Norms, Frames and Prosocial Behavior in Games

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Abstract

We develop a unifying framework to understand the sensitivity of prosocial behavior to variation in context in games. We argue that individuals are motivated not only by material payoffs but also by how closely their actions correspond to social norms. In extensive form games with observable actions, we derive the implications of norm-dependent utility - which depends on material payoffs, social appropriateness of actions in the game (i.e. norms), and a single parameter measuring sensitivity to norms. We demonstrate how all the ingredients of the utility function can be measured from behavioral data using specifically designed tasks. We argue that norms vary with context and that this can account for observed behavioral heterogeneity across payoff-equivalent frames of a game. We report the results of experiments aimed at manipulating norms and thereby behavior. In three variants of the dictator game we replicate previous findings that heterogeneity in individual norm sensitivity accounts for heterogeneity in dictator giving, though our manipulation does not directly influence norms. In two variants of the Ultimatum game, we demonstrate that our utility specification explains otherwise incomprehensible differences in strategic choices of the Proposers that result from experimentally induced changes in norms of Responder behavior.

JEL classifications: *C91, C92, D03*
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1 Introduction

The prevalence of prosocial behavior in one-shot and repeated games has generated abundant research devoted to uncovering its origins. Dictator, ultimatum, trust and public goods games, to name some of the most prominent, have all been employed to identify and catalogue the nature of prosocial tendencies, their sensitivity to experimental manipulations, and the crucial roles of culture, past experience, and individual heterogeneity in shaping behavior (see e.g. Cooper and Kagel, 2013, for a summary).

From the body of empirical evidence has also grown a rich set of models designed to explain and predict prosocial behavior.[1] A common theme throughout this literature has been the construction of agents whose utility depends not only on their own payoffs, but also on the payoffs received by others. These social preference models are able to generate cooperative and altruistic behaviors even in one-shot settings, but there remain a number of empirical facts that stand unexplained: for instance, many social preference models are unable to explain the sensitivity of prosocial behavior to changes in context. Varying the assignment of decision rights, the observability of actions, and the choice set itself all demonstrably impact measured pro-sociality. These behaviors are difficult to account for using models where utility depends only on own and other payoffs.[2]

To account for these stylized facts, two new, complementary approaches have begun to emerge. The first posits that prosocial behavior reflects self- and other-signaling (Bénabou and Tirole, 2006; Andreoni and Bernheim, 2009). In these models, individuals care about their reputations (i.e. others' beliefs about their type), believe that their choices in experimental games provide an informative signal about their type, and make choices reflecting a tradeoff between payoff maximization and reputation-management. Thus, under these models, the reason "double-blind" and "hidden action" manipulations reduce dictator giving is that when actions are unobservable, they cannot signal an agent's type.

The second approach argues that prosocial behavior is driven by an intrinsic desire to adhere to social norms (see e.g. López-Pérez, 2008; Kessler and Leider, 2012; Krupka and Weber, 2013; Kimbrough and Vostroknutov, 2014).[3] Under this view, individuals faced with a decision import norms into the lab in order to determine the "socially appropriate" action. They care about how closely their actions adhere to these norms, and their choices reflect a tradeoff between payoff maximization and norm-adherence. In this paper we follow this approach. We present a

[1] See e.g. Rabin (1993); Levine (1998); Fehr and Schmidt (1999); Bolton and Ockenfels (2000); Charness and Rabin (2002); Cox *et al.* (2008); Halevy and Peters (2013); Dufwenberg and Kirchsteiger (2004).

[2] A sample of the literature can be found in Hoffman and Spitzer (1985); Forsythe *et al.* (1994); Hoffman *et al.* (1994); Andreoni (1995); Hoffman *et al.* (1996); Eckel and Grossman (1996); Burnham *et al.* (2000); Cherry *et al.* (2002); McCabe *et al.* (2003); Dana *et al.* (2007); List (2007); Levitt and List (2007); Bardsley (2008); Falk *et al.* (2008).

[3] The approaches are complementary in the sense that reputation concerns may well explain why an individual would care about norms. Similarly, without reference to social norms it would be impossible to know which actions would harm (or improve) a reputation.

modeling framework that provides a unifying account of prosocial behavior, and its sensitivity to context, and we show that this model can be handled with standard game theoretic tools. Then we provide experimental evidence that is consistent with our model and cannot be explained by well-known social preference models.

Following the papers cited above, we assume that preference heterogeneity can be captured with a single parameter measuring the strength of an individual's norm-following preferences. The greater the value of this parameter, the more willing an agent is to follow norms in apparent violation of a narrow view of self-interest. Here we also formalize the idea that social norms depend on the particulars of the choice context. This leads to a natural notion of a "frame" of a game: a frame is a payoff-irrelevant description of a choice setting that evokes a particular norm. This describes the mechanism through which framing effects operate: frames evoke different norms and norm-following individuals alter their behavior accordingly.

To test the model we study dictator and ultimatum games and attempt to alter norms by varying the description of the choices subjects faced. In the dictator game, our manipulations do not substantially alter subjects' perceptions of the social norm: under all manipulations, the norm is to split the pie equally. Nevertheless, in support of the model, we replicate the finding from Kimbrough and Vostroknutov (2014) that measures of norm-following preference elicited in an individual-decision task correlate strongly with dictator giving. In the ultimatum game, our manipulation is successful, and we find evidence supporting our model. We show that varying payoff-irrelevant descriptions can alter the norms evoked by a game and that induced changes in norms lead to changes in behavior. In particular, we introduce variants of the ultimatum game in which rejection by the second mover is described as either an act of commission (destroying the pie) or an act of omission (failing to create the pie). Using the coordination game method developed by Krupka and Weber (2013), we measure subjects' perceptions of the socially appropriate action (read: norm) in each setting, and we find that the act of commission generates increasing disapprobation as the amount offered to the second-mover increases while disapprobation for the act of omission peaks at the equal split and declines as the offer becomes unequal in either direction.

Under our model, these differences in norms, if known by first-movers, should lead to differences in the distribution of offers. In particular, first movers in the omission treatment should be far more likely to offer the equal split, while offers in the commission treatment should be more dispersed. This is exactly what we find.

2 Norms in Extensive Form Games

Kessler and Leider (2012) develop a simple model of norm-dependent utility in one-shot normal form games. In this section, we extend the norm-dependent utility function to *extensive form games with observable actions*. This general set of games includes normal form games, games of perfect information and repeated games. Intuitively, a game with observable actions consists of a sequence of potentially different normal form games such that the choices of all players after each normal form game are publicly known. See Appendix A for a formal definition.

In order to incorporate players' concerns for social norms, we need to amend the definition of the payoff functions $\pi_i : Z \to \mathbb{R}$ for each player i, where Z is the set of terminal histories of the game. Suppose that after each history in the game, there is common consensus about how *socially appropriate* each available action for each player after this history is. Denote by A the set of all actions of all players after all non-terminal histories in the game and let a mapping $g : A \to [-1, 1]$ formalize this: g equals 1 for "very socially appropriate" actions, -1 for "very socially inappropriate" ones and takes intermediate values for less extreme cases. We think of g as the definition of a *social norm* and assume that it is common knowledge.[4,5] Suppose as well that after each stage in the game each player cares about whether she followed the norm. In particular, each player receives positive utility from following the norm (positive g) and negative utility from choosing an action which is socially inappropriate (negative g). After each stage in the game, each player receives some utility associated with her personal norm following.

Let $(a^1(z), ..., a^\ell(z))$ be the sequence of action profiles leading to a terminal history $z \in Z$. We can define the norm-dependent utility of player i in the game with observable actions as

$$U_i(z) = \pi_i(z) + \phi_i \sum_{t=1}^{\ell} g(a_i^t(z))$$

where $\phi_i \geq 0$ represents the norm sensitivity. This redefines the original game with the new payoff functions U_i for each player i. The game can be analyzed using any standard game theoretic tools. To understand what would be the appropriate equilibrium concept for this game we should consider the notion of the social norm that we defined earlier. The norm g was defined as "social appropriateness" for all actions of all players with the idea that a perfectly norm-obedient player ($\phi_i \to \infty$) will follow the most socially appropriate action after *any* history. This points towards Subgame Perfect Nash Equilibrium as the right concept for the analysis. Of course, any other equilibrium concept can be equally considered.

The utility specification with norm-dependent utility allows the equilibrium behavior in a game to depend on the norms associated with the actions of the players. An important implication is that predicted behavior for a game varies with the norms associated with it. In what follows, we hypothesize that *frames* of the game change behavior by influencing the norms associated with various actions; indeed, this is a natural definition of a frame. To test this hypothesis we design Dictator and Ultimatum game variants with different frames. Then we estimate the

[4]Strictly speaking, g reflects an "injunctive" or prescriptive social norm, as opposed to a descriptive social norm (which may or may not emerge to reflect any prescriptive norm).

[5]If there exist heterogeneous beliefs about the appropriateness of various actions in the game, g can be interpreted as an "average" or "expected" norm.

parameters of the norm-dependent utility function U_i. The social norm g can be measured using a coordination game procedure described in Krupka and Weber (2013). Kimbrough and Vostroknutov (2014) show how the norm sensitivity parameter ϕ_i can be estimated by means of an individual rule-following task.

3 Design

We conduct two experiments in which we attempt to alter norms of behavior, the first involving a framed dictator game, and the second involving a framed ultimatum game. Each game is described so that the norms of socially appropriate behavior can be manipulated with a simple change in framing. For each game, separate (between-subject) treatments are designed so that for a targeted profile of strategies, in one treatment the behavior corresponding a strategy is considered socially inappropriate, whereas in another treatment the behavior corresponding to the identical strategy is considered socially appropriate (or neutral).

For each game, using a separate set of subjects, we validate that the change in frame manipulates the norms of socially appropriate behavior by using an incentivized norm-elicitation task (Krupka and Weber, 2013) (see Section 3.3).

3.1 Experiment 1: Framed Dictator Game

The experiment was conducted using the Behavioral Business Lab subject pool at the University of Arkansas. We recruited 186 subjects, 60% male and 40% female with an average age of 22 years. The subjects were paid \$21.75 on average for their participation including \$7 for arriving to the experiment on time. Each subject first participated in a rule following task, then a single treatment of the framed dictator game, and finally a questionnaire that included demographic information and the Moral Foundations Questionnaire (MFQ 30) due to Graham *et al.* (2008) (see Appendix G for a copy of the questionnaire). A separate sample of subjects participated in a norm elicitation task related to the framed dictator game (see Section 3.3). We first describe the design of the framed dictator game.

