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Subjects in the Lab, Activists in the Field: Public Goods and Punishment

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Abstract

We compare standard (laboratory) and non-standard (field) subject pool behavior in an extensive form public goods game with random punishment. Our experimental investigation is motivated by real-world 'Activists' encouraging public goods provision by firms; an activity known as corporate social responsibility. We find that relative to laboratory subjects, activists in Mumbai are more willing to settle at the Nash equilibrium of the game (which entails increased provision of public goods) and are more willing to punish non-cooperative firm behavior even if such punishments hurt their own payoffs.

Keywords: Public goods, punishment, non-standard subject pool

JEL Codes: C92, C93, D64

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1. Introduction

In socio-economic contexts, self-proclaimed 'Activists' encourage greater involvement of private sector actors in public sector processes and outcomes. For example, Activists may encourage legal reforms via private sector lobbying, alternate systems of governance drawn from the corporate sector and myriad related rules that govern an implicit social contract. In economic situations, Activists push for the private provision of public goods beyond what governments can or do provide. In low-income countries, Activists lobby for increased Corporate Social Responsibility (CSR). For example, India has a law requiring corporations to spend 2% of revenue on CSR activities; even if the law is followed uniformly in the private sector, Activists may try to have firms spend more than that mandated or spent voluntarily by firms.[1,2]

We focus on a particular tension between Activists and Firms with respect to the private provision of public goods by firms that may manifest itself in CSR contexts. We explore the topic with a unique experimental design, implemented on a standard subject pool as well as, critically, real-world Activists recruited via the Blue Ribbon Movement in Mumbai, India.[3] Our design and results complement that of Bartling et al (2015) and Charness et al (2016). Bartling et al (2015) study socially responsible behavior in experimental markets and investigate tastes for socially responsible goods production and consumption. Charness et al (2016) also take an experimental

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[1] Kitzmueller and Shimshack (2012) define CSR as any voluntary social activity manifesting itself in some observable behavior or output by firms that exceeds levels set by legal regulation.

[2] Section 135 of India's Companies Act of 2013 requires on a "comply-or-explain" basis that firms satisfying specific size/profit thresholds spend a minimum of 2% of their net profit on CSR. The import of such laws boil down to mandatory public goods provision by firms; possibly bolstered by NGO activists who attempt to have firms increase such provision beyond the mandated amount.

[3] This organization is a social movement/youth empowerment oriented network; detailed information is available at http://brmworld.org/.

approach to CSR albeit in a very different experimental (gift exchange) labor markets context with a view towards understanding worker behavior when experimental task remuneration is in the form of charitable donations.[4] These two experimental designs investigate CSR from the perspective of product and labor markets; our experimental environment focuses on a strategic aspect of CSR with a comparison between a standard undergraduate subject pool and real world 'Activists' as subjects.

Baron's (2001) model of CSR activities motivates our experimental design. It assumes a firm producing a differentiated product with linear inverse demand and constant marginal costs. Such a firm has the choice to expend additional resources out of profits on CSR activities. The next step is key for Baron's (2001) model: the assumption that consumers can 'reward' a firm for its CSR behavior by purchasing more of its product than if the firm did not engage in CSR activities. Hence, this aspect of the model is similar to models of advertising with a critical difference: when a firm engages in CSR it improves the social environment in which consumers live by providing a public good or mitigating a negative externality. This avoids the assumption that the firm engages in CSR for purely altruistic reasons and so the model limits itself to the strategic aspects of CSR (see Benabou and Tirole (2010)). Next, the model assumes the existence of an Activist who can try to force the firm to increase its' level of CSR beyond the profit maximizing amount using 'boycotts'. This sets up an extensive form game between the firm and the activist and an

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[4] Benabou and Tirole (2010) identify three CSR channels: a long-term perspective on profitability adopted by firms who engage in CSR versus those who do not; that firms engage in CSR due to shareholder concerns and that firms engage in CSR due to the concerns of corporate insiders and managers.

endogenous probability that an activist will boycott a firm. Baron (2001) then uses standard equilibrium concepts to sort through the predictions on offer for activist/firm behavior.

Based on the above analyses we conjecture that beginning from a point where a firm is already providing some level of a public good, the Activist employs the threat of a boycott to have the firm provide even more of the public good.[5] However, this boycott (or 'punishment') outcome is random in that there is a positive probability that it will not succeed. Thus the specific context of CSR suggests a more general context: starting from the point where there is public goods provision, can those who tend to contribute more to public goods try to get others to increase their contribution (in an environment best described as an extensive form (i.e. 'Stage') game as in Baron (2001)) using the threat of random punishment? This is the tension we instantiate in our design described below, which employs both a standard undergraduate subject pool real-world Activists who constitute a unique non-standard subject pool.

We find that contributions fall as the Stage game progresses and that punishment is effective. In other words, the Activists we observe in the field willingly settle for an increase in contributions in the VCM. However, when Firms choose not to cooperate, the Activists willingly punish the Firms despite the fact that it hurts themselves. We find evidence that inequity aversion explains observed behavior: the bigger the difference between in public good contributions between Activists and Firms, the more likely the Activist is to punish the Firm for not providing even more contributions to the public good. We also find evidence that negative

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[5] Due to the nature of endogenous probabilities that determine equilibrium in Baron (2001), it is not possible to design an experiment that would exactly replicate the model. Additionally, given our focus on standard vs. non-standard subject pool behavior, we chose instead to experimentally instantiate a main tension of CSR.

reciprocity – Firms refusing to accede to Activists' demand for more Firm contributions to the public good – partially explains why Activists' sacrifice their own expected payoffs to punish the Firms. Finally, the higher the MPCR for both real world and lab subjects, the more likely they are to reach the punishment node.[6]

In Section 2 of this paper, we review literature relevant to the topic and to our design. We describe our design in Section 3, present results in Section 4 and draw conclusions Section 5.

2. Literature Review

We begin with a review of the management literature that provides motivation for our analysis of economic tensions underlying CSR activities. Activists play a key role in the provision of public goods by firms and when activists pressure less, firms tend to have a lower output of CSR (Bansal et al (2015)).[7] Evidence-based activism is more effective in fostering an environment where firms can conduct more CSR activities (Briscoe et al (2015)). Further, when activists attempt to change firm behavior, the firms become more open to subsequent public pressure. This implies that firms become more accustomed, as activists' operations proceed, and that a virtuous cycle of increased CSR takes place once a certain amount of activists are involved.

When firms compete for socially responsible customers, they often produce branded public goods (Bagnoli and Watts (2003)). Branded public goods are products or services that promote the improvement of the environment or society while simultaneously being identifiable

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[6] Both the established laboratory and field pools understand the environment in so far as they react in the standard theoretically predicted direction as the MPCR of the VCM is varied.

[7] A differentiation of activists' operations exists, but scholars emphasize that activists' operations may not constitute institutional change (den Hond and de Bakker, 2007). We do not expect fundamental changes in the structure of our experiment to result from activists. Instead, we find consequences of the actions of players assigned the Activist role to determine payoffs for all players.

with the operations of a particular firm. Again, incentives to follow the goading of activists are generally positive for CSR output of firms.

An emerging experimental literature has also explored issues related to CSR, e.g. Charness et al (2016). In that analysis, workers' effort in a gift-exchange game correlates with the giver's CSR contributions. Workers' effort was higher when the giver and receiver's preferred charities matched and CSR levels were high. Nevertheless, firms continue to promote CSR at similar levels during subsequent rounds (Koppel and Regner, 2014). Bartling et al (2015) study socially responsible behavior in laboratory product (vs labor) markets. They find a preference among consumers and firms for avoiding negative social impacts and a willingness to pay a premium for socially responsible goods. They conduct their study in Switzerland and China and find a difference in that production that creates negative externalities in their design is more prevalent in Chinese laboratory markets. In addition, information about CSR initiatives published through internal sources has higher impact on consumer attributions than negative sources (Groza et al (2011)). We further explore an activist's role in influencing a firm to conduct CSR and analyze inequity aversion and negative reciprocity as mechanisms for increasing CSR promoting activities. The cooperation that we observe in the game can be due to inequity aversion (Fischbacher et al (2001); Fischbacher and Gachter, 2010) or negative reciprocity (Charness and Rabin, 2002). Inequity aversion has been found to appropriately explain behavior in public good contexts (Nikiforakis et al (2014); Bolle et al (2011)).

We think of our experimental design, reflecting strategic CSR tensions, as a public good in a game theoretic setting: the well-known Voluntary Contribution Mechanism (VCM).[8] Thus, we find it pertinent to discuss the experimental literature associated with sequential-move public good games, random punishment in public goods games and passive players in public goods games. These three topics relate directly to our design, discussed in detail in Section 3 below.

Scholars observe a difference between sequential and simultaneous contributions to a public good. Particularly, they find lower contributions in sequential games (Gächter et al (2010)). In our design, the initial contribution to the public good is simultaneous but the subsequent contributions are sequential. It can also be said that the second contribution follows the initial one. That said, we can expect lower contributions in our "Stage" game, or part three of the experiment. Our findings follow the literature in this sense because we find that contributions fall as the "Stage" game progresses.

In contrast to our findings, the literature often points out the ineffectiveness of punishment. For example, random punishment- has been found to have no impact, or even a negative impact, on the behavior of subjects with respect to imposing sanctions (Walker and Halloran, 2004; Houser et al (2008)). This is encouraging for our design because it implies that subjects will make decisions with respect to their willingness to impose sanctions on the other player due to their commitment to increasing public goods contributions and not due to the nature of the punishment as designed.[9]

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[8] In a VCM, individuals i with an endowment of points (E_i) must decide how many they wish to contribute toward the provision of a hypothetical public good vs. own contributions (C_i). The payoff for individual i is given by $E_i - C_i + MPCR \times Total\ Contributions$.

[9] See also Normann and Rau (2015).

In our design, we have two active and two passive players. The research on passive players in VCM contexts again finds that passive players increase contributions to a public good (Blanco et al (2018); Cox and Stoddard (2018)). This ought to be approached with caution, however: given large externalities, active players may be indifferent to the fate of passive players (Bland and Nikiforakis (2015)). Nevertheless, in our design, public goods contributions by activists may be encouraged by the fact that contributions assist passive players.

3. Experimental Design

3.1 Laboratory Implementation

Our laboratory design with a standard undergraduate subject pool consists of three distinct parts that are revealed sequentially.[10] Subjects first perform individual real effort tasks (RET) which consist of typing character strings, to earn an endowment of points for subsequent parts of the experiment. These tasks are designed so that subjects have a sense of an earned endowment leading to increased engagement with the subsequent experimental environment. Moreover, these tasks are designed so that it is rare that subjects do not earn the same endowment. In so doing we provide the best possible chance for subjects to not only feel engaged but start off subsequent parts of the experiment with a uniform distribution of endowments.[11] Having earned their endowments, subjects are then placed randomly in groups of four by our oTree (Chen et al (2016)) software for the second part of the experiment.[12]

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[10] All standard subject pool sessions were conducted at the Social Science Experimental Laboratory (SSEL) at New York University Abu Dhabi (NYUAD).
[11] Subjects do not know that the tasks have been designed to have no variation in endowments; as a result, in this part of our design we are looking for subjects to have perfect real effort task scores as a measure of design success.
[12] Screenshots of the software are in an Appendix.

