and Social&Power-. These figures complement Figure 8 of the Main text. In Table D1 we compare our subjects to those of

Charness and Rabin (2002) and Chen and Li (2009) by presenting the proportion of subjects who choose the first option in decision problems CR1-CR6. This table complements Table 5 of the Main text.

Finally, in Tables D2 and D3 we compare subjects' behavior in the Charness and Rabin (2002) task across subjects with different preferences: Standard, Power+, and social preferences (we group together Social, Social&Power+, and Social&Power- preference classes). The preference classes are defined using our *local* and *global maximum* methods. These tables complement Table 6 of the Main text. The last two columns of Tables D2 and D3 are populated with check marks and crosses. A check mark indicates that a test of proportion comparing specific groups is consistent with the theory. Specifically, comparing the behavior of subjects in the Power+ and Standard preference classes, for all decision problems but CR1, a check means that we cannot reject the null that the two proportions are equal in favor of the alternative that they are different, or in other words, that the two-sided p -values are greater than 10%. For CR1, since A 's payoff is identical across both options, any proportion is consistent with the theory. In almost all decision problems, we cannot reject the null hypothesis that the subjects in the Power+ preference class behave similarly to those in the Standard preference class. The null is rejected in decision problem PT2 in Table D2 and in decision problems CR6 and PT1 in Table D3. The p -values are 0.091, 0.098 and 0.073, respectively.

When comparing Power+ subjects and those with social preferences, a check means that we cannot reject the null in favor of the alternative that subjects with social preferences choose the first option more often than Power+ subjects, or in other words, that the one-sided p -values are greater than 10%. In all decision problems, Power+ subjects choose the first option at least as often as subjects with social preferences. In fact, for both the *local* and *global maximum* methods, Power+ subjects choose the first option in statistically greater proportion in 6 of those decision problems (CR1, CR2, CR4, CR5, PT1 and PT2) with one-sided p -values less than 0.01.

POWER

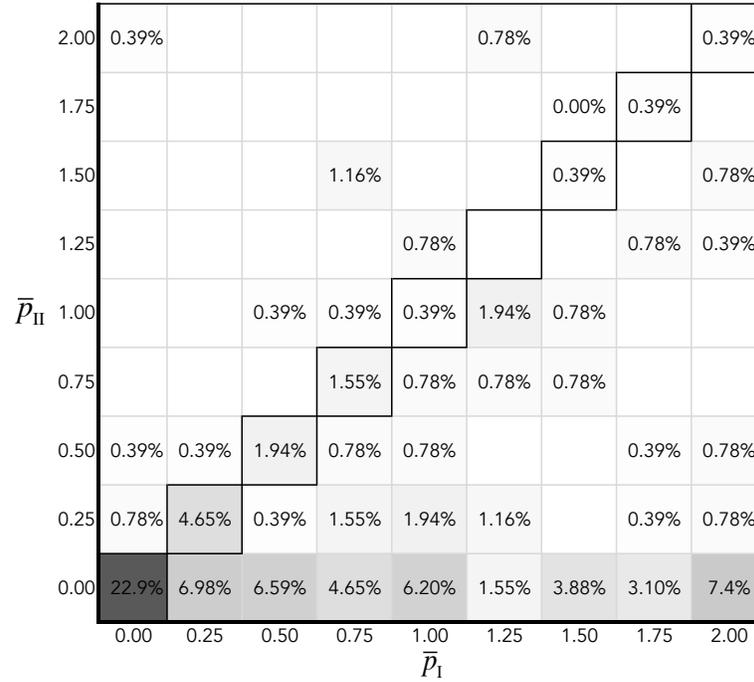


FIGURE D1. Joint distribution of the willingnesses to pay in Part I and Part II, \bar{p}_I and \bar{p}_{II} , defined using the *local maximum* method.