Framed Dictator Game: Balls and Baskets. We conduct the canonical dictator game (Forsythe *et al.*, 1994) under three different between-subject framed treatments. We depict the dictator game graphically on a computer screen using balls and baskets: the dictator and the receiver each have a basket, and the dictator allocates the balls one-by-one across the baskets. After the dictator decides, if x balls are in the dictator's basket and $100 - x$ balls are in the receiver's basket, then the dictator receives $.15 * x$ dollars and the receiver receives $.15 * (100 - x)$ dollars. The instructions are reproduced in Appendix B. There are three treatments that vary the initial placement of the balls and description of the actions:

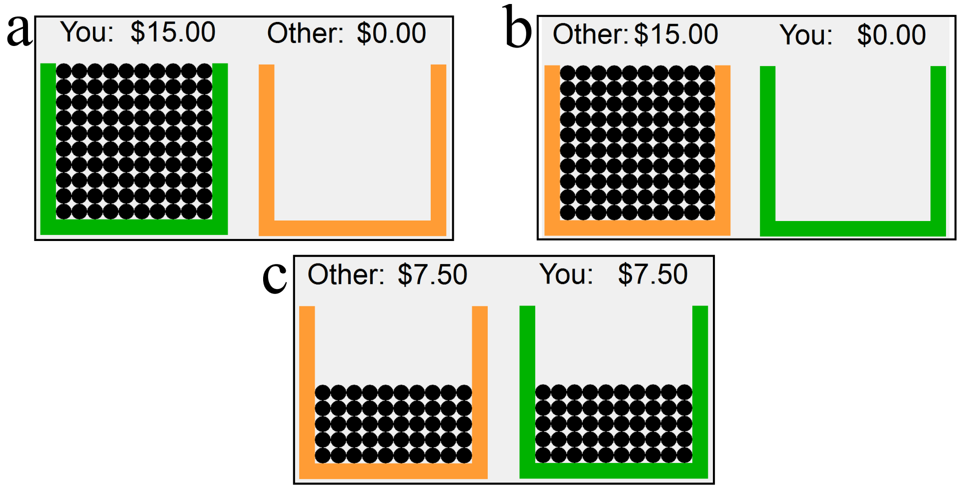

Figure 1: Three Dictator games: a) GiveDG; b) TakeDG; c) Give-Take DG.

- **Give Frame** (GiveDG, Figure 1a). The dictator is endowed with all 100 balls in her basket. She chooses how many balls to give to the receiver For each ball the dictator must decide whether to keep it where it currently is (by clicking on it) or to move it to the other basket (by drag-and-dropping it);
- **Take Frame** (TakeDG, Figure 1b). Receiver is endowed with all 100 balls in his basket and the dictator chooses how many balls to take from him. For each ball the dictator must decide whether to keep it where it currently is (by clicking on it) or to move it to the other basket (by drag-and-dropping it);
- **Give-Take Frame** (NeutralDG, Figure 1c). Each basket initially contains 50 balls, and the dictator chooses how many balls to keep in her basket and how many balls to leave in the basket of the receiver. For each ball the dictator must decide which basket to allocate it to (by clicking or by drag-and-dropping it).

Rule Following Task. We conduct a variant of the rule following task due to Kimbrough and Vostroknutov (2014) which measures each individual's propensity to follow rules (or obey the experimenter). Using an interface similar to that of the dictator game, in this individual task participants drop balls one-by-one into two baskets: yellow or blue. For each ball in the yellow basket they receive 10 cents and for each ball in the blue basket they receive 5 cents. The instructions explicitly specify that *"the rule is to put the balls into the blue basket."* Participants have 100 balls to allocate, thus their earnings can vary from $5 (if they did follow the rule) to $10 (if they did not follow the rule). Following Kimbrough and Vostroknutov (2014), we use the cost incurred following the rule as a measure of an individual's propensity to follow norms. This task has two purposes: 1) it allows us to attempt to replicate the finding that norm-followers tend to give more in dictator games (i.e. tend to adhere to norms of giving) and 2) pairing this task with our design, we can, in principle, test a subtle prediction of our utility specification that subjects sensitive to norms are impacted by frames.

3.2 Experiment 2: Framed Ultimatum Game

The experiment was conducted using the BEELab subject pool at Maastricht University. We recruited 142 subjects, 44% male and 56% female with an average age of 23 years. The subjects were paid on average €4.65 for their participation plus €5 for showing up.

Framed Ultimatum Game: a Water Tank. We conduct the canonical ultimatum game (Güth *et al.*, 1982) under two different between-subject framed treatments. We depict the ultimatum game graphically on a computer screen with the image of a water tank. Figure 2 illustrates how the game is represented under two treatments: the amount of water in the tank represents the size of the pie, and the placement of the yellow marker indicates the division of the pie. All water to the left of the yellow marker goes to player A (Proposer), and all water to the right of the marker goes to player B (Responder).

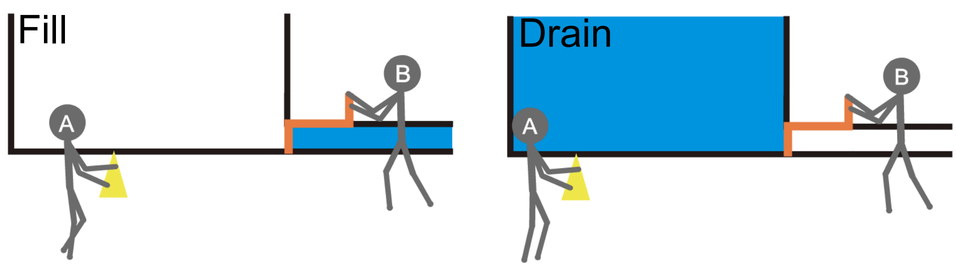

Figure 2: The Ultimatum game with two frames: empty water tank (fill-frame) and full water tank (drain-frame).

- **Omission Frame** (Fill, left panel of Figure 2). The water tank is initially empty. Player A moves his stick figure avatar forward and backward to choose a provisional division of an as-yet-unfilled tank. After that player B chooses whether to fill the tank with water by opening the valve (acceptance) or not by leaving the valve closed (rejection). See Appendix C for the instructions.

- **Commission Frame** (Drain, right panel of Figure 2). The water tank is initially filled. Player A moves his avatar to divide the water in the tank. Then player B chooses whether to leave the water in the tank by leaving the valve closed (acceptance) or to drain the water by opening the valve (rejection). See Appendix D for the instructions.

To make sure that subjects clearly understood how the game is played, they were shown two videos at the beginning of the experiment. In the videos player A walked holding the yellow marker to some position (a little less than half for herself and a little more than half for player

B). Then, blinking arrows showed which part of the tank would be assigned to each player if player B were to accept. Then player B either opened the valve (video 1) or demonstrably stood away leaving the valve closed (video 2). Subjects were only shown the videos corresponding to the frame that they were about to choose in.

After the Utimatum game subjects were asked a series of questions about how they decided in the experiment. The purpose was to elicit the beliefs that subjects held while choosing (see Appendix F).

3.3 Experiment 3: Norm Elicitation Task

In a separate set of subjects we conducted an incentivized norm elicitation task for all frames of the Dictator game and the Ultimatum game using the Behavioral Business Lab subject pool at the University of Arkansas. We recruited 168 subjects, 55% male and 45% female with an average age of 22 years old. Following the design of Krupka and Weber (2013), subjects were presented with a sequence of scenarios faced by hypothetical players, and were instructed to rate the "social appropriateness" of various possible actions that these players could take. Their answers were incentivized using a coordination game where we randomly chose one of the hypothetical actions we asked them to rate and paid them $10 only if their evaluation was the same as the modal evaluation of peers in their experimental session.[6] 86% of subjects earned the $10. As discussed in Krupka and Weber (2013), this method captures the notion of a norm as a set of shared beliefs about the appropriate course of action in a given scenario. If an action is rated "very socially appropriate" by all (or nearly all) people, then that action can be considered a norm. The weaker the agreement, the weaker the norm.

From each subject, we elicited a measure of norms for a single player role in one frame of the DG and one frame of the UG. This mitigates contamination and experimenter demand effects that might arise if we elicited norms for all variants (or roles) in the DG or UG within-subject. We chose to elicit norms in separate sessions for similar reasons: it is possible that eliciting both norms and choices would induce subjects to alter their decision in one task to make it consistent with their behavior in the other task.

In sum, our design introduces variants of two well-known games meant to evoke different norms. Using a between-subject design, we elicit both actions in the games and perceptions of social norms. If our model is correct, then changes in observed behavior across experiments should be explained by changes in elicited norms.

[6]See Appendix E for the instructions and screenshots.

4 Experimental Results

4.1 Dictator Games

Figure 3 reports elicited norms for each variant of the dictator game (see Section 3.3). The figure reveals minor differences in the elicited appropriateness of highly selfish actions, but overall the normative profile is consistent across all three variants of the game. In particular, while 'taking' is viewed as slightly less appropriate than 'not giving', there is still widespread agreement that the most appropriate action is the equal split. This suggests that our manipulation failed to alter norms, and hence that our data from these treatments do not allow us to test our main hypothesis.

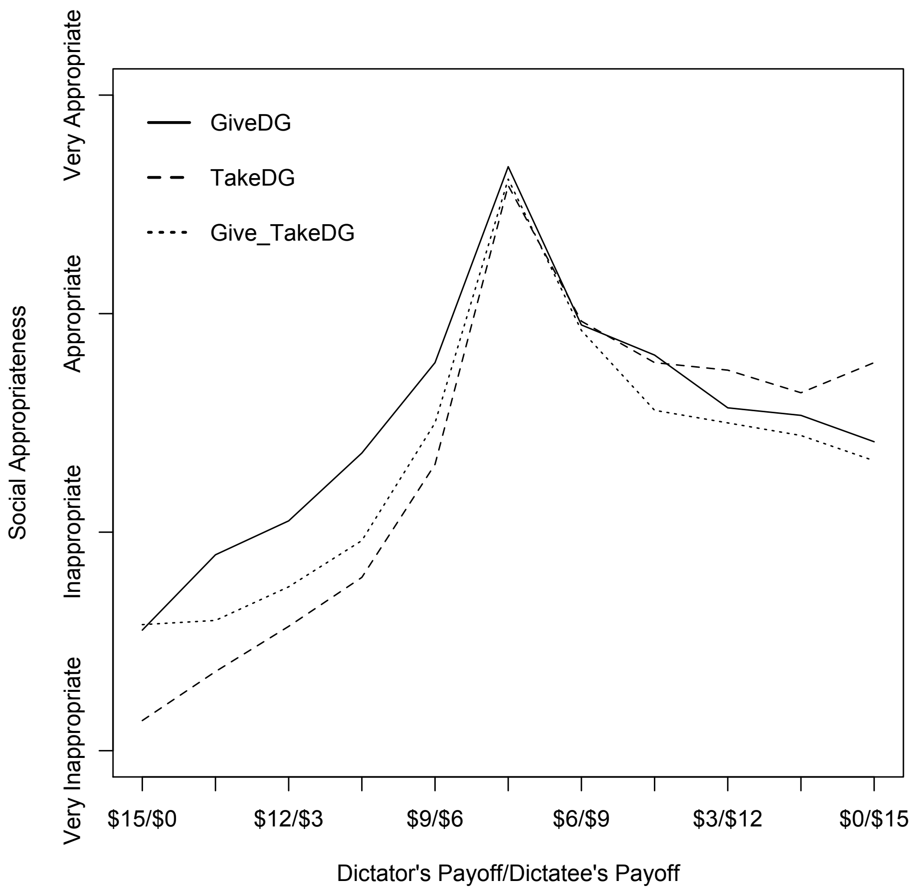

Figure 3: **Elicited Norms in Each Variant of the DG**

However, since we also elicited individual norm-following propensities, we are able to test our earlier finding that individuals who follow the rule to a greater degree in the Rule Following task will be more influenced by the norm in the dictator game (Kimbrough and Vostroknutov, 2014). Pooling the data from all three variants of the dictator game, we find that Rule Following task allocations to the low-return bucket are positively correlated with dictator giving (Spearman's $\rho = 0.36$, p-value < 0.01). Thus, we replicate the finding from Kimbrough and Vostroknutov (2014). For additional support, figure 4 displays a histogram of Rule Following task decisions alongside empirical CDFs of dictator giving by rule-followers and rule-breakers, where types are defined by a median split of the Rule Following task distribution. Giving by rule-followers first-order stochastically dominates giving by rule-breakers, and this finds statistical support with a Kolmogorov-Smirnov test (D = 0.32, p-value < 0.01).