In the second part of the experiment, subjects play a VCM with their earned endowment of points in groups of four. Subjects see the endowments of the other three people in their group before making their allocation decisions. The MPCR is either Low (0.30) or High (0.75), depending on the session-level treatment. Subjects play the VCM for ten rounds with random re-matching of groups between each round. Having completed the ten rounds our software computes each subject's average percent contribution to the public good. Based on their average percent contribution to the public good, subjects are divided into the top 50% contributors and the bottom 50% contributors based on their contribution rates. Those in the top 50% are denoted as "A" (or Activist) and those in the bottom 50% are denoted as "F" (or Firm). The top contributor is matched with the lowest contributor, the second highest contributor is matched with the second lowest contributor, and this pattern continues until the final pair is the lowest of the top 50% and the highest of the bottom 50% of the contributors. Subjects are then told their role (A or F), but not how the role was assigned. In this part of our design, we expect that as rounds progress, group contributions decrease and that groups with higher MPCR will have higher group contributions. We note that the choice of going to the random punishment node in the stage game below is more costly in terms of expected payoffs with a higher MPCR.[13]

Our matching method is deliberate. An alternative would be to match an 'A' player randomly with an 'F' player. There are several possible conjectures about what might drive the behavior of an 'A' player (pure altruism, inequity aversion, reciprocity etc.). We wanted to give the best possible chance that some form of pro-social preferences would drive behavior so that

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[13] In the VCM and subsequent stage game parts of the design, subjects were quizzed on their understanding of their task.

any deviation from classical own-profit maximizing theory would be clearly identified in the stage game part of the experiment described below, hence our choice of matching technology described above.

In the third and final part of the experiment, each 'A' subject is matched with an 'F' subject and each pair plays the extensive form game, described in Figure 1, ten times using the strategy method; Table 1 provides the payoffs associated with each terminal node.

With this game tree and payoffs table in hand, we now describe how the tree unfolds. The Activist (player 'A') first chooses between actions A1 or A2. If the Activist selects A1, the game ends; this represents the Activist accepting that the Firm maintains its original contribution to the public good. Node A1 represents the pure strategy Nash Equilibrium of the game. In other words, the status quo, according to the payoff structure, is the dominant strategy for both players. The payoffs associated with choosing A1 are the payoffs of a VCM game in which Player A contributes 15 to the public good and keeps 5, Player F contributes 5 to the public good and keeps 15, and two other 'passive players' each contribute 20 to the public good. With an MPCR of 0.30, A earns 23, F earns 33, and each passive player earns 18. With an MPCR of 0.75, A earns 50, F earns 60, and each passive player earns 45. We present the various payoffs in Table 1 and reiterate that while the second part of the experiment allows us to classify subjects, this third part of the experiment is focused on the stage game illustrated in Figure 1.

Conversely, the selection of A2 by the Activist represents a demand for a higher contribution from the Firm. If the Activist selects A2 the game continues, and the Firm selects F1 or F2. If the Firm selects F1 the game ends; this outcome represents the Firm accepting the

Activist's demand, and increasing its public good contribution by three times, from 5 to 15. The payoff for the Activist if the Firm selects F1 is the payoff associated with the Firm's additional contribution (as demanded by the Activist). Thus, the payoff for the Activist is higher in F1 than in A1 and the payoff for the Firm is lower in F1 than in A1 (see Table 1).

The selection of F2 by the firm represents the Firm rejecting the Activist's demand for higher contributions from the Firm. If the Firm selects F2, the game continues and the Activist selects A3 or A4. If the activist selects A3, the game ends; this represents the Activist accepting that the Firm maintains its original contribution. The payoff for A3 is equivalent to the payoff from A1 for both the Activist and the Firm, and is thus the sub-game perfect Nash Equilibrium of the game.

The selection of A4 by the Activist represents the Activist demanding a higher contribution from the Firm. If the Activist selects A4, the game goes into the 'boycott', or punishment, stage.[14] The subjects do not know that this stage represents a boycott per se since we wished to avoid emotive labels. The results of the next stage, illustrated in Figure 1, are determined by Nature.

If Nature selects N1 the boycott succeeds (with probability $p = 0.75$), the Firm has to accept the Activist's demand. The payoff for the Firm is the same as in F1. If Nature selects N2 the boycott fails (with probability $1-p$), the Firm has to reject the Activist's demand. Due to the costs associated with holding a boycott, the Activist's contribution is that of F1 reduced by a fixed cost (of 10 points). Thus, the payoff for the Activist is the same as in A1 (and A3) reduced by a

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[14] The CSR analog behind this is that once the Firm rejects the Activist's demand, the Activist attempts a boycott against the Firm's products.

fixed cost associated with holding a boycott. The payoff for the Firm associated with N2 is the same as in A1 (and A3). Finally, when players are passive agents in a dyadic stage game interaction, they are paid accordingly (see Table 1). We note that since we employ the strategy method, subjects earn both as passive players and as active players.

3.2 Field Implementation

Our laboratory-in-the-field design with real-world activists in Mumbai, India was a modified version of the design described in section 3.1. We first describe our recruitment of this non-standard subject pool and then describe how the design implemented with that pool differed from that implemented with the standard pool at the SSEL at NYUAD.

We contacted the Blue Ribbon Movement (BRM) in Mumbai, India; an NGO that attempts to "harness the power of collective action through an evolving ecosystem of projects aimed at personal growth and social transformation." In particular, they are "building a movement of individuals, projects, organizations, and networks that can create impactful social change and make the world a better place."

We requested and obtained access to the network of self-reported social movement activists that comprise this organization. This network then became the universe from which we drew samples for our lab-in-the-field work. Officials from the BRM helped us to get access to local computer labs and recruit subjects using NYUAD IRB approved methods. We conducted several sessions over three trips to Mumbai, India and conducted sessions in randomly selected

neighborhoods (some middle class areas and some slum areas) with neighborhood selection being driven by BRM's ability to book computer labs with at least 14 computers.[15]

The 84 field subjects had a median year of birth of 1997, and 32.14% were female. All subjects had a high school degree or more (36.90% had completed an undergraduate degree); they had a median household income of INR 47,597.20 and had worked with the Blue Ribbon Movement for an average of about ¾ of a year by volunteering on average for 2.70 hours a week. These statistics are conservative in that non-responses from a survey conducted at the end of field sessions are not included; the response rate was above 80%.[16]

With our field subjects, the main differences in design were as follows. First, 'Firms' (F) were represented by automated bots who contributed according to levels that were observed in the laboratory sessions.[17] Second, Field subjects who all played the role of 'Activists' (A) in the design described above knew this fact about field implementation. This distinction is important in interpreting the results of the design implemented in the field, discussed next.

4. Results

We first report the results from laboratory sessions with the standard undergraduate subject pool; we then discuss results from lab-in-the-field implementation.

4.1 Standard Subject Pool Results

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[15] Some "computer labs" were no more than converted corrugated tin roof shacks that provided internet and computing access for local communities. Photographs of lab-in-the-field sites available in an Appendix.

[16] Some questions were raised by these 'Activist' subjects as to why survey questions were being asked, we assume that the 20% of non-responses are out of privacy concerns despite all assurances of confidentiality of survey responses.

[17] All code for the laboratory and field designs as well as data are available upon request.

We conducted seven sessions at the SSEL of NYUAD with 120 subjects in total. For the RET, 98.33% of subjects earned the maximum of 20 points. Since our measure of success at this stage of the design was a degenerate distribution of scores, given the maximum score was earned, we focus on results from the second and third parts of the experiment.

In the second part of the experiment, we first examine the amount subjects contributed to the group exchange in the VCM. Figure 2 below plots the individual and group exchange contributions by the main treatment variable (MPCR).

Figure 2 illustrates two facts. The first is that that as the MPCR rises, from the left panels to the right, contributions to the group exchange rise and those to the individual exchange fall. For example, in the top left panel group exchange contributions tend to be higher with a lower public good contribution than in the top right panel. Further, there is variation in group exchange contributions among subjects: some contribute the minimum, others the maximum with variation in between and of course a sizeable mass at the "fair" value of 50% to the group exchange and 50% to the individual exchange. Since the three parts of our design are revealed sequentially, and in this second part of the design our objective was to ensure that subjects were behaving as is already documented in the voluminous literature on VCM's, we see this confirmed in Figure 2. Subjects behave in the expected direction as incentives (MPCR) change and, as is usual, there is variation in subject behavior with mass at near zero ("Nash"), 50% ("fair") allocations and near 100% contributions ("Pareto").

The VCM was repeated 10 times in this the second part of our overall design. Figure 3 shows that contributions fell as rounds progressed, in line with previous research. While the

public good (group) contribution level is higher in the higher MPCR treatment, it fell as rounds progressed in both treatments.

Recall, our software program classified subjects to be A or F players according to their contribution to the Group Exchange in the VCM as described above. We now turn to the results from the third part of our design, the Stage Game. We begin by describing the terminal node choice made by dyads, shown in Figure 4 below. Note that theoretically the expected node choices do not change as a function of treatment (MPCR) and so we begin by first noting what part of the data come to rest at node A1, A3 or Nature.

In Figure 4, we see that while the majority of dyads do go to the Nash equilibrium, a large number of subjects chose the Nature node, implying that Activists 'punish' the Firms. In terms of the F1 node, it is interesting why any Firm would choose it. Perhaps they feel like this would be a fair division of the joint funds? We explore these questions using regressions below. Figure 5 visually confirms a certain temporal stability of node choices across rounds, but controlling for variation also involves examining the data across our treatment variable, MPCR. Figure 6 shows terminal node choices broken down by laboratory and field subjects. In the top left and right panels of Figure 6 we see that our standard subject pool shows some change in terminal node choice behavior across Low-High MPCR treatments (as do our real-world 'Activists' in the field).

Figure 6 suggests that as MPCR rises, dyads choose to settle at the A1 node of the stage game more often across rounds. This behavior is clearly at the expense of the A3 node for laboratory subjects. Recall from the design description that actions in the Stage game were elicited via the strategy method. For example, even if A1 was selected by the role A player, Role

F would still be asked what they would choose if A had chosen A2 previously. At the end of each round, the terminal node and payoffs were revealed to both players; and the next round began with the strategy method again. We illustrate these strategy method choices in Figure 6. Table 2 shows that regressing the VCM contribution rate (described in detail below), was correlated with the MPCR treatment in the laboratory (first two columns of Table 2).

While these figures suggest differences across the treatment variable, what else may explain the variation between node choices if it is not the main treatment instituted? In Figure 7 we examine whether inequality aversion explains the difference by plotting the distribution of these two-player-group exchange contribution differences for each terminal node that was selected. A large difference implies one player contributed a lot more to the public good relative to the other, while a small difference means the two players contributed at similar rates. The plot shows that F1 tended to be selected where public good contribution differences were the smallest within groups, while players that tended to reach the nature node show the highest differences in group exchange contributions.