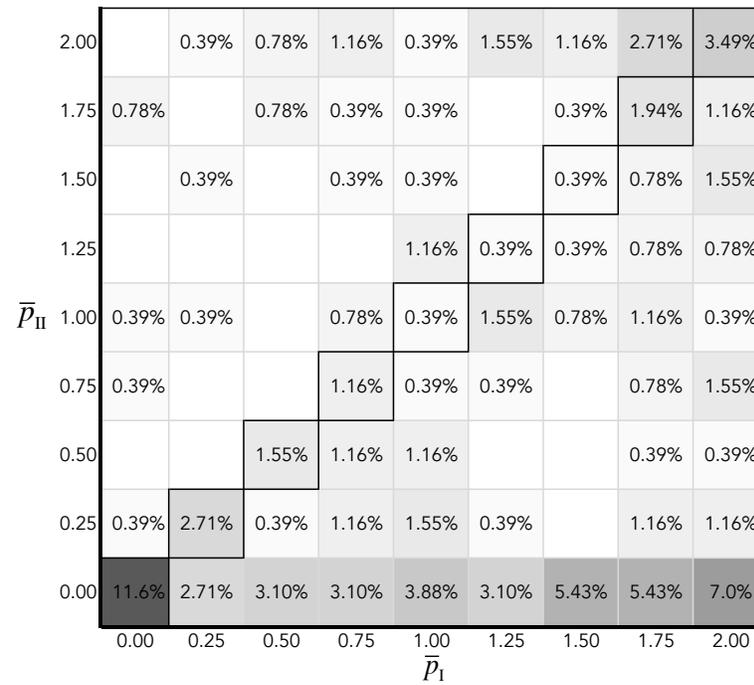


FIGURE D2. Joint distribution of the willingnesses to pay in Part I and Part II, \bar{p}_I and \bar{p}_{II} , defined using the *global maximum* method.

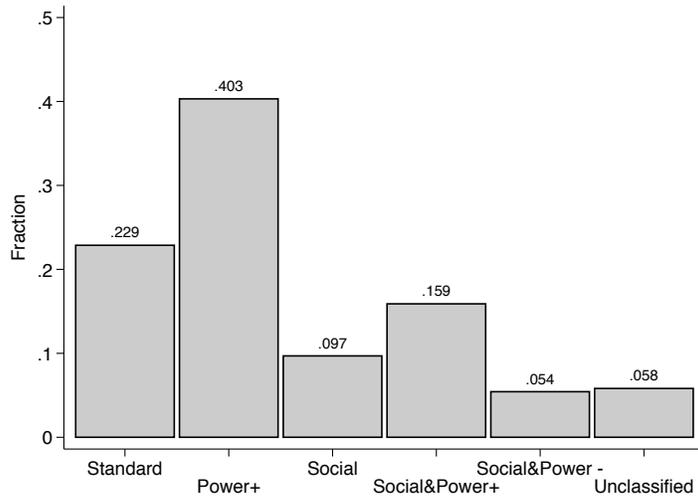


FIGURE D3. Distribution of preference classes based on the willingnesses to pay in Part I and Part II, \bar{p}_I and \bar{p}_{II} , defined using the *local maximum* method.

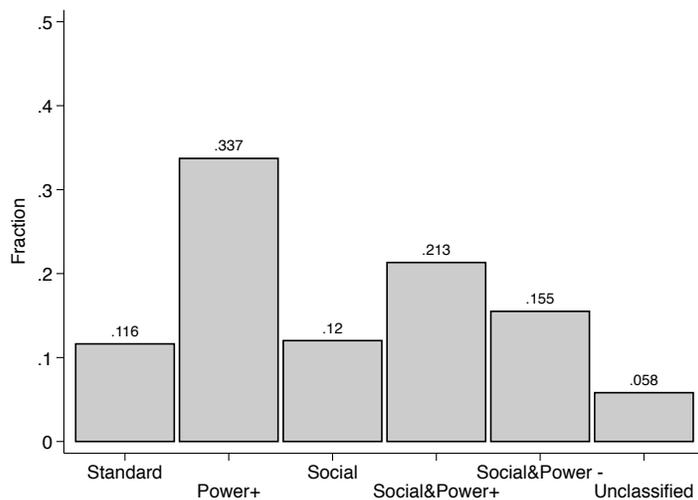


FIGURE D4. Distribution of preference classes based on the willingnesses to pay in Part I and Part II, \bar{p}_I and \bar{p}_{II} , defined using the *global maximum* method.

POWER

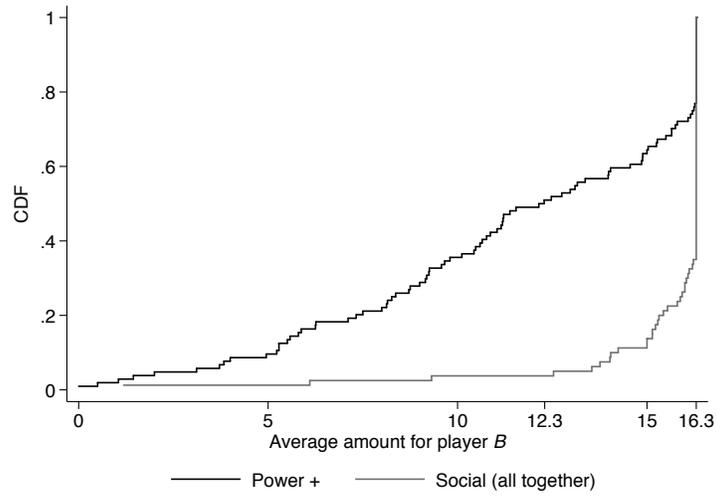


FIGURE D5. Distribution of the average amount given to player B , where preference classes are defined using the *local maximum* method.