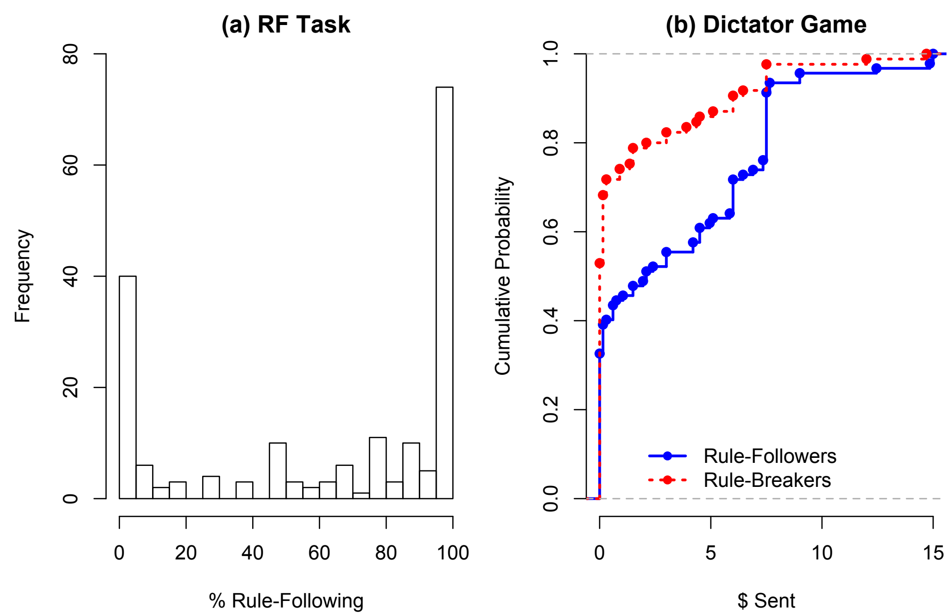

Figure 4: **Histogram of Rule Following Task Behavior and Empirical CDFs of Dictator Giving.** Panel (a) displays a histogram of RF task behavior showing the number of balls placed in the blue basket by each subject in our sample. Panel (b) displays empirical CDFs of dictator giving by each type (as measured in the RF task). Types are defined by a median split of the distribution; 9 observations at the median are excluded.

4.2 Ultimatum Games

Figure 5 reports elicited norms for each player role in each variant of the Ultimatum game. In both variants, norms for the proposers are nearly identical. However, our manipulation has a strong effect on norms for the responders. In the commission frame, subjects reported how appropriate it was to drain the tank (reject). The social appropriateness of rejection is monotonically decreasing in the share offered (Figure 5b): it is roughly "Appropriate" ($g \approx \frac{1}{3}$) to drain the tank if the Proposer offers nothing, and it is in-between "Inappropriate" and "Very Inappropriate" ($g \approx -\frac{4}{9}$) to drain it when Proposer offers the entire tank to the Responder. In the omission frame, subjects reported how appropriate it is to fill the tank (accept). The graph in Figure 5b shows the elicited norm inverted or, specifically, multiplied by -1 (in terms of g function). This represents the appropriateness of "not filling" the tank.[7] Notice that the figure is not monotonic

[7] For graphical and expository convenience, we assume that the appropriateness of the other action available (not drain, or accept; not fill, or reject) is the opposite of the reported appropriateness for the available action (multiplied

and attaches the least appropriate rating to not filling the tank when the split of the pie is equal ($g \approx -\frac{8}{9}$). Thus the omission frame induces a strong norm *against* rejecting the equal division.

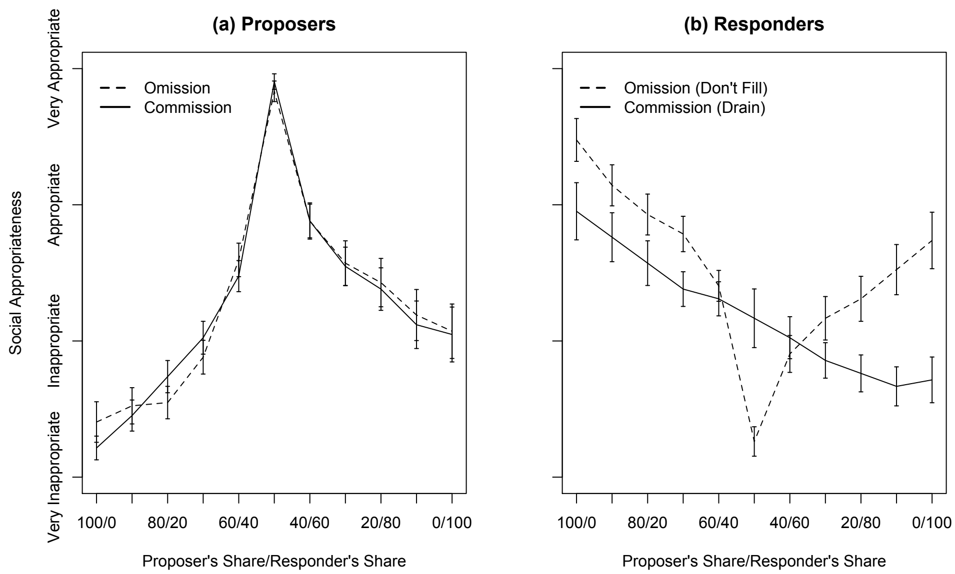

Figure 5: **Elicited Norms in Each Variant of the UG**. Bars are $\pm$1SE.

Even though the shapes of the two g functions are very different, it should be noted that only rarely do Proposers choose offers which are disadvantageous to them. Therefore, the norm for offers in the range 50/50 to 0/100 (0 to Proposer) hardly plays any role in the behavior. In this light we should only compare the relevant monotonic pieces of the g functions in the range of offers 100/0 to 50/50. Notice that in this range the norm in the omission frame is much *steeper* than the norm in the commission frame: it is much more inappropriate to not fill the tank for 50/50 split and significantly more appropriate to not fill it for the 100/0 split. This should have consequences for the responders' rejection rates and thereby ultimately influence proposers' choices.

To understand the implications of different norms for the behavior let us think of the curves on Figure 5b as frame-dependent g functions for each rejection action available to the responder for all possible offers by the proposer. According to our utility specification, rejection of share x (with proposer's share $100 - x$) gives utility $\phi_i g_\theta(x)$, where θ represents the commission or omission frame (call the two functions g_o an g_c). Then, given the assumption about reversing the norm made above, the utility from accepting share x is $x - \phi_i g_\theta(x)$.

If we allow for the possibility of stochastic choice (so that the probability of choosing one action over another is monotonic in the difference in the utilities that these actions yield, see e.g. McFadden, 1976), then the probability of rejecting share x is positively proportional to $2\phi_i g_\theta(x) - x$. Figure 5b then tells us that the relative probability of rejecting the 50/50 split in the omission frame (not filling) is very small while the relative probability of rejecting in the commission

by -1). We believe this assumption is justified here because the actions are binary. In other games this assumption might not be applicable and elicitation of norms for each action would be necessary.

frame (drain) is much higher since the action "drain" in the latter frame is considered much more appropriate. The opposite holds for offers near 0. In the omission frame the relative probability of rejecting 0 is very high, while in the commission frame it is lower.

Different behavior of responders in the two frames should also influence the proposers' optimal behavior. For simplicity, let us assume that all proposers share common prior about the g_o and g_c functions (our evidence from the norm elicitation suggests this is a reasonable approximation of the truth as 70% of responses matched the modal response). The proposers with very low ϕ, who ideally would like to offer a very small share to the responder, will strategically increase their offers in order to avoid higher rejection probabilities in the omission frame. In the commission frame this effect should not be as pronounced since the rejection probabilities are lower. The proposers with very high ϕ will choose amounts close to the 50/50 split in both frames, as dictated by the proposers' norm (Figure 5a) without paying much attention to the rejection probabilities. The proposers with intermediate ϕ, who would normally be willing to offer something in the range $(0, 50)$ will shift their offers *more* towards the equal split in the omission than in the commission frame for the same strategic reason as low ϕ proposers. All this makes us conclude that in the omission frame we should observe many more offers at or near the 50/50 split than in the commission frame, where the offers should be more diffuse in the range between 100/0 and 50/50.

To test this prediction, we look at the distributions of the amounts *kept* by the Proposers in each treatment. In Figure 6 we indeed observe a much higher peak around the normative half-half offer in the omission frame, and a two-sided Kolmogorov-Smirnov test rejects the null hypothesis of identical CDFs, in support of our theory ($D_{35,36} = 0.24$, p-value = 0.03).

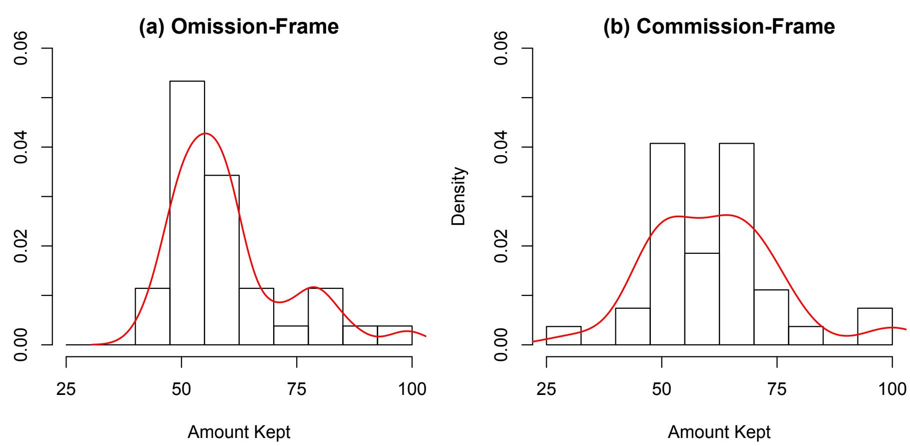

Figure 6: **Distributions of Amounts Kept by Proposers in Two UG Treatments.** Panel (a) shows the distribution of amount kept in the omission-frame, and panel (b) shows the distribution for the commission-frame. Red lines are Gaussian kernel density estimates

To check directly whether there is a high concentration of offers near the 50/50 split in the omission frame (as compared to the absence of it in the commission frame) we ran a permutation test for the statistic equal to the difference in the number of observations in the range 50% to

60% between the two treatments. In 10,000 permutations, we find that only 212 times did the difference in the number of observations exceed the sample difference (one-sided test). This gives the p-value of 0.021 with 95% confidence interval of $[0.0184, 0.0242]$.

Since in this experiment we did not elicit the norm-following sensitivity we use an additional test of our model with a simple belief elicitation question to Proposers:

QFM4: What do you think is the minimum amount you could assign to player B and still have player B accept? For example, type 0 if you believe player B would accept any amount, 60 if player B would accept assignments 60% and above, etc. (enter 0-100)

We find that in the empty tank treatment (omission frame) the amount sent depends directly on the belief of Proposers about the Responder's acceptance threshold (OLS regression, $p = 0.049$). In the full tank treatment (commission frame) we observe no dependency, since the player's own (unobserved) type also influences the choice. This is consistent with the predictions of our utility specification. We plan to conduct more experiments combining norm-sensitivity elicitation and the ultimatum game framing technique above to shed more light on the differences in behavior.