Figure 7 raises the possibility that each of the node choices is a statistically significant function of the difference between group exchange contributions. We therefore regressed the percentage of the time a group (g) reached a particular terminal node (e.g. N_g for the percentage of time the Nature node was reached) on a constant, the dichotomous treatment variable ($MPCR_g$) and the difference between players average public good contribution rates in the VCM game in each group ($GEDIFF_g$).

The larger the estimated coefficient on $GEDIFF_g$ in any given regression, the stronger the effects of the group difference in determining whether groups reached a particular node. Table 3 provides regression results with columns corresponding to the different dependent variables (i.e. N_g, $F1_g$, $A1_g$ and $A3_g$). Table 3 shows that groups reach the A3 and Nature node much more often due to inequality aversion, as proxied by $GEDIFF_g$, and that all subjects are more likely to shy away from the A1 and A3 nodes and punish more (node N) in the high MPC treatment. It is perhaps unsurprising that higher MPCR makes it more likely that a group heads to the Nature node in the subsequent stage game (even though the three parts of the experiment were revealed to subjects sequentially so groups did not know they could punish beforehand in our between treatment design).

Finally, we control for the possibility of negative reciprocity influencing the behavior of our subjects. We do so by introducing another variable in the regression specification that accounts for the percent of the time that a Role F player selected F2 in rounds 2 through 10 ($NegRecip$). This represents negative reciprocity since we expect Role A players to select Nature due to negative reciprocity only when Role F players select F2, otherwise Role A player's selection of Nature is due to the perception that the Role F player's contribution to the group exchange was unequal. Table 3 shows that the estimated coefficient on this variable affects the choice of nodes A3, F1 and N using standard laboratory subject pool data.

4.2 Non-Standard Subject Pool Results

We begin with the distribution of VCM contributions by non-standard subject pool ("Field") subjects relative to results reported above for standard laboratory subject pool ("Lab")

data. Figure 8 plots the group exchange contribution distribution across MPCR treatments and Field vs Lab participants.

The general pattern of contributions of field subjects looks very different from that of laboratory subjects. However, Figure 9 looks at the differences over rounds and we see that field subjects tended to contribute more than lab subjects in the low MPCR treatments and less than lab subjects in the High MPCR treatment. Field subjects do not seem to be as affected by the MPCR treatment as compared to the lab subjects. Hence, our non-standard subject pool appears to have stronger fairness norms and is thus less responsive to extrinsic incentives.

Our next step is to regress the individual contributions as a fraction of endowments earned, a variable we term VCMRATE, on whether subjects were in the lab or in the field as well as the MPCR treatment. Results are provided in Table 2.[18]

The regressions reported in Table 2 all control for session effects and proceed as follows. We note that a subject being a field participant lowers their average VCMRATE rather significantly and that the coefficient on MPCR is both significant and positively signed as would be predicted by standard theory (columns three and four of Table 2). This could be because field subjects were drawn to the 50-50 allocation or less prone to variation at either end of the allocation distribution. However, not including the MPCR dummy that controls for treatment, being a field subject does not seem to make one very different from a lab subject (columns five and six, estimated coefficients on Field variable (-0.011 and 0.062) are not different from zero).

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[18] We chose to create the VCMRATE variable since there was slightly more variation in RET scores amongst field subjects. Thus, the VCMRATE variable "deflates" contributions by earned endowments.

Next, we turn to terminal node behavior with the non-standard subject pool. Figure 10 presents the results of the strategy method for the stage game in Figure 1 that we employed across subject pool (field vs. lab) and across the MPCR treatments. Note first that given the design differences from the lab, field subjects were playing against firm "bots", and so there is understandably no data for the terminal node choice F1. However, in the field there was a lower frequency of subjects going to the A3. Figure 11 below presents data across rounds for the low and the high MPCR condition respectively. In percentage terms the field subjects seem to either consistently stick to the A1 node or the N node. Plots aside, we investigate behavior using regressions in Tables 4-6.

Tables 4-6 show uniformly that subjects in the non-standard subject pool, self-proclaimed "Activists", tend to the A1 and N nodes more than the usual standard laboratory subjects (columns three and four of Tables 4 and 5). They seem to not only settle more often at the Nash equilibrium, but also punish more when settlement is not reached. To put it differently, self-proclaimed real-world Activists are happy to settle for increased public goods contributions, but when "good behavior" is not forthcoming, they are happy to punish others even if it hurts themselves. Indeed, a normative conclusion might be that when real-world people or organized groups thereof say they are "Activists", firms should take them at their word and provide more public goods than the amount dictated by the profit-maximizing amount of CSR.

4.3 Discussion

We expect a certain level of altruism from the Activist in the environments we designed. Because the activists consistently put more of their endowment into the Group Exchange, we

take for granted that Activists are more altruistic than Firms. In order to test this hypothesis, we wanted to verify that Activists will sacrifice their earnings (by bearing a fixed boycott cost) in order to ensure that passive players are remunerated more. We disentangle this in two ways. Firstly, it could be that Activists go to the Nature node in order to punish Firms. However, this is unlikely because this is a costly punishment with random probability of success. A more likely explanation is that Activists want to encourage firms to contribute more because this is socially optimal behavior.

While we expected behavior to deviate from that consistent with Nash equilibrium play, we believe Inequity Aversion and Negative Reciprocity played important roles. The bigger the difference in public good contributions between Activists and Firms (which motivated our particular matching mechanism described above), the more likely a Nature terminal node is reached (inequity aversion). Alternatively, the Nature node could be reached due to firm behavior with respect to the F2 node (negative reciprocity).

Finally, we expect that a higher MPCR (across treatments in our design) leads subjects to reach the Nature node in the stage game more often. We note that, by design, going to the punishment node is not particularly attractive for the Activist, should they actually do so suggests exactly the sort of behavior we wish to investigate, as it would be the result of non-classical preferences holding sway: attempting to punish F for not contributing more to the public good.

With respect to each of the above hypotheses, given the results, we can conclude altruism on the part of subjects in both pools; that, interestingly enough, Field subjects deviate less from Nash predictions in the Stage game and that otherwise the usual incentives at play in VCMs apply.

A key difference between pools is that Field subjects can be said to punish more than lab subjects and yet contribute less to the public good at the same time, suggesting that standard subject pools might overstate the case for altruism.

5. Conclusion

Activists can accelerate the real-world private provision of public goods using various techniques. This type of provision is particularly useful and apparent in developing country contexts where there is a paucity of government provided public goods. In this paper, we design and implement an experiment, guided by a model of corporate social responsibility (Baron (2001)) with standard laboratory and non-standard field subjects (real-world "Activists"). The experimental design is unique in that it features an extensive form game embedded within a VCM but with random punishment. We find first that subjects in both pools react to incentives in the same manner. Second, real-world Activists, who comprise our non-standard subject pool, tend to punish more even if it hurts their own payoffs.

References

Bagnoli, M., and Watts, S. G. (2003). "Selling to socially responsible consumers: Competition and the private provision of public goods." Journal of Economics and Management Strategy, 12 (3), 419-445.

Bansal, P., Jiang, G., and Jung, J. (2015). "Managing Responsibly in Tough Economic Times: Strategic and Tactical CSR During the 2008–2009 Global Recession." Long Range Planning, 48 (2), 69-79.

Bartling, B., R. A. Weber and L. Yao (2015). "Do Markets Erode Social Responsibility?." Quarterly Journal of Economics, 130 (1), 165-218.

Baron, D. (2001). "Private Politics, Corporate Social Responsibility, and Integrated Strategy." Journal of Economics and Management Strategy, 16 (3), 7-45.

Benabou, R., and Tirole, J. (2010). "Individual and Corporate Social Responsibility." Economica, 77 (305), 1-19.

Blanco, E., Haller, T., and Walker, J. M. (2018). "Provision of environmental public goods: Unconditional and conditional donations from outsiders." Journal of Environmental Economics and Management. 92, 815-831.

Bland, J., and Nikiforakis, N. (2015). "Coordination with third-party externalities." European Economic Review, 80, 1-15.

Bolle, F., Breitmoser, Y., and Schlächter, S. (2011). "Extortion in the Laboratory." Journal of Economic Behavior and Organization, 78 (3), 207-218.

Briscoe, F., Gupta, A., and Anner, M. (2015). "Social Activism and Practice Diffusion: How Activist Tactics Affect Non-targeted Organizations." Administrative Science Quarterly, 60(2), 300-332.

Charness, G., Cobo-Reyes, R., and Sanchez, A. (2016). "The effect of charitable giving on workers' performance: Experimental evidence." Journal of Economic Behavior and Organization, 131, 61-74.

Charness, G. and M. Rabin (2002). "Understanding Social Preferences with Simple Tests." Quarterly Journal of Economics, 117 (3), 817–869.

Chen, D. L, M. Schonger and C. Wickens (2016). "oTree – An Open Source Platform for Laboratory, Online, and Field Experiments" Journal of Behavioral and Experimental Finance, 9, 88-97.

den Hond, F., and de Bakker, F. (2007). "Ideologically motivated activism: How activist groups influence corporate social change activities." Academy of Management Review, 32(3), 901-924.

Fischbacher, U., and Gachter, S. (2010). "Social preferences, beliefs, and the dynamics of free riding in public goods experiments." American Economic Review, 100 (1), 541-56.

Fischbacher, U., Gächter, S., and Fehr, E. (2001). "Are people conditionally cooperative? Evidence from a public goods experiment." Economics Letters, 71 (3), 397-404.

Gächter, S., Nosenzo, D., Renner, E., and Sefton, M. (2010). "Sequential vs. simultaneous contributions to public goods: Experimental evidence." Journal of Public Economics, 94 (7-8), 515- 522.

Groza, M., Pronschinske, M., and Walker, M. (2011). "Perceived Organizational Motives and Consumer Responses to Proactive and Reactive CSR." Journal of Business Ethics, 102 (4), 639-652.

Houser, D., Xiao, E., McCabe, K., and Smith, V. (2008). "When punishment fails: Research on sanctions, intentions and non-cooperation." Games and Economic Behavior, 62 (2), 509-532.

Kitzmueller, M. and Shimshack, J. (2012). "Economic Perspectives on Corporate Social Responsibility." Journal of Economic Literature, 50 (1), 51-84.

Koppel, H., and Regner, T. (2014). "Corporate Social Responsibility in the work place: Experimental evidence from a gift-exchange game." Experimental Economics, 17 (3), 347-370.

Nikiforakis, N., Oechssler, J., and Shah, A. (2014). "Hierarchy, coercion, and exploitation: An experimental analysis." Journal of Economic Behavior and Organization, 97, 155-168.

Normann, H.-T., and Rau, H. (2015). "Sequential Contributions to Step-level Public Goods: One versus Two Provision Levels." Journal of Conflict Resolution, 59 (7), 1273-1300.