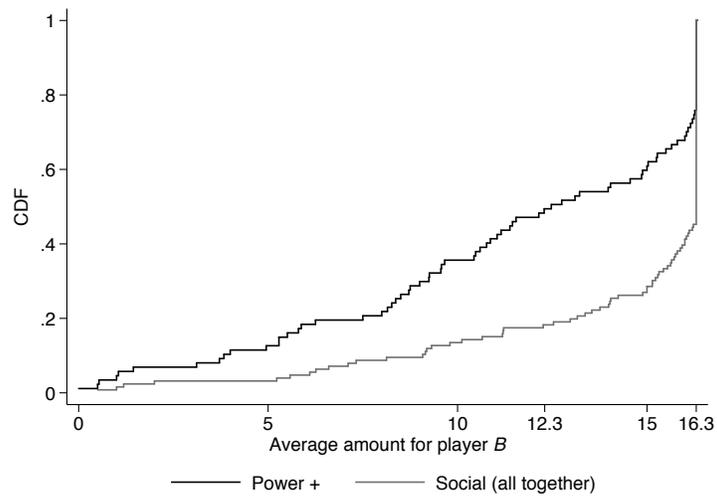


FIGURE D6. Distribution of the average amount given to player B , where preference classes are defined using the *global maximum* method.

TABLE D1. Fraction of subjects choosing the first option in the Charness and Rabin (2002) task across three samples: Charness and Rabin (2002), Chen and Li (2009), and our sample.

Decision	First Option	Second Option	CR2002	CL2009	Our Subjects ^a
CR1	(6.60, 6.60)	(6.60, 12.30)	31%	33%	26%
CR2	(6.60, 6.60)	(6.20, 12.30)	51%	82%	48%
CR3	(3.10, 12.30)	(0.00, 0.00)	100%	NA	96%
CR4	(10.50, 5.30)	(8.80, 12.30)	67%	76%	78%
CR5	(12.30, 3.50)	(10.50, 10.50)	27%	50%	50%
CR6	(12.30, 0.00)	(6.15, 6.15)	78%	64%	75%

^aThe sample includes 258 subjects who make any number of skips across both Parts of the Power Game.

TABLE D2. Fraction of subjects choosing the first option in the independent task by preference class, defined using the *local maximum* method.

Decision	Option		Preference Class			Consistent w/ Theory	
	First	Second	Standard	Power +	Social (All)	P+ vs. Std	P+ vs. Soc
CR1	(6.60, 6.60)	(6.60, 12.30)	25%	38%	5%	✓	✓
CR2	(6.60, 6.60)	(6.20, 12.30)	63%	66%	11%	✓	✓
CR3	(3.10, 12.30)	(0.00, 0.00)	93%	95%	99%	✓	✓
CR4	(10.50, 5.30)	(8.80, 12.30)	88%	83%	66%	✓	✓
CR5	(12.30, 3.50)	(10.50, 10.50)	64%	57%	28%	✓	✓
CR6	(12.30, 0.00)	(6.15, 6.15)	76%	75%	74%	✓	✓
PT1	(10.10, 5.20)	(9.10, 9.10)	71%	60%	35%	✓	✓
PT2	(12.30, 5.10)	(10.10, 12.30)	81%	69%	48%	✗	✓
PT3	(12.30, 9.60)	(9.60, 12.30)	98%	98%	100%	✓	✓
PT4	(12.30, 7.80)	(7.80, 5.40)	100%	97%	100%	✓	✓
PT5	(6.15, 6.15)	(0.00, 0.00)	100%	100%	100%	✓	✓

TABLE D3. Fraction of subjects choosing the first option in the independent task by preference class, defined using the *global maximum* method.

Decision	Option		Preference Class			Consistent w/ Theory	
	First	Second	Standard	Power +	Social (All)	P+ vs. Std	P+ vs. Soc
CR1	(6.60, 6.60)	(6.60, 12.30)	13%	46%	12%	✓	✓
CR2	(6.60, 6.60)	(6.20, 12.30)	63%	74%	25%	✓	✓
CR3	(3.10, 12.30)	(0.00, 0.00)	97%	97%	95%	✓	✓
CR4	(10.50, 5.30)	(8.80, 12.30)	97%	86%	69%	✓	✓
CR5	(12.30, 3.50)	(10.50, 10.50)	80%	69%	28%	✓	✓
CR6	(12.30, 0.00)	(6.15, 6.15)	90%	75%	71%	✗	✓
PT1	(10.10, 5.20)	(9.10, 9.10)	87%	70%	36%	✗	✓
PT2	(12.30, 5.10)	(10.10, 12.30)	90%	79%	49%	✓	✓
PT3	(12.30, 9.60)	(9.60, 12.30)	100%	99%	98%	✓	✓
PT4	(12.30, 7.80)	(7.80, 5.40)	100%	98%	99%	✓	✓
PT5	(6.15, 6.15)	(0.00, 0.00)	100%	100%	100%	✓	✓