5 Conclusions

We report tests of a model of prosocial behavior in which individuals trade off own payoff maximization and norm-following. We argue that well-known framing effects can be understood as manipulations of the relevant norm: individuals import social norms from outside the lab, and the imported norm varies with induced context. We introduce variants of the dictator and ultimatum games meant to evoke different norms, and we test the predictions of the model. Our data from dictator game variants suggests that we were unable to manipulate norms, though we are able to replicate an earlier finding that individually elicited norm-following preferences are correlated with dictator giving. Our data from ultimatum game variants provides evidence consistent with our interpretation: changing the rejection decision from an act of commission into an act of omission alters both elicited norms and behavior in a manner consistent with the model.

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Appendix

A Formal Definition of a Game with Observable Actions

Let a tuple $\langle N, H \rangle$ be an *extensive form* with observable actions, where $N = \{1, ..., n\}$ is the set of players and H is the finite set of histories. $h = (a^1, a^2, ..., a^\ell)$ represents a history of length ℓ where $a^t = (a_1^t, ..., a_n^t)$ is a profile of actions chosen at stage $1 \leq t \leq \ell$. Each history h becomes commonly known to all players once it occurs. Empty history $\{\emptyset\} \in H$ represents the beginning of the game. After history h player i has the set of actions $A_i(h)$, which is empty if and only if $h \in Z \subsetneq H$, where Z is the set of all terminal histories. Let $A(h) = \times_{i \in N} A_i(h)$ be the set of all action profiles at h and $A = \cup_{i \in N} \cup_{h \in H \setminus Z} A_i(h)$ be the set of all actions of all players after all non-terminal histories. An *extensive form game with observable actions* is a tuple $\langle N, H, \pi \rangle$, where $\langle N, H \rangle$ is an extensive form and $\pi = (\pi_i : Z \to \mathbb{R})_{i \in N}$ is the vector of material payoff functions.

B Instructions for DG

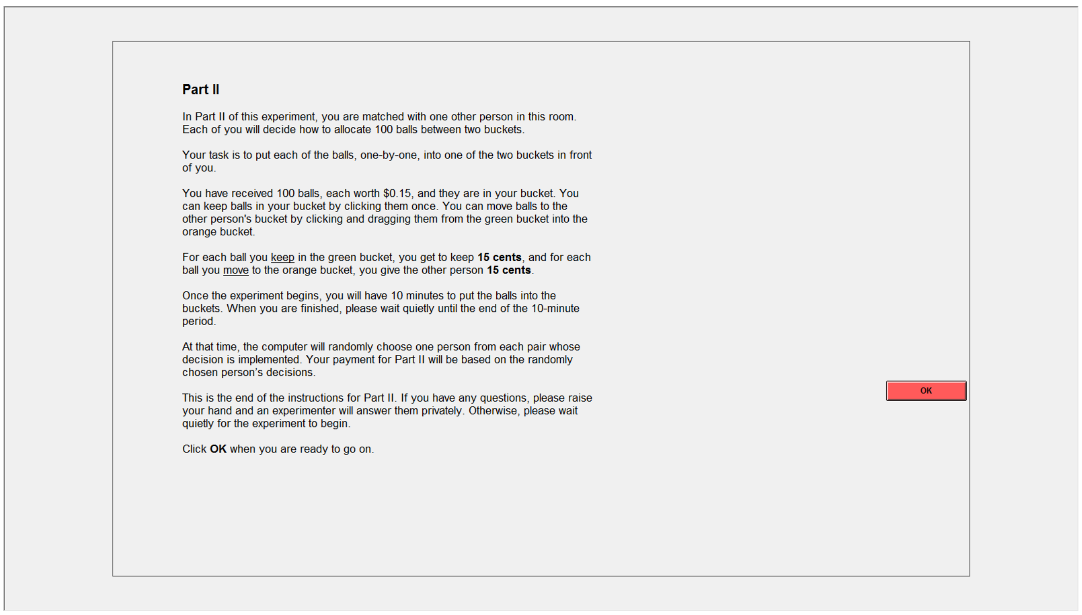
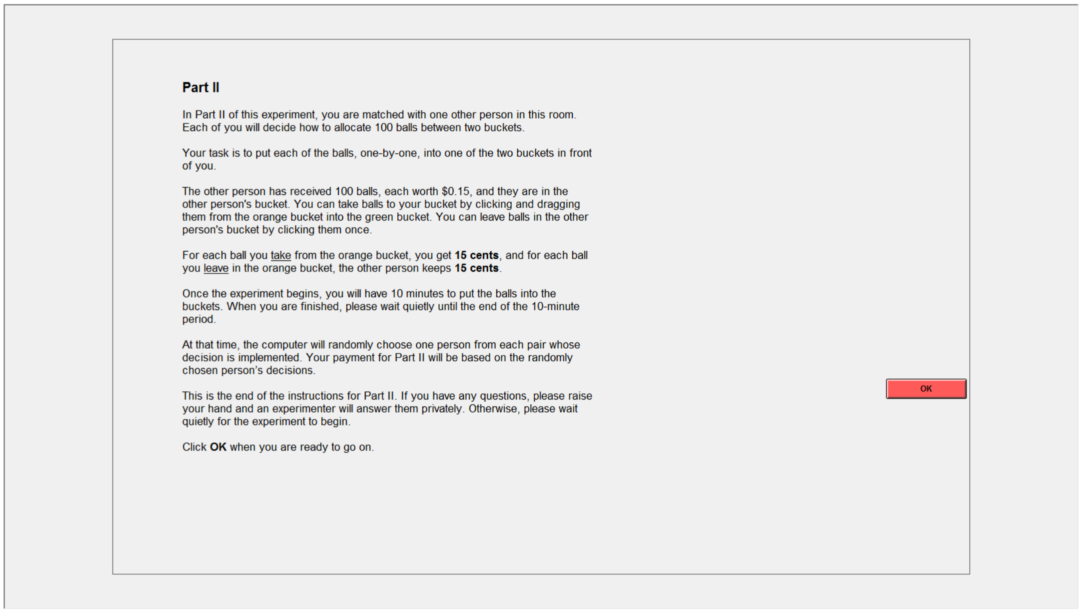


Figure 7: Instructions for the “Give” Dictator Game



Part II

In Part II of this experiment, you are matched with one other person in this room. Each of you will decide how to allocate 100 balls between two buckets.

Your task is to put each of the balls, one-by-one, into one of the two buckets in front of you.

The other person has received 100 balls, each worth $0.15, and they are in the other person's bucket. You can take balls to your bucket by clicking and dragging them from the orange bucket into the green bucket. You can leave balls in the other person's bucket by clicking them once.

For each ball you take from the orange bucket, you get **15 cents**, and for each ball you leave in the orange bucket, the other person keeps **15 cents**.

Once the experiment begins, you will have 10 minutes to put the balls into the buckets. When you are finished, please wait quietly until the end of the 10-minute period.

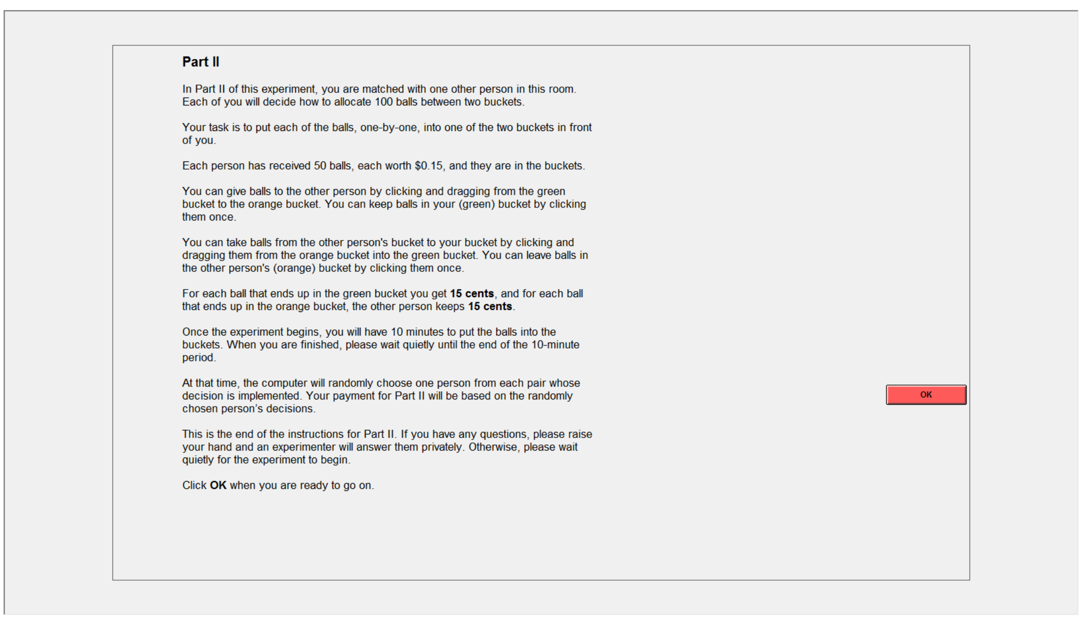
At that time, the computer will randomly choose one person from each pair whose decision is implemented. Your payment for Part II will be based on the randomly chosen person's decisions.

This is the end of the instructions for Part II. If you have any questions, please raise your hand and an experimenter will answer them privately. Otherwise, please wait quietly for the experiment to begin.

Click **OK** when you are ready to go on.

OK

Figure 8: Instructions for the "Take" Dictator Game



Part II

In Part II of this experiment, you are matched with one other person in this room. Each of you will decide how to allocate 100 balls between two buckets.

Your task is to put each of the balls, one-by-one, into one of the two buckets in front of you.

Each person has received 50 balls, each worth $0.15, and they are in the buckets.

You can give balls to the other person by clicking and dragging from the green bucket to the orange bucket. You can keep balls in your (green) bucket by clicking them once.

You can take balls from the other person's bucket to your bucket by clicking and dragging them from the orange bucket into the green bucket. You can leave balls in the other person's (orange) bucket by clicking them once.

For each ball that ends up in the green bucket you get **15 cents**, and for each ball that ends up in the orange bucket, the other person keeps **15 cents**.

Once the experiment begins, you will have 10 minutes to put the balls into the buckets. When you are finished, please wait quietly until the end of the 10-minute period.

At that time, the computer will randomly choose one person from each pair whose decision is implemented. Your payment for Part II will be based on the randomly chosen person's decisions.

This is the end of the instructions for Part II. If you have any questions, please raise your hand and an experimenter will answer them privately. Otherwise, please wait quietly for the experiment to begin.

Click **OK** when you are ready to go on.

OK

Figure 9: Instructions for the "Give-Take" Dictator Game

C Instructions for UG with the Omission Frame

General Explanations for Participants

You are participating in a choice experiment that is financed by the Marie Curie grant. In the experiment you are guaranteed 5 Euro show up fee plus you can earn additional money with the decisions you make. Your earnings may also depend on the decisions of other participants and random events. The exact way your earnings are calculated is explained in this document and during the experiment. It is, therefore, very important that you carefully read the following explanations. At the end of the experiment you will be instantly and confidentially paid in cash all the money you have earned.