Cox, C. A., and Stoddard, B. (2018). "Strategic thinking in public goods games with teams." Journal of Public Economics, 161, 31-43.

Walker, J., and Halloran, M. (2004). "Rewards and Sanctions and the Provision of Public Goods in One-Shot Settings." Experimental Economics, 7 (3), 235–247.

Tables

Table 1. Stage Game Payoffs

Node		Player	PG Contrib.	Cost	MPCR 0.30	MPCR 0.75
A1		A	15		23	50
		F	5		33	60
		Ea. P	20		18	45
F1		A	15		26	57.5
		F	15		26	57.5
		Ea. P	20		21	52.5
A3		A	15		23	50
		F	5		33	60
		Ea. P	20		18	45
N1	$p = 0.75$	A	15	10	16	47.5
		F	15		26	57.5
		Ea. P	20		21	52.5
N2	$p = 0.25$	A	15	10	13	40
		F	5		33	60
		Ea. P	20		18	45

Notes: In column 3, "Ea. P" represents payoffs to "Each Passive Player", "PG Contrib." refers to "Public Good Contribution" and "Cost" to the "Boycott Cost" as it applies to the two Nature nodes in the game tree.

Table 2. VCM Contribution Rate Determinants

Dep. Var: VCM contrib. rate

	All rounds	Last round	All rounds	Last round	All rounds	Last round
MPCR	0.330***	0.370***	0.330***	0.370***		
	(0.021)	(0.069)	(0.021)	(0.069)		
Round	-0.021***		-0.021***		-0.021***	
	(0.002)		(0.002)		(0.003)	
Field			-0.198***	-0.148*	-0.011	0.062
			(0.023)	(0.075)	(0.021)	(0.070)
Constant	0.249***	0.056	0.446***	0.203***		
	(0.030)	(0.088)	(0.019)	(0.045)		
Obs.	1,440	144	1,440	144	1,440	144
R^2	0.233	0.280	0.233	0.280	0.106	0.128

Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1, session controls included.

Notes: MPCR = 1 if High (0.75) MPCR Treatment, Field = 1 if Field Subjects.

Table 3. Inequality Aversion vs. Negative Reciprocity

Dep. Var:	A1	A3	F1	N
MPCR	-0.508**	-0.621**	0.335	1.166***
	(0.254)	(0.248)	(0.330)	(0.270)
GEDIFF	0.127	-1.075***	-0.485	1.438***
	(0.328)	(0.361)	(0.534)	(0.368)
NEGRECIP	0.326	1.304***	-2.489***	0.892***
	(0.200)	(0.239)	(0.246)	(0.263)
Constant	-0.808***	-0.899***	0.558*	-2.336***
	(0.236)	(0.266)	(0.321)	(0.308)
Obs.	600	600	600	600
Pseudo R^2	0.057	0.130	0.330	0.097

Standard errors in parentheses, *** $p<0.01$, ** $p<0.05$, * $p<0.1$, session controls included.

<u>Note</u>: MPCR = 1 if High (0.75) MPCR Treatment, only laboratory subjects included since Field subjects played with bots.

Table 4. Node A1 Determinants

Dep. Var: A1						
	All rounds	Last round	All rounds	Last round	All rounds	Last round
MPCR	-0.058	-0.0068	-0.057	-0.007		
	(0.039)	(0.126)	(0.039)	(0.126)		
Round	0.013***		0.013***		0.013***	
	(0.004)		(0.004)		(0.004)	
Field			0.223***	0.321**	0.191***	0.317***
			(0.043)	(0.137)	(0.037)	(0.116)
Constant	0.491***	0.673***	0.268***	0.353***	0.243***	0.350***
	(0.056)	(0.160)	(0.035)	(0.083)	(0.031)	(0.062)
Obs.	1,440	144	1,440	144	1,440	144
R^2	0.069	0.112	0.069	0.112	0.067	0.112

Standard errors in parentheses, *** $p<0.01$, ** $p<0.05$, * $p<0.1$, session controls included.

<u>Notes</u>: MPCR = 1 if High (0.75) MPCR Treatment, Field = 1 if Field Subjects.

Table 5. Node N Determinants

Dep. Var: N						
	All rounds	Last round	All rounds	Last round	All rounds	Last round
MPCR	0.008	-0.023	0.008	-0.023		
	(0.034)	(0.105)	(0.034)	(0.105)		
Round	-0.007*		-0.007*		-0.007*	
	(0.004)		(0.004)		(0.004)	
Field			0.078**	0.138	0.083***	0.125
			(0.037)	(0.115)	(0.031)	(0.097)
Constant	0.290***	0.314**	0.213***	0.176**	0.216***	0.167***
	(0.048)	(0.134)	(0.031)	(0.070)	(0.027)	(0.052)
Obs.	1,440	144	1,440	144	1,440	144
R^2	0.010	0.038	0.010	0.038	0.010	0.037

Standard errors in parentheses, *** $p<0.01$, ** $p<0.05$, * $p<0.1$, session controls included.

Notes: MPCR = 1 if High (0.75) MPCR Treatment, Field = 1 if Field Subjects.

Table 6. Node A3 Determinants

Dep. Var: A3						
	All rounds	Last round	All rounds	Last round	All rounds	Last round
MPCR	-0.140***	-0.133	-0.140***	-0.133		
	(0.036)	(0.110)	(0.036)	(0.110)		
Round	-0.003		-0.003		-0.003	
	(0.004)		(0.004)		(0.004)	
Field			-0.009	-0.266**	-0.088***	-0.342***
			(0.039)	(0.119)	(0.034)	(0.102)
Constant	0.391***	0.175	0.399***	0.441***	0.339***	0.383***
	(0.051)	(0.140)	(0.032)	(0.072)	(0.029)	(0.055)
Obs.	1,440	144	1,440	144	1,440	144
R^2	0.038	0.186	0.038	0.186	0.028	0.177

Standard errors in parentheses, *** $p<0.01$, ** $p<0.05$, * $p<0.1$, session controls included.

Notes: MPCR = 1 if High (0.75) MPCR Treatment, Field = 1 if Field Subjects.

Figures

Figure 1. Stage Game
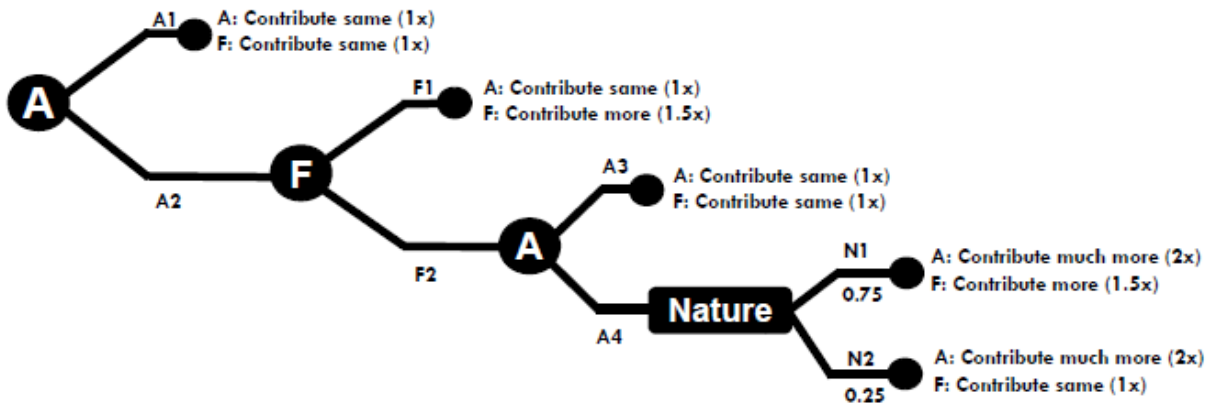
Figure 2. VCM Contributions (Lab only)
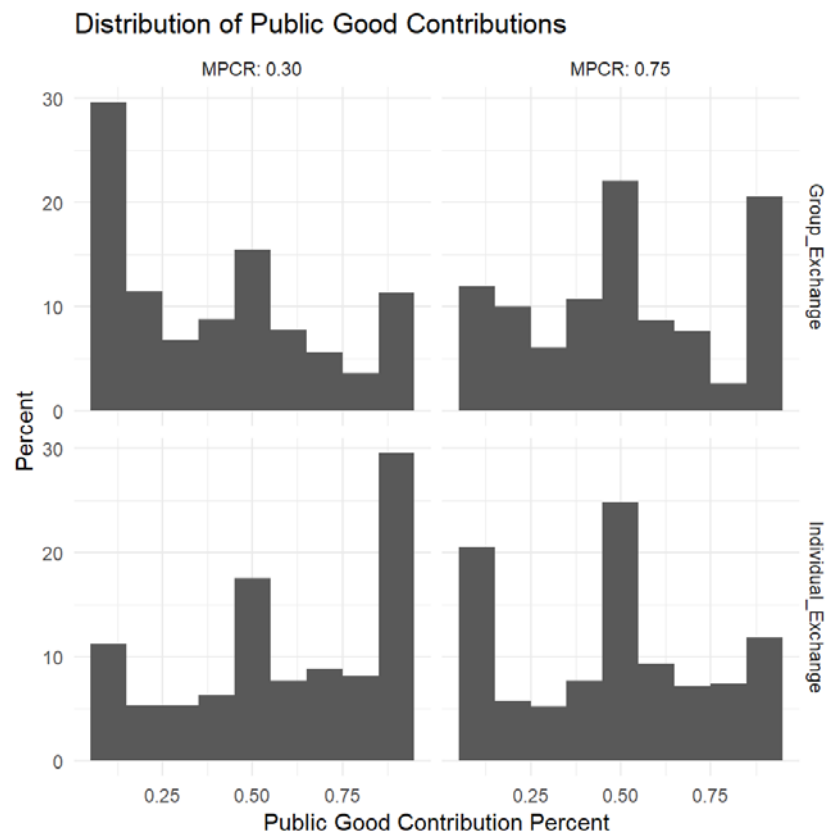
Figure 3. VCM Behavior across Rounds (Lab only)
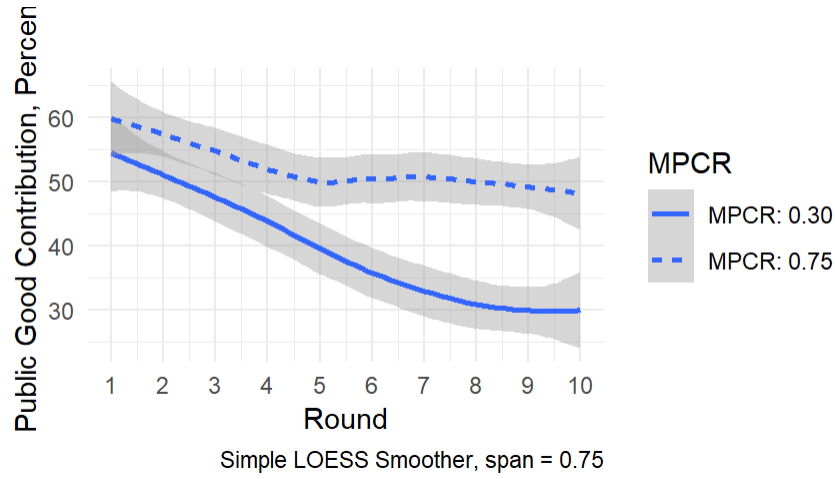
Figure 4. Terminal Node Choices (lab only)
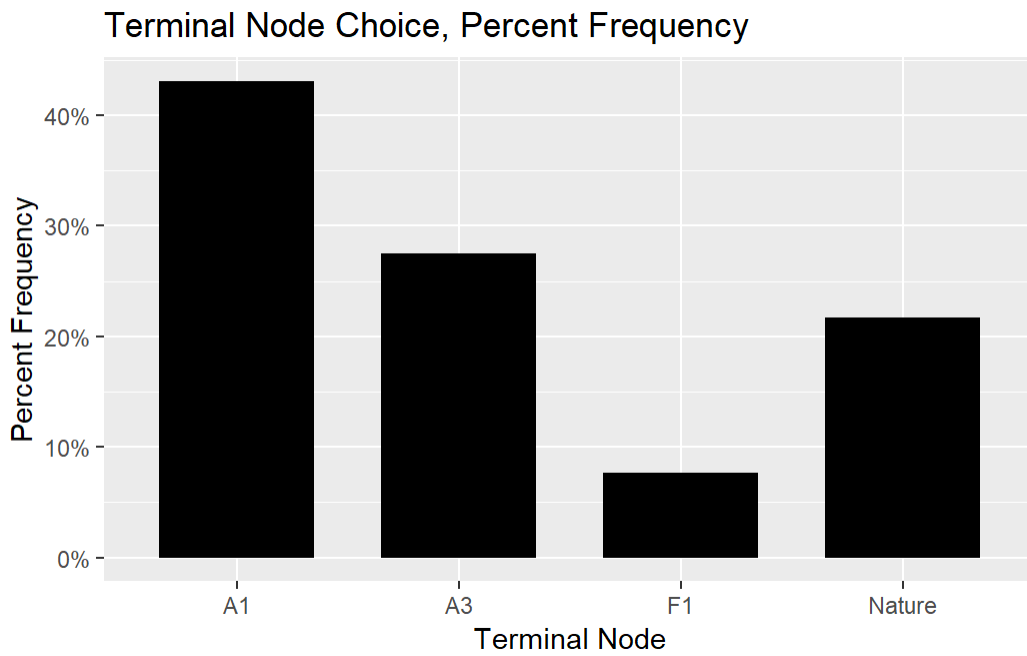
Figure 5. Node Choices by Treatment (Lab only)