During the experiment you are not allowed to communicate. If you have any questions please raise your hand. An experimenter will come to answer your questions.

AT THIS POINT, PLEASE DO NOT PRESS ANYTHING ON YOUR COMPUTER AND KEEP READING THE INSTRUCTIONS.

Information on the Exact Procedure of the Experiment

The experiment consists of a game that you play with one other person in this room and a questionnaire.

Description of the Game

During the game you are randomly paired with another participant in this room. Neither during nor after the experiment will anybody be informed about who has been paired with whom.

You and the person you are paired with are going to play a game. Each player has a unique role in the game: Player A and Player B. So if you are assigned the role of Player A, the other person will play as Player B and vice versa.

The game involves a container which can contain different amounts of water. The decisions that Player A and Player B make influence how much water will be in the container. In the end of the game some amount of water in the container will be assigned to Player A and some to Player B. The amount of water assigned to each player at the end of the game depends on the decisions made by both players during the game.

The amount of money you earn in the experiment is proportional to the amount of water you are assigned in the end of the game. The maximum amount you can earn is 10 Euro which corresponds to the full container of water if all of it is assigned to you. If only some portion of the water in the full container is assigned to you, you will earn the amount of money proportional to that amount of water.

For example, if in the end of the game the container is full and you are assigned 25% of the water, your earnings will be $10 * .25 = 2.5$ Euro. More generally, if you are assigned p% of the water where $p = 0$ means that you are assigned none of it and $p = 100$ means you are assigned all the water, then your earnings in the experiment will be $10 * (p/100)$ Euro if the container of water is full and 0 Euro if the container of water is empty.

Rules of the Game

The decisions in the game are made one after another. First, Player A makes a decision and then Player B makes a decision. After this the game ends. Player A chooses which part of the container is assigned to him/her and which part of the container is assigned to Player B. After that Player B chooses how much water the container will contain. In particular, Player A decides on a percentage p% of the container which is assigned to him/her and correspondingly, the percentage $100 - p$ (the rest of the container) that is assigned to Player B. After this decision is made Player B can either open the valve or keep the valve closed. The position of the valve determines whether the container is full of water or is empty.

To better understand the possible outcomes of the game please play the example in ANIMATION 1 that you see on the screen in front of you (if your screen is blank move your mouse). This animation is an example and not a suggestion about how to play the game. In this animation Player A chooses the assignments of the water in the container that are indicated by blinking arrows with A's meaning Player A's part and B's meaning Player B's part (here Player A's assigned part of the container is around 40% and Player B's around 60%). After that Player B decides to open the valve which results in water filling the container. As a result Player A and Player B get assigned 40% and 60% of the full container which translates into 4 Euro and Player B is assigned 60% of the full container that translates into 6 Euro. Please replay the animation as many times as you need.

Now please play the example in ANIMATION 2. Here Player A makes the same decision; however Player B decides to leave the valve closed, so the container stays empty. As a result Player A is assigned 40% of the empty container which translates into 0 Euro each.

This is the end of the description of the game.

After game ends we will ask you to fill out the questionnaire which will conclude the experiment.

Should you have any questions please raise your hand and one of us will assist you.

PLEASE PRESS ON THE GREY BACKGROUND BEHIND THE ANIMATION WINDOWS AND WAIT FOR THE EXPERIMENT TO BEGIN

D Instructions for UG with the Commission Frame

General Explanations for Participants

You are participating in a choice experiment that is financed by the Marie Curie grant. In the experiment you are guaranteed 5 Euro show up fee plus you can earn additional money with the decisions you make. Your earnings may also depend on the decisions of other participants and random events. The exact way your earnings are calculated is explained in this document and during the experiment. It is, therefore, very important that you carefully read the following explanations. At the end of the experiment you will be instantly and confidentially paid in cash all the money you have earned.

During the experiment you are not allowed to communicate. If you have any questions please raise your hand. An experimenter will come to answer your questions.

AT THIS POINT, PLEASE DO NOT PRESS ANYTHING ON YOUR COMPUTER AND KEEP READING THE INSTRUCTIONS.

Information on the Exact Procedure of the Experiment

The experiment consists of a game that you play with one other person in this room and a questionnaire.

Description of the Game

During the game you are randomly paired with another participant in this room. Neither during nor after the experiment will anybody be informed about who has been paired with whom.

You and the person you are paired with are going to play a game. Each player has a unique role in the game: Player A and Player B. So if you are assigned the role of Player A, the other person will play as Player B and vice versa.

The game involves a container which can contain different amounts of water. The decisions that Player A and Player B make influence how much water will be in the container. In the end of the game some amount of water in the container will be assigned to Player A and some to Player B. The amount of water assigned to each player at the end of the game depends on the decisions made by both players during the game.

The amount of money you earn in the experiment is proportional to the amount of water you are assigned in the end of the game. The maximum amount you can earn is 10 Euro which corresponds to the full container of water if all of it is assigned to you. If only some portion of the water in the full container is assigned to you, you will earn the amount of money proportional to that amount of water.

For example, if in the end of the game the container is full and you are assigned 25% of the water, your earnings will be $10 * .25 = 2.5$ Euro. More generally, if you are assigned p% of the water where $p = 0$ means that you are assigned none of it and $p = 100$ means you are assigned all the water, then your earnings in the experiment will be $10 * (p/100)$ Euro if the container of water is full and 0 Euro if the container of water is empty.

Rules of the Game

The decisions in the game are made one after another. First, Player A makes a decision and then Player B makes a decision. After this the game ends. Player A chooses which part of the container is assigned to him/her and which part of the container is assigned to Player B. After that Player B chooses how much water the container will contain. In particular, Player A decides on a percentage p% of the container which is assigned to him/her and correspondingly, the percentage $100 - p$ (the rest of the container) that is assigned to Player B. After this decision is made Player B can either open the valve or keep the valve closed. The position of the valve determines whether the container is full of water or is empty.

To better understand the possible outcomes of the game please play the example in ANIMATION 1 that you see on the screen in front of you (if your screen is blank move your mouse). This animation is an example and not a suggestion about how to play the game. In this animation Player A chooses the assignments of the water in the container that are indicated by blinking arrows with A's meaning Player A's part and B's meaning Player B's part (here Player A's assigned part of the container is around 40% and Player B's around 60%). After that Player B decides to open the valve which results in the water being drained. As a result Player A and Player B get assigned 40% and 60% of the empty container which translates into 0 Euro each. Please replay the animation as many times as you need.

Now please play the example in ANIMATION 2. Here Player A makes the same decision; however Player B decides to leave the valve closed, so the water stays in the container. As a result Player A is assigned 40% of the full container which translates into 4 Euro and Player B is assigned 60% of the full container that translates into 6 Euro.

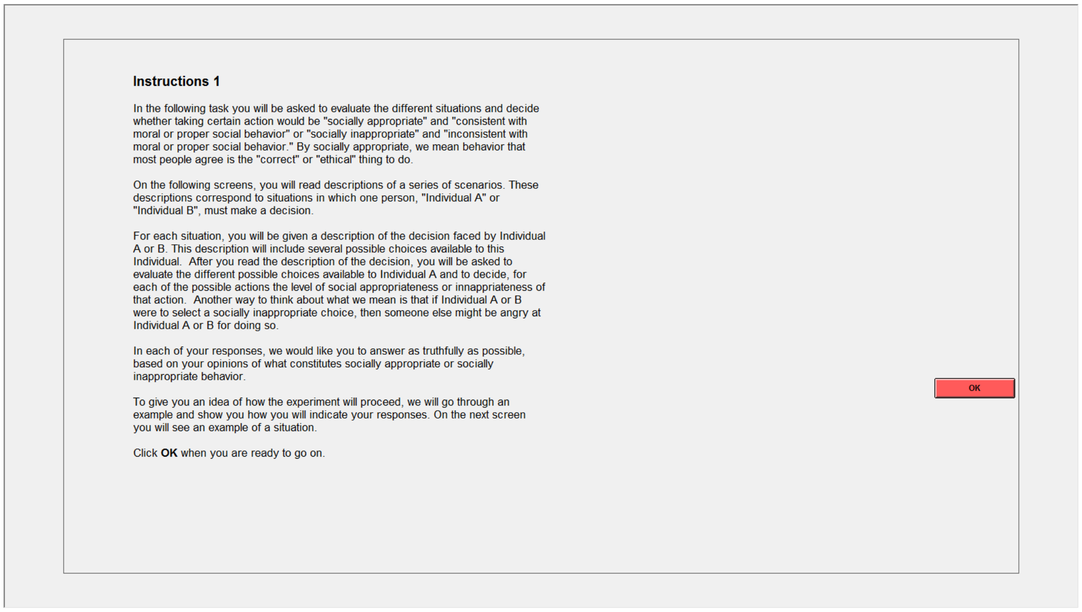
This is the end of the description of the game.

After game ends we will ask you to fill out the questionnaire which will conclude the experiment.

Should you have any questions please raise your hand and one of us will assist you.

PLEASE PRESS ON THE GREY BACKGROUND BEHIND THE ANIMATION WINDOWS AND WAIT FOR THE EXPERIMENT TO BEGIN

E Screenshots of Norm Elicitation Experiment



Instructions 1

In the following task you will be asked to evaluate the different situations and decide whether taking certain action would be "socially appropriate" and "consistent with moral or proper social behavior" or "socially inappropriate" and "inconsistent with moral or proper social behavior." By socially appropriate, we mean behavior that most people agree is the "correct" or "ethical" thing to do.

On the following screens, you will read descriptions of a series of scenarios. These descriptions correspond to situations in which one person, "Individual A" or "Individual B", must make a decision.

For each situation, you will be given a description of the decision faced by Individual A or B. This description will include several possible choices available to this Individual. After you read the description of the decision, you will be asked to evaluate the different possible choices available to Individual A and to decide, for each of the possible actions the level of social appropriateness or innappriateness of that action. Another way to think about what we mean is that if Individual A or B were to select a socially inappropriate choice, then someone else might be angry at Individual A or B for doing so.

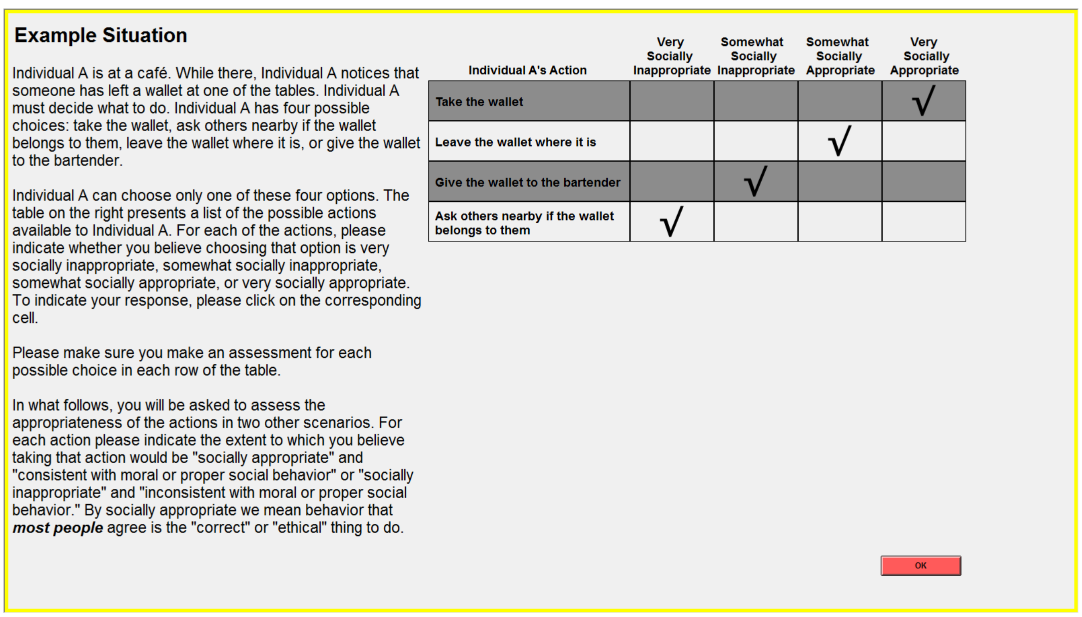
In each of your responses, we would like you to answer as truthfully as possible, based on your opinions of what constitutes socially appropriate or socially inappropriate behavior.

To give you an idea of how the experiment will proceed, we will go through an example and show you how you will indicate your responses. On the next screen you will see an example of a situation.

Click **OK** when you are ready to go on.

OK

Figure 10: **Screen 1.** General instructions.



Example Situation

Individual A is at a café. While there, Individual A notices that someone has left a wallet at one of the tables. Individual A must decide what to do. Individual A has four possible choices: take the wallet, ask others nearby if the wallet belongs to them, leave the wallet where it is, or give the wallet to the bartender.

Individual A can choose only one of these four options. The table on the right presents a list of the possible actions available to Individual A. For each of the actions, please indicate whether you believe choosing that option is very socially inappropriate, somewhat socially inappropriate, somewhat socially appropriate, or very socially appropriate. To indicate your response, please click on the corresponding cell.

Please make sure you make an assessment for each possible choice in each row of the table.

In what follows, you will be asked to assess the appropriateness of the actions in two other scenarios. For each action please indicate the extent to which you believe taking that action would be "socially appropriate" and "consistent with moral or proper social behavior" or "socially inappropriate" and "inconsistent with moral or proper social behavior." By socially appropriate we mean behavior that ***most people*** agree is the "correct" or "ethical" thing to do.

Individual A's Action	Very Socially Inappropriate	Somewhat Socially Inappropriate	Somewhat Socially Appropriate	Very Socially Appropriate
Take the wallet				√
Leave the wallet where it is			√	
Give the wallet to the bartender		√		
Ask others nearby if the wallet belongs to them	√			

OK

Figure 11: **Screen 2.** Example elicitation.

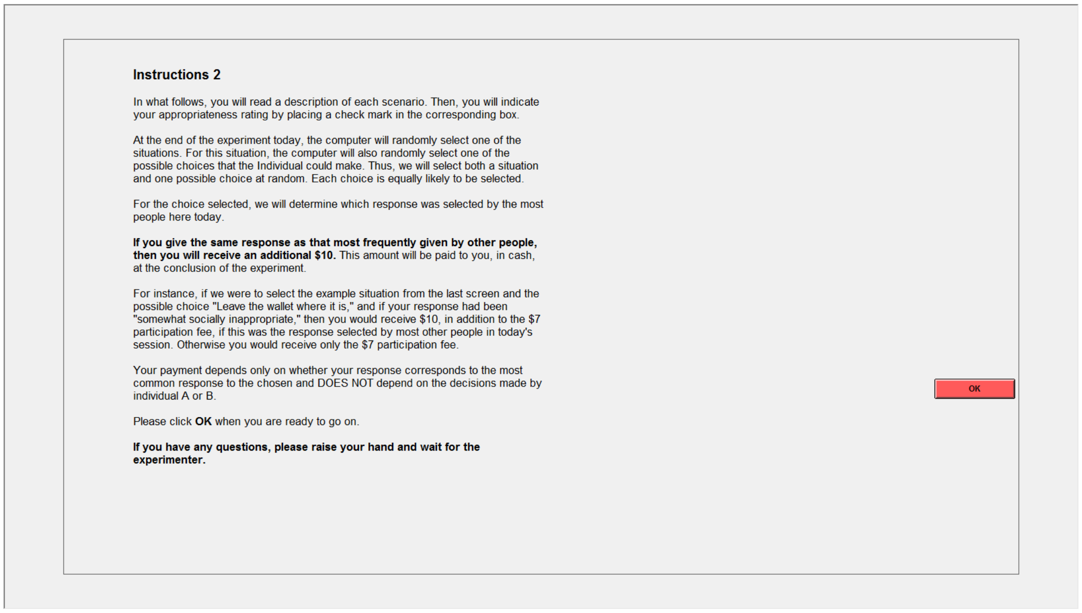


Figure 12: **Screen 3.** Instructions for the rest of the experiment.

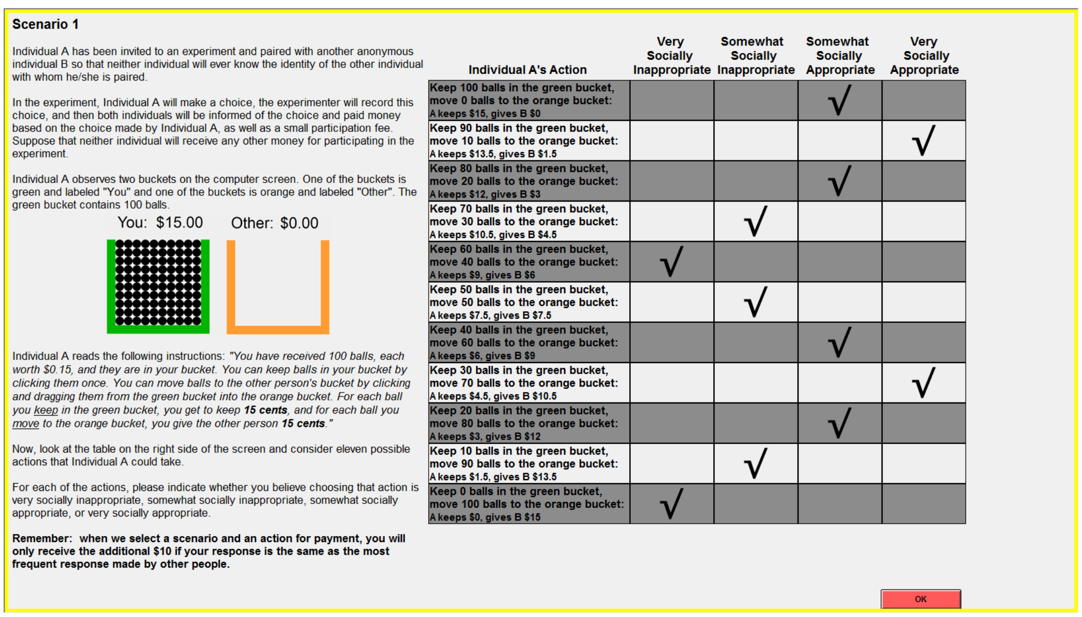


Figure 13: **Screen 4.1.** Give Dictator game.

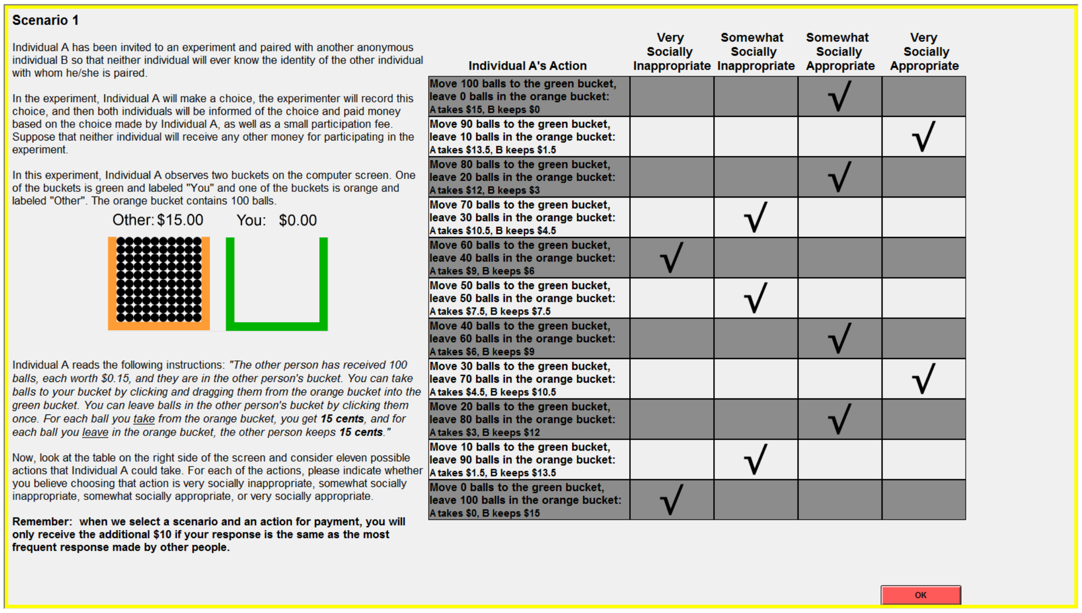


Figure 14: **Screen 4.2.** Take Dictator game.

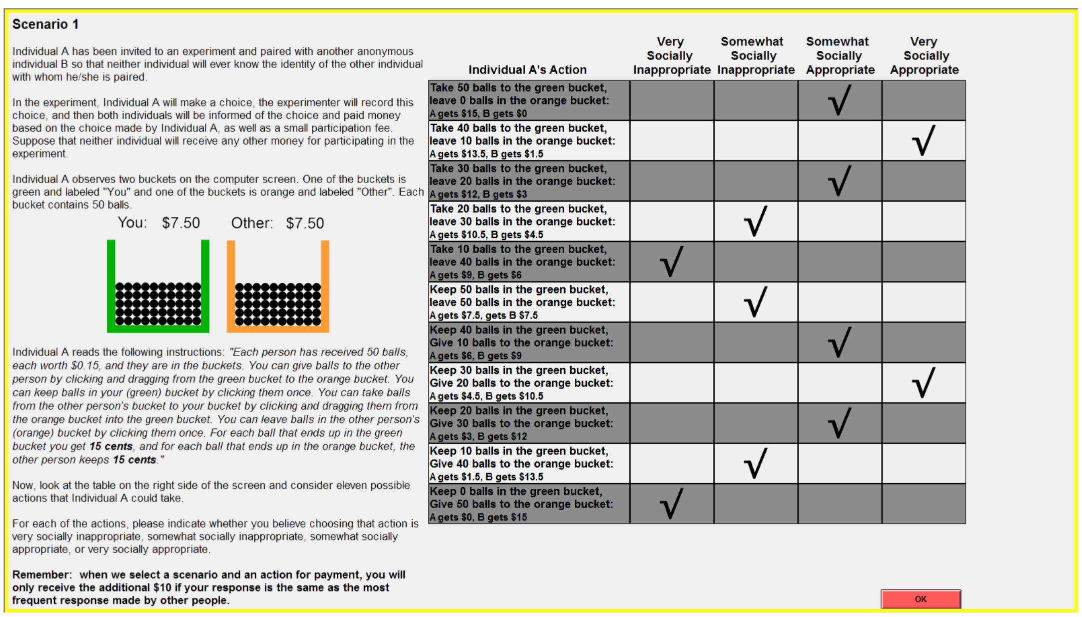


Figure 15: **Screen 4.3.** Neutral Dictator game.