Frequency of Terminal Node Choice Over Rounds
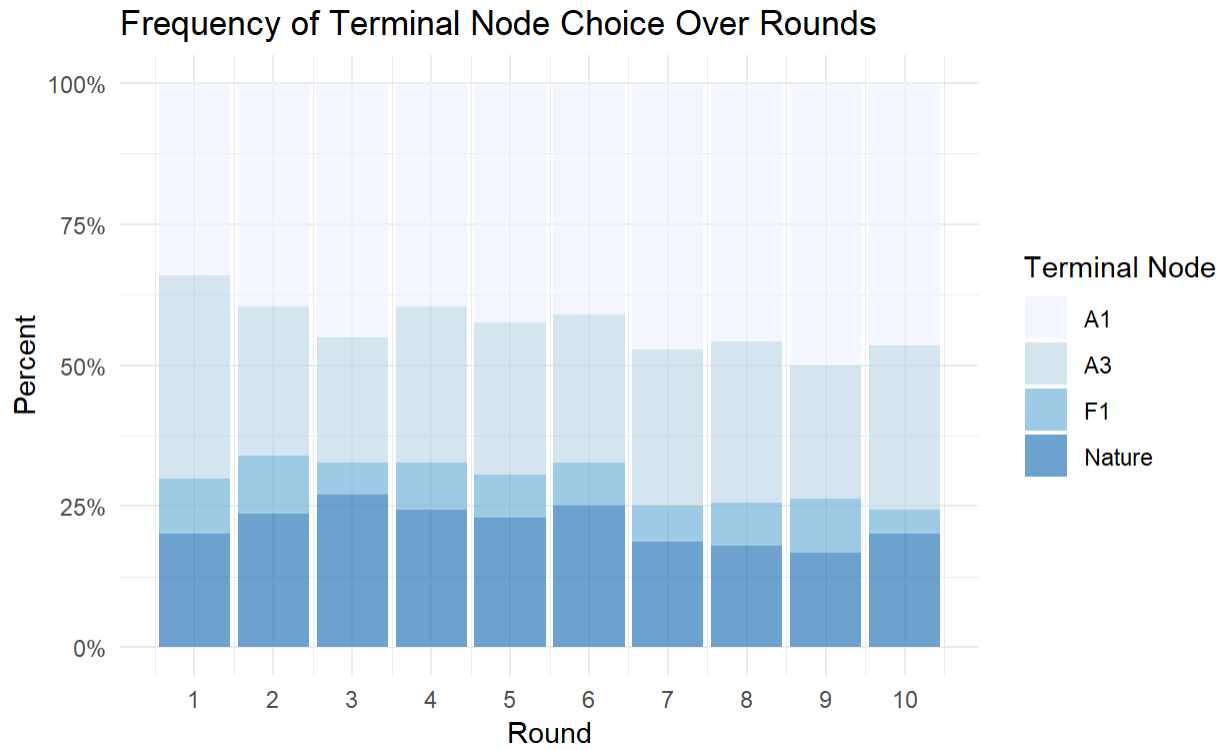
Figure 6. Frequency of Node Choice by MPCR

Frequency of Terminal Node Choice
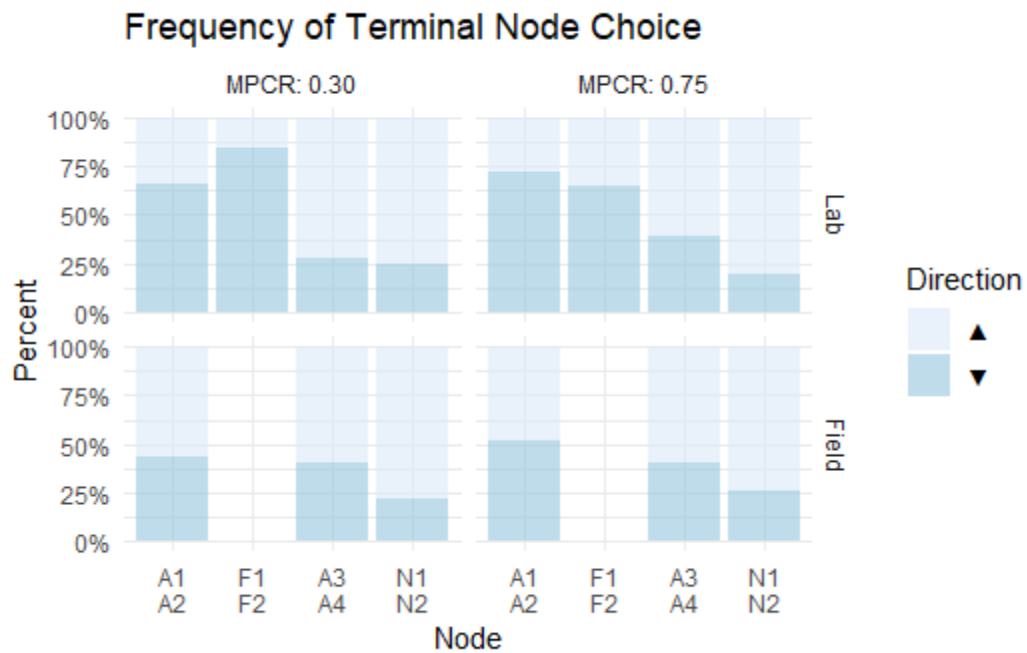
Figure 7. Variation in Node Choices (Lab only)

Boxplot with median, 95%CI, min. & max.
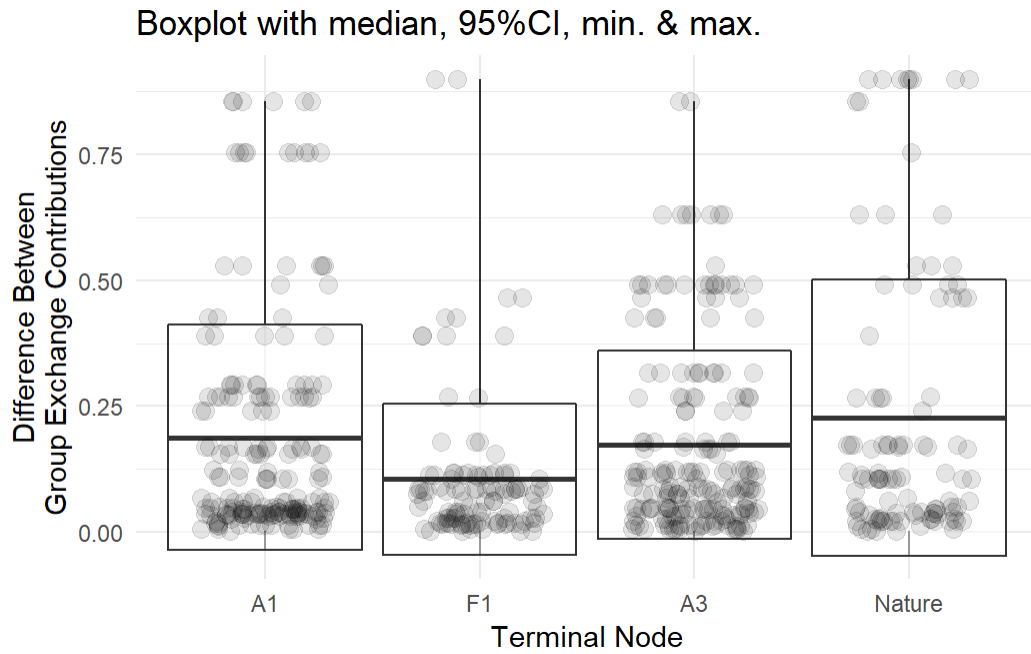
Figure 8. VCM Contributions Lab vs. Field