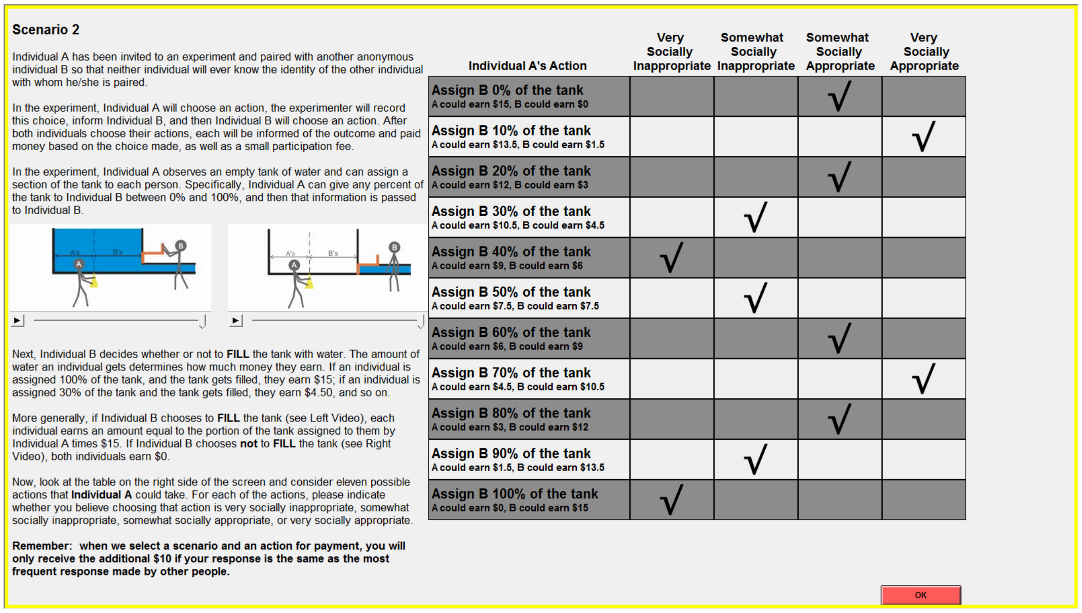


Figure 16: **Screen 5.1.** Norms for Actions of A, omission frame.

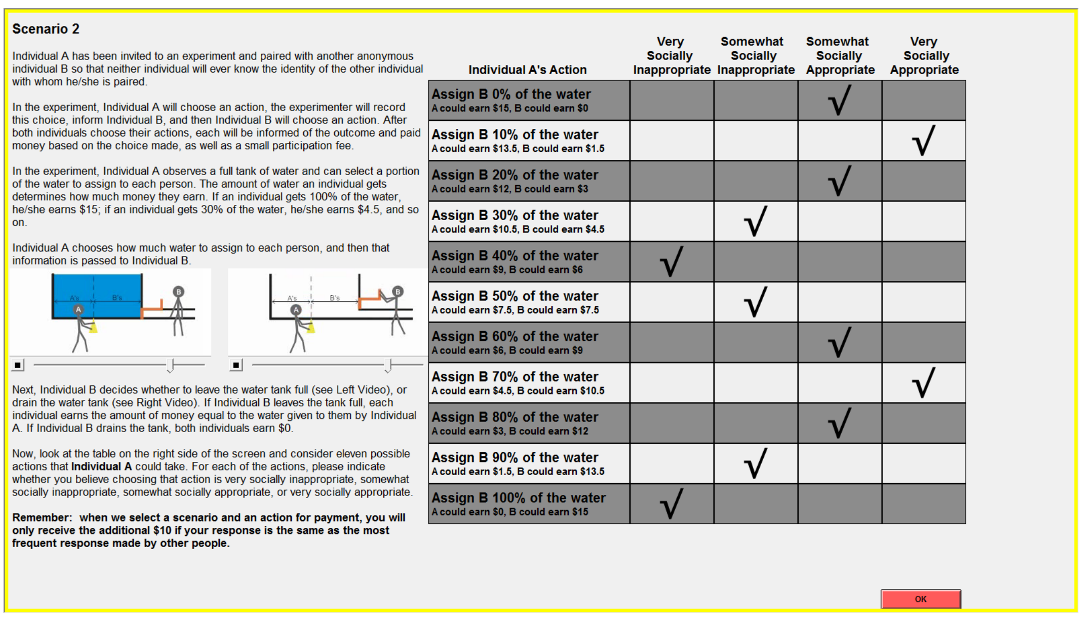
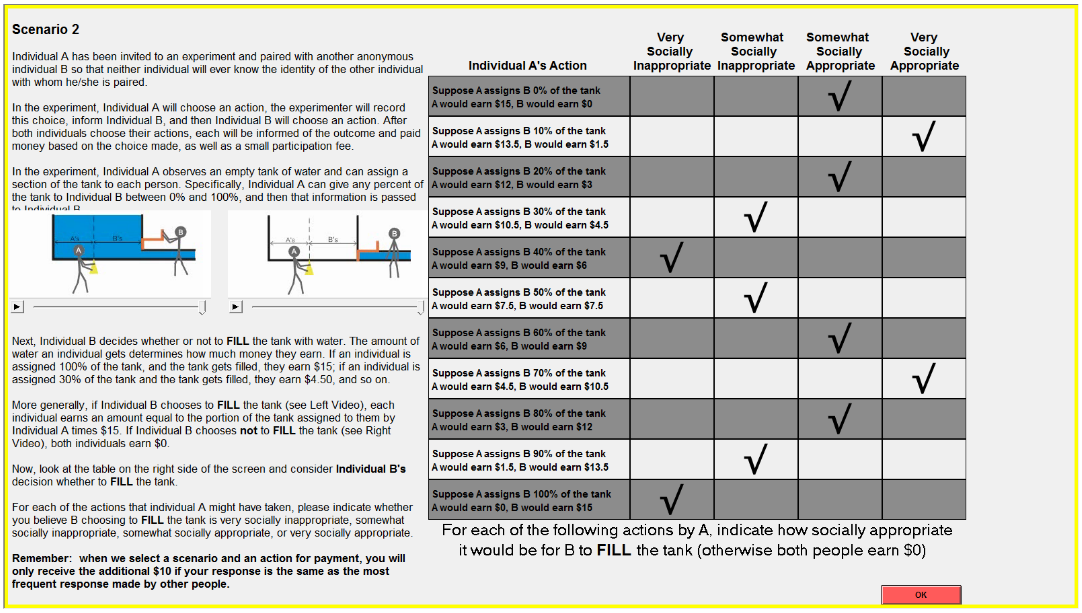


Figure 17: **Screen 5.2.** Norms for Actions of A, commission frame.



Scenario 2

Individual A has been invited to an experiment and paired with another anonymous individual B so that neither individual will ever know the identity of the other individual with whom he/she is paired.

In the experiment, Individual A will choose an action, the experimenter will record this choice, inform Individual B, and then Individual B will choose an action. After both individuals choose their actions, each will be informed of the outcome and paid money based on the choice made, as well as a small participation fee.

In the experiment, Individual A observes an empty tank of water and can assign a section of the tank to each person. Specifically, Individual A can give any percent of the tank to Individual B between 0% and 100%, and then that information is passed to Individual B.

Next, Individual B decides whether or not to **FILL** the tank with water. The amount of water an individual gets determines how much money they earn. If an individual is assigned 100% of the tank, and the tank gets filled, they earn $15; if an individual is assigned 30% of the tank and the tank gets filled, they earn $4.50, and so on.

More generally, if Individual B chooses to **FILL** the tank (see Left Video), each individual earns an amount equal to the portion of the tank assigned to them by Individual A times $15. If Individual B chooses **not** to **FILL** the tank (see Right Video), both individuals earn $0.

Now, look at the table on the right side of the screen and consider **Individual B's** decision whether to **FILL** the tank.

For each of the actions that individual A might have taken, please indicate whether you believe B choosing to **FILL** the tank is very socially inappropriate, somewhat socially inappropriate, somewhat socially appropriate, or very socially appropriate.

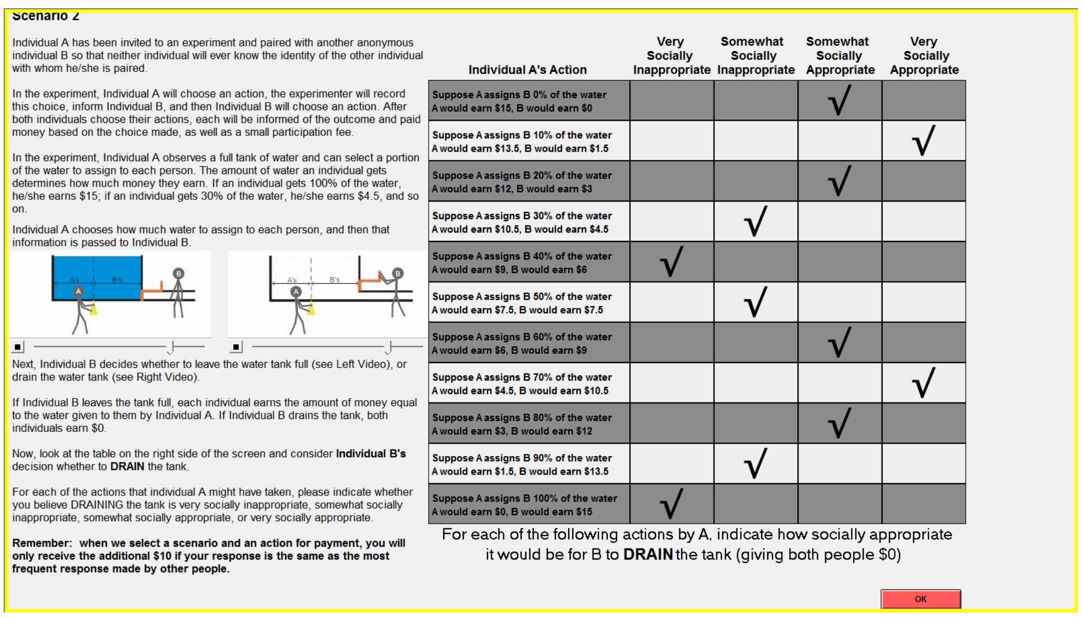
Remember: when we select a scenario and an action for payment, you will only receive the additional $10 if your response is the same as the most frequent response made by other people.

Individual A's Action	Very Socially Inappropriate	Somewhat Socially Inappropriate	Somewhat Socially Appropriate	Very Socially Appropriate
Suppose A assigns B 0% of the tank A would earn $15, B would earn $0			√	
Suppose A assigns B 10% of the tank A would earn $13.5, B would earn $1.5				√
Suppose A assigns B 20% of the tank A would earn $12, B would earn $3			√	
Suppose A assigns B 30% of the tank A would earn $10.5, B would earn $4.5		√		
Suppose A assigns B 40% of the tank A would earn $9, B would earn $6	√			
Suppose A assigns B 50% of the tank A would earn $7.5, B would earn $7.5		√		
Suppose A assigns B 60% of the tank A would earn $6, B would earn $9			√	
Suppose A assigns B 70% of the tank A would earn $4.5, B would earn $10.5				√
Suppose A assigns B 80% of the tank A would earn $3, B would earn $12			√	
Suppose A assigns B 90% of the tank A would earn $1.5, B would earn $13.5		√		
Suppose A assigns B 100% of the tank A would earn $0, B would earn $15	√			

For each of the following actions by A, indicate how socially appropriate it would be for B to **FILL** the tank (otherwise both people earn $0)

OK

Figure 18: **Screen 5.3.** Norms for Actions of B, omission frame.