Distribution of Public Good Contributions
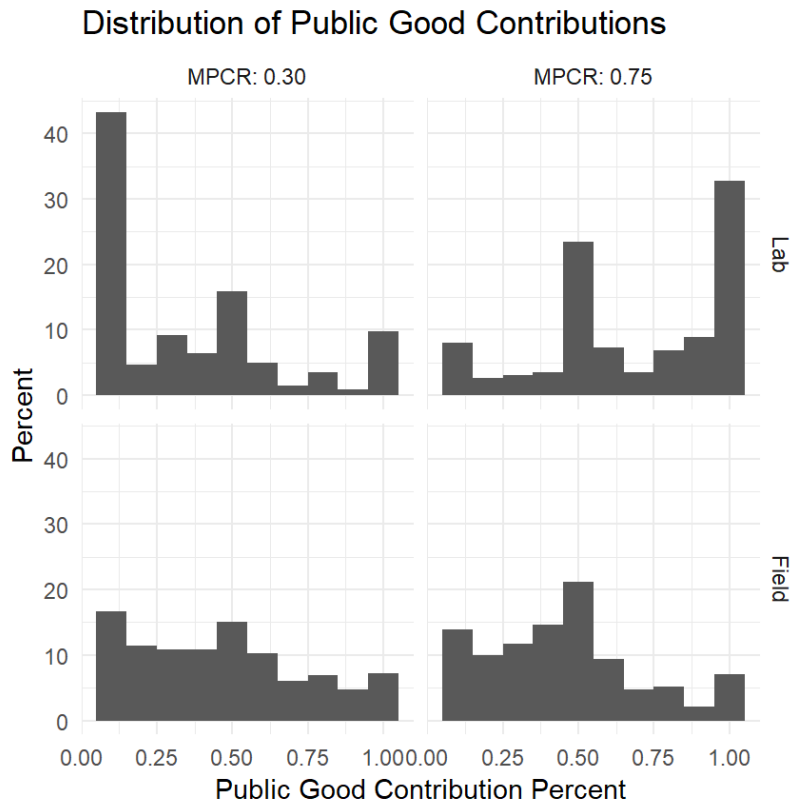
Figure 9. VCM Contributions over Rounds
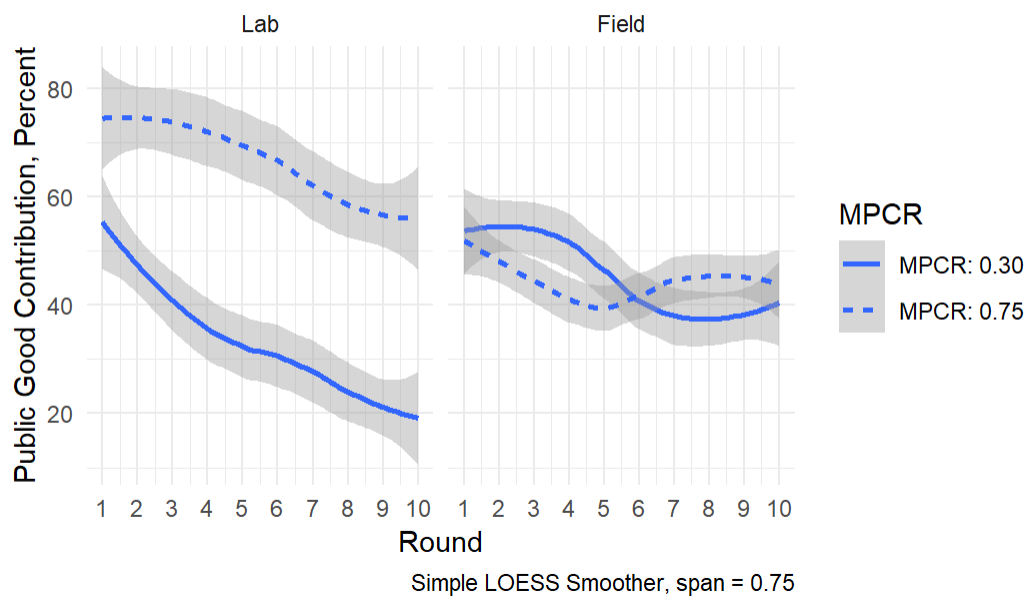
Figure 10. Terminal Node Choices, Lab vs. Field
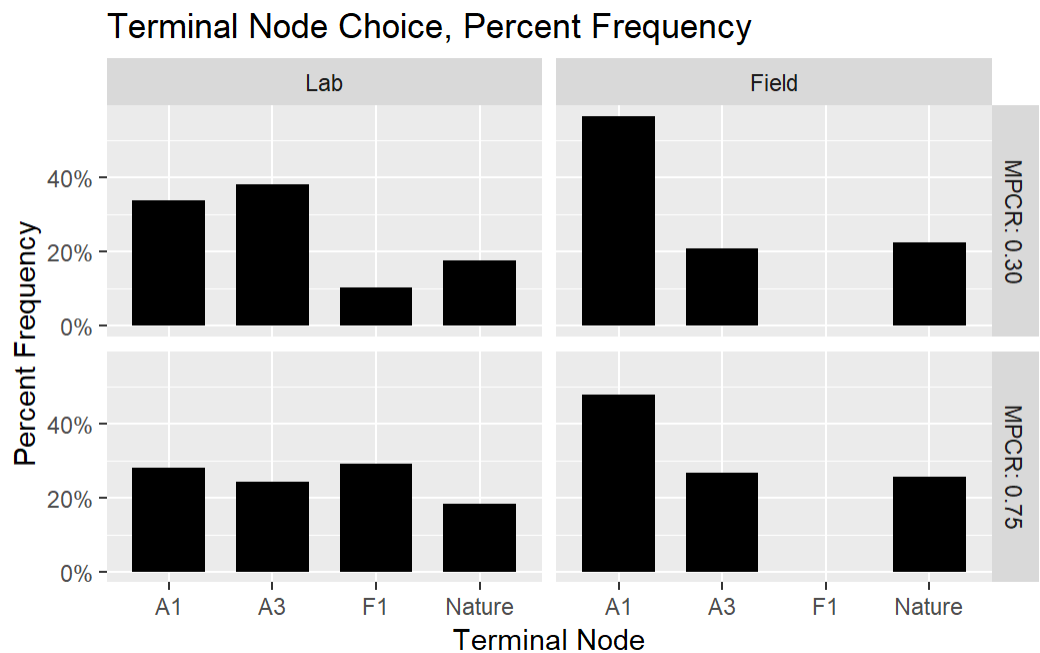
Figure 11. Node Choices across Rounds
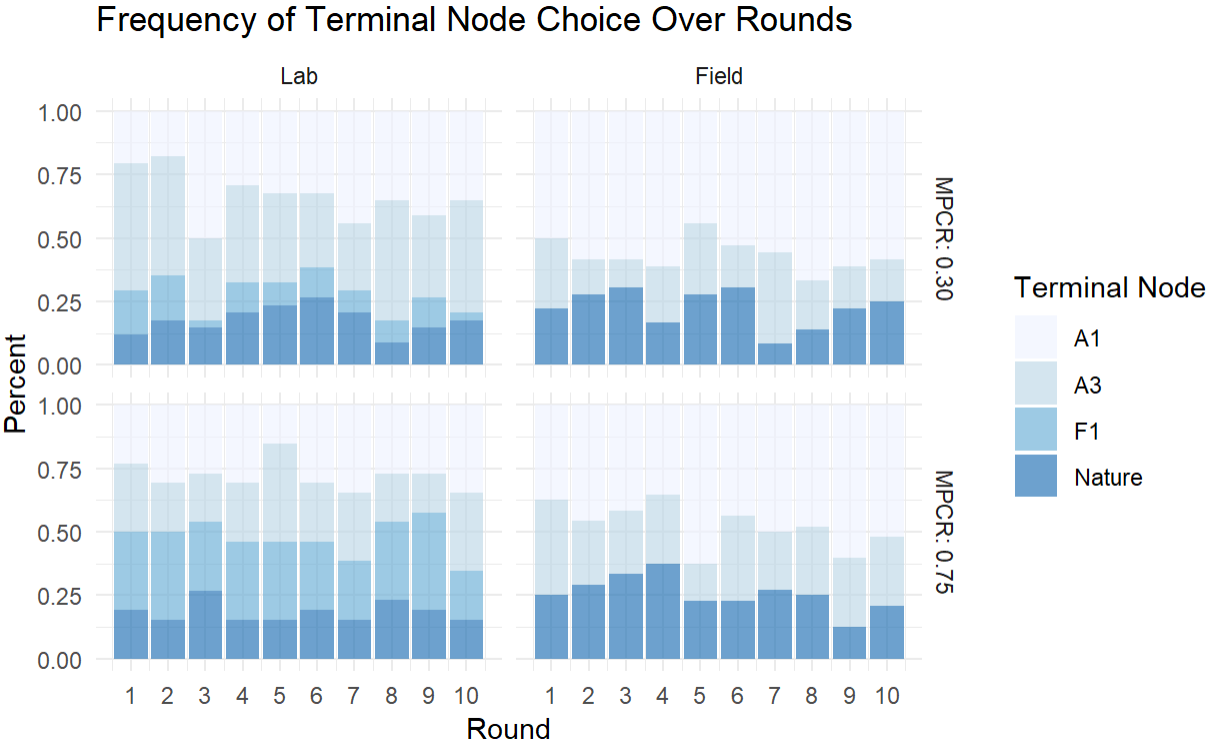
Appendix

Not Intended for Publication

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1. Screenshots: Laboratory Implementation

This section provides screenshots of the software as presented to the standard undergraduate subject pool in the laboratory.

2. Screenshots: Field Implementation

This section provides screenshots of the software as presented to the non-standard subject pool in the field.

3. Field Implementation Photographs

This section provides photographs of the lab-in-the field implementation at the computer "labs" booked by the Blue Ribbon Movement (BRM) administrator in Mumbai, India.

1. Screenshots: Laboratory Implementation

Instructions

You are about to start the **typing task**.

The typing task is to correctly type sequences of randomly selected letters and numbers.

You will have two minutes to type as many sequences as possible. Note that each character has to be correct.

After typing a text sequence, click the **Next** button or click the keyboard button **Enter** to submit it. Then a new text sequence will be generated.

The number of correctly-typed sequences is displayed on the lower part of the screen.

You will get points for each successfully typed sequence, as follows:

Correctly typed text sequences	0	1	2	3	4	5	6	7	8	9	≥10
Points	2	4	6	8	10	12	14	16	18	20	20

Typing Task

Type the text below into the box and click **Next** or hit the **Enter Key**

dWg5

Next

Number of correct words: 0

Points earned: 0

Time remaining: 2:54

Typing Task

Type the text below into the box and click **Next**
or hit the **Enter Key**

CwNg

[input box] Next

Your last guess was incorrect

Number of correct words: 3   Time remaining: 1:34

Points earned: 8

Typing Task

Type the text below into the box and click **Next**
or hit the **Enter Key**

L5O8

[input box] Next

Your last guess was correct

Number of correct words: 9   Time remaining: 1:02

Points earned: 20

Task 1 Summary

You Transcribed 12 text strings correctly.
Your Total Score: 20 points.

Transcription #	Text	Your Entry	Correct?
1	dWg5	dWg5	True
2	6kdA	6kdA	True
3	ep7o	ep7o	True
4	zflY	ljhg	False
5	CwNg	CwNg	True
6	OhZn	OhZn	True
7	Xw0w	Xw0w	True
8	GJcR	GJcR	True
9	OJ2D	OJ2D	True
10	kJO3	kJO3	True
11	L5O8	L5O8	True
12	1MUj	1MUj	True
13	GleS	GleS	True
14	4gKx	Too Late	False

Note, if you see "False" for a correct answer to your final task, that means the task was submitted after the timer had expired.

Next

Instructions

You are about to start **Part 2** of the study.

In this part of the study you will make a series of **10 investment decisions**. For each investment decision you will be placed in a group with **three other participants**.

Each investment decision you make will result in an investment return. **One** of these 10 investment returns will be **randomly selected** to determine a part of your final payment at the end of the experiment. Your **investment returns** will depend on the investment decision that you and the other members of your group make.

You have been assigned to a group of **4 people**. For each round, you will be randomnly assigned to a new group.

Each of you will be given an **investment account** with the amount of points earned in Part 1 in it. You earned **20 points** in Part 1.

In each round, you will divide your points between **two investment opportunities**: the Individual Exchange and the Group Exchange.

The Individual Exchange

The Individual Exchange

Every point you invest in the Individual Exchange will yield you a return of one. Your investments into the Individual Exchange will not affect the other group members' scores.

Your investment into the Individual Exchange	Addition to your score from your Individual Exchange contribution	Addition to your group members' score from the Individual Exchange contribution
20 points	20 points	0 points
10 points	10 points	0 points
0 points	0 points	0 points

The Individual Exchange

The Individual Exchange

It is also true that when the other members of your group invest in the Individual Exchange, your score will remain unaffected:

Your group member's total Individual Exchange contributions	Addition to your score from your group member's Individual Exchange contributions
60 points	0 points
30 points	0 points
0 points	0 points

The Group Exchange

The Group Exchange

Your score from the Group Exchange will depend on the total investment you and your group members make.

Every point that you or a group member invests yields 0.3 point to *each* member, *not just the member who invested it*.

Your investment into the Group Exchange	Added to your score from your Group Exchange contribution	Points to *each* of your group members score from your group exchange contribution
60 points	18.0 points	18.0 points
30 points	9.0 points	9.0 points
0 points	0 points	0 points

Example

For example, suppose you start with 20 points, and each of the other three members of your group also have 20 points.

You decide to invest 10 points into the Individual Exchange, with the remaining 10 points go to the Group Exchange.

Suppose that the other members of your group do the same, giving 10 points each (20 points total) to the Individual Exchange and 10 points each (20 points total) to the group exchange. Your payoff will be determined as the following,

Your individual exchange contribution:	10	10
Your group exchange contribution:	+ 0.3 * 10	+ 3.0
Other group members' individual exchange:	+ 0 * (10 + 10 + 10)	+ 0
Other group members' group exchange:	0.3 * (10 + 10 + 10)	+ 9.0
	Your score:	22

The Investment Decision

Your task is to choose how to invest your points in the Individual Exchange and/or the Group Exchange.

You are free to divide the points between the two Exchanges as you wish. However, your contributions are limited to a minimum of 5% to the group exchange account and a maximum of 95% to the group exchange account.

You will have **20 points** in your investment account each decision round.

Quiz 1

Every member of your group has 20 points available to invest.

How many points would <u>you</u> earn if you invest 10 points into the Individual Exchange, and 10 points into the Group Exchange?

Assume that the other three players each place 10 points in the Group Exchange.

See Instructions link below for help.

Your score: 22

Next

Quiz 1 Solution

> Every member of your group has 20 points available to invest.
>
> How many points would you earn if you invest 10 points into the Individual Exchange, and 10 points into the Group Exchange?
>
> Assume that the other three players each place 10 points in the Group Exchange.

Correct!

You earn 1 point for each point you invest into the Individual Exchange, 0.3 point for each point you invest into the Group Exchange, and 0.3 point for each point that your other group members invested into the Group Exhange, and you earn zero for each point the other player invests into their Individual Exchange:

Your individual exchange contribution:	10	10
Your group exchange contribution:	+ 0.3 * 10	+ 3.0
Other group members' individual exchange:	+ 0 * (10 + 10 + 10)	+ 0
Other group members' group exchange:	0.3 * (10 + 10 + 10)	+ 9.0
	Your score:	22

Next

Quiz 2

You and every other member of your group has 20 points available to invest.

How many points would <u>each of your group members</u> earn if **you** invest 10 points into the Individual Exchange, and 10 points into the Group Exchange?

Assume that the other members of your group distribute to the Individual and Group Exchange the same as you.

See Instructions link below for help.

Your score: 22

Next

Quiz 2 Solution

You and every other member of your group has 20 points available to invest.

How many points would <u>each of your group members</u> earn if **you** invest 10 points into the Individual Exchange, and 10 points into the Group Exchange?

Assume that the other members of your group distribute to the Individual and Group Exchange the same as you.

Correct!

You earn 1 point for each point you invest into the Individual Exchange, 0.3 point for each point you invest into the Group Exchange, and 0.3 point for each point that your other group members invested into the Group Exhange, and you earn zero for each point the other player invests into their Individual Exchange:

One other player's individual exchange contribution:	10	10
Your group exchange contribution:	+ 0.3 * 10	+ 3.0
Total individual exchange contributions:	+ 0 * (10 + 10 + 10 + 10)	+ 0
Total Group Exchange contributions:	0.3 * (10 + 10 + 10 + 10)	+ 12.0
	One other player's score:	22

Next

Full Instructions Hide - Show

Quiz 3

Every member of your group has 20 points available to invest.

How many points would <u>you</u> earn if you invest all of your points into the Individual Exchange, (0 points into the Group Exchange)?

Assume that the other three players each place 10 points in the Group Exchange.

See Instructions link below for help.

Your score: 29

Next

Quiz 3 Solution

Every member of your group has 20 points available to invest.

How many points would <u>you</u> earn if you invest all of your points into the Individual Exchange, (0 points into the Group Exchange)?

Assume that the other three players each place 10 points in the Group Exchange.

Correct!

You earn 1 point for each point you invest into the Individual Exchange, 0.3 point for each point you invest into the Group Exchange, and 0.3 point for each point that your other group members invested into the Group Exhange, and you earn zero for each point the other player invests into their Individual Exchange:

Your individual exchange contribution:	20	20
Your group exchange contribution:	+ 0.3 * 0	+ 0.0
Other group members' individual exchange:	+ 0 * (10 + 10 + 10)	+ 0
Other group members' group exchange:	0.3 * (10 + 10 + 10)	+ 9.0
	Your score:	<u>29</u>

Next

Full Instructions Hide - Show

Quiz 4

Every member of your group has 20 points available to invest.

How many points would <u>you</u> earn if you invest all of your points into the Group Exchange, (0 points into the Individual Exchange)?

Assume that the other three players each place 10 points in the Group Exchange.

See Instructions link below for help.

Your score: 15|

Next

Quiz 4 Solution

Every member of your group has 20 points available to invest.

How many points would <u>you</u> earn if you invest all of your points into the Group Exchange, (0 points into the Individual Exchange)?

Assume that the other three players each place 10 points in the Group Exchange.

Correct!

You earn 1 point for each point you invest into the Individual Exchange, 0.3 point for each point you invest into the Group Exchange, and 0.3 point for each point that your other group members invested into the Group Exhange:

Your individual exchange contribution:	0	0
Your group exchange contribution:	+ 0.3 * 20	+ 6.0
Other group members' individual exchange:	+ 0 * (10 + 10 + 10)	+ 0
Other group members' group exchange:	0.3 * (10 + 10 + 10)	+ 9.0
	Your score:	<u>15.0</u>

Next

Full Instructions Hide - Show

Quiz 5

Every member of your group has 20 points available to invest.

How many points would <u>you</u> earn if you invest 10 points into the Individual Exchange, and 10 points into the Group Exchange?

Now assume that the other three players each place all their points in the Group Exchange.

See Instructions link below for help.

Your score: 31

Next

Quiz 5 Solution

Each member of your group has 60 points available to invest.

How many points would **you** earn if you invest 30 points into the Individual Exchange, and 30 points into the Group Exchange?

Assume that the other members place all their points in the Group Exchange.

Correct!

You earn 1 point for each point you invest into the Individual Exchange, 0.3 point for each point you invest into the Group Exchange, and 0.3 point for each point that your other group members invested into the Group Exhange:

Your individual exchange contribution:	10	10
Your group exchange contribution:	+ 0.3 * 10	+ 3.0
Other group members' individual exchange:	+ 0 * (0 + 0 + 0)	+ 0
Other group members' group exchange:	0.3 * (20 + 20 + 20)	+ 18.0
	Your score:	31

Next

Full Instructions Hide - Show

Instructions to Part 2

You received 20 points in the typing task.

In a moment your experimenter will start the first decision.

Next

Please wait

Waiting for the other participants.

Select your group exchange contribution

Investment round :	**1 of 10**
Other members in your group received the following::	**20, 20, 20**
Other group members' total points available for investing:	**60 points**
Your points available for investing:	**20 points**

Select Group Exchange Percent Contribution:

50	percent

Group Exchange Percent Contribution: ...%

Your Group Exchange Contribution: ...

Your Individual Exchange Contribution: ...

Click "Next" when you are ready to confirm your contribution allocation.

Next

Select your group exchange contribution

Investment round :	**1 of 10**
Other members in your group received the following::	**20, 20, 20**
Other group members' total points available for investing:	**60 points**
Your points available for investing:	**20 points**

Select Group Exchange Percent Contribution:

◯   82   percent

**Group Exchange
Percent Contribution: 82%**

Your Group Exchange Contribution: 16.40

Your Individual Exchange Contribution: 3.60

Click "Next" when you are ready to confirm your contribution allocation.

Next

P1:

Round 1 Review

Your points available for investing:	20 points	
Your Individual Exchange contribution:	95% or 19.00 points	
Your Group Exchange contribution:	5% or 1.00 points	
Your individual exchange contribution:	19.00	19.00
Your group exchange contribution:	+ 0.3 * 1.00	+ 0.30
Other group members' individual exchange:	+ 0 * (3.6 + 14.8 + 5.0)	+ 0.00
Other group members' group exchange:	0.3 * (16.4 + 5.2 + 15.0)	+ 10.98
You have received the following earnings from Round 1:		30.28

Next

P2:

Round 1 Review

Your points available for investing:	20 points	
Your Individual Exchange contribution:	74% or 14.80 points	
Your Group Exchange contribution:	26% or 5.20 points	
Your individual exchange contribution:	14.80	14.80
Your group exchange contribution:	+ 0.3 * 5.20	+ 1.56
Other group members' individual exchange:	+ 0 * (3.6 + 19.0 + 5.0)	+ 0.00
Other group members' group exchange:	0.3 * (16.4 + 1.0 + 15.0)	+ 9.72
You have received the following earnings from Round 1:		26.08

Next

P3:

Round 1 Review

Your points available for investing:	20 points	
Your Individual Exchange contribution:	25% or 5.00 points	
Your Group Exchange contribution:	75% or 15.00 points	
Your individual exchange contribution:	5.00	5.00
Your group exchange contribution:	+ 0.3 * 15.00	+ 4.50
Other group members' individual exchange:	+ 0 * (3.6 + 19.0 + 14.8)	+ 0.00
Other group members' group exchange:	0.3 * (16.4 + 1.0 + 5.2)	+ 6.78
You have received the following earnings from Round 1:		16.28

Next

P4:

Round 1 Review

Your points available for investing:	20 points	
Your Individual Exchange contribution:	18% or 3.60 points	
Your Group Exchange contribution:	82% or 16.40 points	
Your individual exchange contribution:	3.60	3.60
Your group exchange contribution:	+ 0.3 * 16.40	+ 4.92
Other group members' individual exchange:	+ 0 * (19.0 + 14.8 + 5.0)	+ 0.00
Other group members' group exchange:	0.3 * (1.0 + 5.2 + 15.0)	+ 6.36
You have received the following earnings from Round 1:		14.88

Next

P1:

Part 2 Summary

Round 8 was randomly selected as your paid round.
You earned a score of **24.34**.