Scenario 2

Individual A has been invited to an experiment and paired with another anonymous individual B so that neither individual will ever know the identity of the other individual with whom he/she is paired.

In the experiment, Individual A will choose an action, the experimenter will record this choice, inform Individual B, and then Individual B will choose an action. After both individuals choose their actions, each will be informed of the outcome and paid money based on the choice made, as well as a small participation fee.

In the experiment, Individual A observes a full tank of water and can select a portion of the water to assign to each person. The amount of water an individual gets determines how much money they earn. If an individual gets 100% of the water, he/she earns $15; if an individual gets 30% of the water, he/she earns $4.5, and so on.

Individual A chooses how much water to assign to each person, and then that information is passed to Individual B.

Next, Individual B decides whether to leave the water tank full (see Left Video), or drain the water tank (see Right Video).

If Individual B leaves the tank full, each individual earns the amount of money equal to the water given to them by Individual A. If Individual B drains the tank, both individuals earn $0.

Now, look at the table on the right side of the screen and consider **Individual B's** decision whether to **DRAIN** the tank.

For each of the actions that individual A might have taken, please indicate whether you believe DRAINING the tank is very socially inappropriate, somewhat socially inappropriate, somewhat socially appropriate, or very socially appropriate.

Remember: when we select a scenario and an action for payment, you will only receive the additional $10 if your response is the same as the most frequent response made by other people.

Individual A's Action	Very Socially Inappropriate	Somewhat Socially Inappropriate	Somewhat Socially Appropriate	Very Socially Appropriate
Suppose A assigns B 0% of the water A would earn $15, B would earn $0			√	
Suppose A assigns B 10% of the water A would earn $13.5, B would earn $1.5				√
Suppose A assigns B 20% of the water A would earn $12, B would earn $3			√	
Suppose A assigns B 30% of the water A would earn $10.5, B would earn $4.5		√		
Suppose A assigns B 40% of the water A would earn $9, B would earn $6	√			
Suppose A assigns B 50% of the water A would earn $7.5, B would earn $7.5		√		
Suppose A assigns B 60% of the water A would earn $6, B would earn $9			√	
Suppose A assigns B 70% of the water A would earn $4.5, B would earn $10.5				√
Suppose A assigns B 80% of the water A would earn $3, B would earn $12			√	
Suppose A assigns B 90% of the water A would earn $1.5, B would earn $13.5		√		
Suppose A assigns B 100% of the water A would earn $0, B would earn $15	√			

For each of the following actions by A, indicate how socially appropriate it would be for B to **DRAIN** the tank (giving both people $0)

OK

Figure 19: **Screen 5.4.** Norms for Actions of B, commission frame.

F Post-Experiment Questionnaire (UG Treatments)

1. On a scale from 1 to 7, do you feel that your game with Player B was more cooperative or competitive? (with 1 being totally cooperative and 7 being totally competitive)
2. Player A assigned the percent of the container to each player. Player B could < comomission-frame="open the valve and drain the container"; omission-frame="keep the valve closed and leave the container empty" > if he/she was unsatisfied with the assignment of Player A. Assuming both players wanted more water for themselves, on a scale from 1 to 7, which player had the power to get more for themself (where 4 is equal power))
3. Although initially the water belonged to the experimenter, you may feel that either Player A or B was more entitled to the water. On a scale of 1 to 7, please rate who was more enititled (4 is equally entitled)
4. What do you think the minimum amount you could assign to player B and still have player B < comomission-frame="leave the valve closed and keep the container full"; omission-frame="open the valve and fill the container" >? For example, type 0 if you believe player B would < comomission-frame="leave the valve closed"; omission-frame="open the valve" > for any amount, 60 if player B would < comomission-frame="leave the valve closed"; omission-frame="open the valve" > for assignments 60% and above, etc. (enter 0-100)
5. Suppose player B was able to communicate to you before you assigned parts of the container. If player B threatened to < comomission-frame="open the valve and drain the container"; omission-frame="keep the valve closed and leave the container empty" >, what is the most player B could successfully demand you assign him/her? (enter 0-100)
6. What do you think is the most common percent of the container that A players assign to B players? (enter 0-100)
7. For B players, what do you think is the most common minimum percent assigned to them so that they would still < comomission-frame="leave the valve closed and keep the container full"; omission-frame="open the valve and fill the container" >? (enter 0-100)
8. On a scale from 1 to 7, do you feel that your game with Player B was more cooperative or competitive? (with 1 being totally cooperative and 7 being totally competitive)
9. Player A assigned the percent of the container to each player. Player B could < comomission-frame="open the valve and drain the container"; omission-frame="keep the valve closed and leave the container empty" > if he/she was unsatisfied with the assignment of Player A. Assuming both players wanted more water for themselves, on a scale from 1 to 7, which player had the power to get more for themself (where 4 is equal power))
10. Although initially the water belonged to the experimenter, you may feel that either Player A or B was more entitled to the water. On a scale of 1 to 7, please rate who was more enititled (4 is equally entitled)
11. What is the minimum amount player A could assign to you so that you would < comomission-frame="leave the valve closed and keep the container full"; omission-frame="open the valve and fill the container" >? For example, type 0 if you would < comomission-frame="leave the valve closed"; omission-frame="open the valve" > for any amount, 60 if you would < comomission-frame="leave the valve closed"; omission-frame="open the valve" > for assignments 60% and above, etc. (enter 0-100)
12. What percent of the container did you expect player A to assign to you? (enter 0-100)
13. What do you think is the most common percent of the container that A players assign to B players? (enter 0-100)
14. For B players, what do you think is the most common minimum percent assigned to them so that they would still <TreatmentTypeText: comomission-frame="leave the valve closed and keep the container full"; omission-frame="open the valve and fill the container">? (enter 0-100)

G Moral Foundations Questionnaire

Part 1. When you decide whether something is right or wrong, to what extent are the following considerations relevant to your thinking? Please rate each statement using this scale:

0	1	2	3	4	5
not at all relevant	not very relevant	slightly relevant	somewhat relevant	very relevant	extremely relevant

1. Whether or not someone suffered emotionally
2. Whether or not some people were treated differently than others
3. Whether or not someone's action showed love for his or her country
4. Whether or not someone showed a lack of respect for authority
5. Whether or not someone violated standards of purity and decency
6. Whether or not someone was good at math
7. Whether or not someone cared for someone weak or vulnerable
8. Whether or not someone acted unfairly
9. Whether or not someone did something to betray his or her group
10. Whether or not someone conformed to the traditions of society
11. Whether or not someone did something disgusting
12. Whether or not someone was cruel
13. Whether or not someone was denied his or her rights
14. Whether or not someone showed a lack of loyalty
15. Whether or not an action caused chaos or disorder
16. Whether or not someone acted in a way that God would approve of

Part 2. Please read the following sentences and indicate your agreement or disagreement:

0	1	2	3	4	5
Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree

1. Compassion for those who are suffering is the most crucial virtue.
2. When the government makes laws, the number one principle should be ensuring that everyone is treated fairly.
3. I am proud of my countrys history.
4. Respect for authority is something all children need to learn.
5. People should not do things that are disgusting, even if no one is harmed.
6. It is better to do good than to do bad.
7. One of the worst things a person could do is hurt a defenseless animal.
8. Justice is the most important requirement for a society.
9. People should be loyal to their family members, even when they have done something wrong.
10. Men and women each have different roles to play in society.
11. I would call some acts wrong on the grounds that they are unnatural.
12. It can never be right to kill a human being.
13. I think its morally wrong that rich children inherit a lot of money while poor children inherit nothing.
14. It is more important to be a team player than to express oneself.
15. If I were a soldier and disagreed with my commanding officers orders, I would obey anyway because that is my duty.
16. Chastity is an important and valuable virtue.

*The Moral Foundations Questionnaire (full version, July 2008) by Jesse Graham, Jonathan Haidt, and Brian Nosek. For more information about Moral Foundations Theory and scoring this form, see: www.MoralFoundations.org

Moral Foundations Questionnaire: 30-Item Full Version Item Key, July 2008

–Below are the items that compose the MFQ30. Variable names are IN CAPS
–Besides the 30 test items there are 2 catch items, MATH and GOOD
–For more information about the theory, or to print out a version of this scale formatted for participants, or to learn about scoring this scale, please see: www.moralfoundations.org

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PART 1 ITEMS (responded to using the following response options: not at all relevant, not very relevant, slightly relevant, somewhat relevant, very relevant, extremely relevant)

MATH - Whether or not someone was good at math [This item is not scored; it is included both to force people to use the bottom end of the scale, and to catch and cut participants who respond with last 3 response options]

Harm:
EMOTIONALLY - Whether or not someone suffered emotionally
WEAK - Whether or not someone cared for someone weak or vulnerable
CRUEL - Whether or not someone was cruel
Fairness:
TREATED - Whether or not some people were treated differently than others
UNFAIRLY - Whether or not someone acted unfairly
RIGHTS - Whether or not someone was denied his or her rights
Ingroup:
LOVECOUNTRY - Whether someones action showed love for his or her country
BETRAY - Whether or not someone did something to betray his or her group
LOYALTY - Whether or not someone showed a lack of loyalty
Authority:
RESPECT - Whether or not someone showed a lack of respect for authority
TRADITIONS - Whether or not someone conformed to the traditions of society
CHAOS - Whether or not an action caused chaos or disorder
Purity:
DECENCY - Whether or not someone violated standards of purity and decency
DISGUSTING - Whether or not someone did something disgusting
GOD - Whether or not someone acted in a way that God would approve of

PART 2 ITEMS (responded to using the following response options: strongly disagree, moderately disagree, slightly disagree, slightly agree, moderately agree, strongly agree)

GOOD It is better to do good than to do bad. [Not scored, included to force use of top of the scale, and to catch and cut people who respond with first 3 response options]

Harm:
COMPASSION - Compassion for those who are suffering is the most crucial virtue.
ANIMAL - One of the worst things a person could do is hurt a defenseless animal.
KILL - It can never be right to kill a human being.
Fairness:
FAIRLY - When the government makes laws, the number one principle should be ensuring that everyone is treated fairly.
JUSTICE Justice is the most important requirement for a society.
RICH - I think its morally wrong that rich children inherit a lot of money while poor children inherit nothing.
Ingroup:
HISTORY - I am proud of my countrys history.
FAMILY - People should be loyal to their family members, even when they have done something wrong.
TEAM - It is more important to be a team player than to express oneself.
Authority:
KIDRESPECT - Respect for authority is something all children need to learn.
SEXROLES - Men and women each have different roles to play in society.
SOLDIER - If I were a soldier and disagreed with my commanding officers orders, I would obey anyway because that is my duty.
Purity:
HARMLESSDG - People should not do things that are disgusting, even if no one is harmed.
UNNATURAL - I would call some acts wrong on the grounds that they are unnatural.
CHASTITY - Chastity is an important and valuable virtue.