Round #	Your individual exchange	Your group exchange	Group exchange percent	Your score
1	14.80	5.20	26.0%	26.08
2	15.00	5.00	25.0%	24.84
3	11.80	8.20	41.0%	24.58
4	11.80	8.20	41.0%	25.12
5	12.20	7.80	39.0%	24.74
6	14.20	5.80	29.0%	25.66
7	13.20	6.80	34.0%	25.80
8	12.40	7.60	38.0%	24.34
9	12.40	7.60	38.0%	25.18
10	12.80	7.20	36.0%	23.54

P2:

Part 2 Summary

Round 8 was randomly selected as your paid round.
You earned a score of **29.74**.

Round #	Your individual exchange	Your group exchange	Group exchange percent	Your score
1	19.00	1.00	5.0%	30.28
2	17.60	2.40	12.0%	27.44
3	16.40	3.60	18.0%	29.18
4	16.00	4.00	20.0%	29.32
5	16.40	3.60	18.0%	28.94
6	17.60	2.40	12.0%	29.06
7	17.80	2.20	11.0%	30.40
8	17.80	2.20	11.0%	29.74
9	17.00	3.00	15.0%	29.78
10	17.20	2.80	14.0%	27.94

In debug mode only,

Next

P3:

Part 2 Summary

Round 8 was randomly selected as your paid round.
You earned a score of **13.14**.

Round #	Your individual exchange	Your group exchange	Group exchange percent	Your score
1	3.60	16.40	82.0%	14.88
2	4.40	15.60	78.0%	14.24
3	1.80	18.20	91.0%	14.58
4	2.20	17.80	89.0%	15.52
5	2.20	17.80	89.0%	14.74
6	1.00	19.00	95.0%	12.46
7	1.00	19.00	95.0%	13.60
8	1.20	18.80	94.0%	13.14
9	1.00	19.00	95.0%	13.78
10	4.20	15.80	79.0%	14.94

P4:

Part 2 Summary

Round 8 was randomly selected as your paid round.
You earned a score of **20.74**.

Round #	Your individual exchange	Your group exchange	Group exchange percent	Your score
1	5.00	15.00	75.0%	16.28
2	10.20	9.80	49.0%	20.04
3	7.40	12.60	63.0%	20.18
4	5.60	14.40	72.0%	18.92
5	7.40	12.60	63.0%	19.94
6	9.00	11.00	55.0%	20.46
7	6.00	14.00	70.0%	18.60
8	8.80	11.20	56.0%	20.74
9	7.00	13.00	65.0%	19.78
10	10.00	10.00	50.0%	20.74

Part 3 Instructions

You are about to start **Part 3** of the study.

You will be placed into two separate four-person groups playing a game similar to that of Part 2.

In one group you will be an "**active player**", in which you will may make choices that affect your final score and the scores of others in that group. In the other group you will be a "**passive player**", in which only the decisions of other players will affect your score in that group. **You will be paid based on the score you receive in one randomly selected active player round, and one randomly selected passive round.**

Each four-person group has two active players and two passive players.

Active Player Rounds

As an active player you will first be assigned to be either a **Role A** participant or a **Role F** participant.

Every Role A participant will be **paired** with one Role F participant. You will have the same partner and you will **keep the same role** throughout the rest of the study. You will be told how much your partner contributed (overall on average) to the Group Exchange in Part 2.

You will also be grouped with two other passive players. These players cannot affect the game, but you and your counterparty's decisions may affect their score.
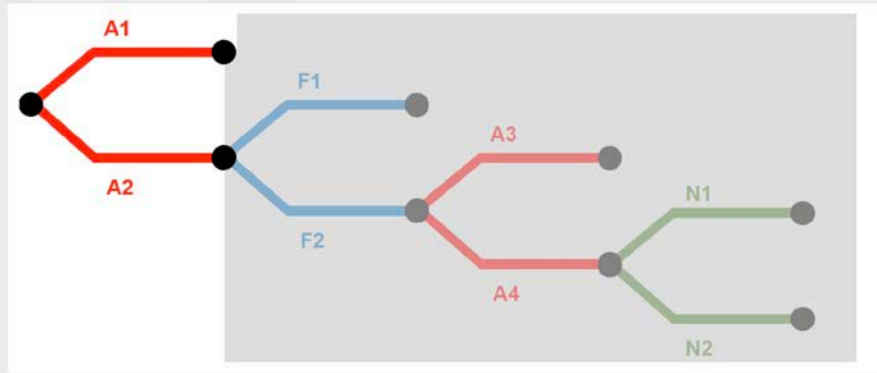
You have been assigned to Role F

Stages

Stages

There are four stages.

- RED moves are taken by the Role A participant,
- BLUE moves are taken by Role F participant and
- GREEN moves are taken by Nature, through randomization.

Stage One - Player A Chooses

Stage One - Player A Chooses

Scores are calculated similar to that of rounds in Part 2, but with fixed amounts to be distributed to the Group or Individual exchange.

Baseline Game:

- **Role A** has 20 points, and starts off placing 15 points into the Group Exchange and 5 into the Individual Exchange.

- **Role F** has 20 points, and starts off placing 5 points into the Group Exchange and 15 into the Individual Exchange.

- **Passive Player 1** has 20 points, and contributes all points into the Group Exchange.

- **Passive Player 2** has 20 points, and contributes all points into the Group Exchange.

Scores awarded to each player in the baseline game are listed below.

Baseline Scores with A1 Selected

	Role A	Role F	Passive Player 1	Passive Player 2	Total
Group Exchange Contribution:	15	5	20	20	60
Individual Exchange Contribution:	5	15	0	0	
Score:	23.0	33.0	18.0	18.0	

The Role A participant will make the first decision. He or she will choose between A1 and A2.

- **A1** means the round ends and both participants receive the baseline scores listed above.

- **A2** means Role F will be asked to increase their Group Exchange contribution in Stage 2.

Stage 2 - F Player Chooses

Stage 2 - F Player Chooses
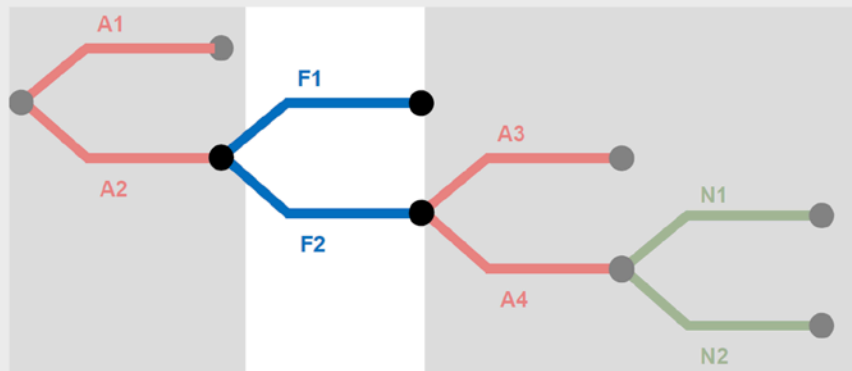
If the Role A participant chooses A2, then the Role F participant will be asked to make the following decision:

- **F1** means the games ends with Role F increasing their Group Exchange contribution by 3.0 times their baseline. Role A will contribute to the Group Exchange by the same amount as their baseline, producing the scores below.

Scores with F1 Selected

	Role A	Role F	Passive Player 1	Passive Player 2	Total
Group Exchange Contribution:	15	15.0	20	20	70
Individual Exchange Contribution:	5	5.0	0	0	
Score:	26.0	26.0	21.0	21.0	

- **F2** means Role F does not choose to increase their baseline Group Exchange contribution. The Role A participant will then be asked to make another decision in Stage 3.

Stage 3 - Player A Chooses

Stage 3 - Player A Chooses

If the Role F participant chooses F2, the Role A participant chooses between A3 and A4:

- If the Role A participant chooses **A3**, the round ends and both participants receive the amount they would have earned if they contributed to the group account equal to the average amount they contributed in Part 2.

Scores with A3 Selected (Same as Baseline)

	Role A	Role F	Passive Player 1	Passive Player 2	Total
Group Exchange Contribution:	15	5	20	20	60
Individual Exchange Contribution:	5	15	0	0	
Score:	23.0	33.0	18.0	18.0	

Stage 4 - Random Event

Stage 4 - Random Event

If the Role A participant chooses **A4** in Stage 3, then both player's scores will be randomly selected by the computer. **In either outcome the Role A player will have to pay a fee of 10**

- **N1**: <u>With probability 0.75</u> the Role F participant will contribute 3.0 times his or her original contribution to the Group Exchange, the amount they would have contributed had Player F chosen F1 in Stage 2.

Scores with N1 - <u>Probability 0.75</u>

	Role A	Role F	Passive Player 1	Passive Player 2	Total
Group Exchange Contribution:	15	15.0	20	20	70
Individual Exchange Contribution:	5	5.0	0	0	
Fee:	- 10	0	0	0	
Score:	16.0	26.0	21.0	21.0	

- **N2**: With probability 0.25, the Role F participant will contribute the same amount that he or she originally contributed in the baseline.

Scores with N2 (Same as Baseline) - Probability 0.25

	Role A	Role F	Passive Player 1	Passive Player 2	Total
Group Exchange Contribution:	15	5	20	20	60
Individual Exchange Contribution:	5	15	0	0	
Fee:	- 10	0	0	0	
Score:	13.0	33.0	18.0	18.0	

- **In N1 and N2 Role A** will pay a 10 point fee.

Passive Player Rounds

Passive Player Rounds

Your final score will also reflect the score you receive from a randomly selected round in which you were a passive player. Incendentially, two other players will receive scores based on the performance of the passive players of rounds in which you were an active player.

Final Payment

The final amount you receive at the end of today's session will include the score you received from Part 2 (29.74 points), plus the randomly selected active player round to come, and the randomoly selected passive player round to come.

Quiz 1

Please answer the following questions. See full instructions below for solutions.

In A1, Role F's Group Exchange Contribution: `5`

In A1, Role A's Group Exchange Contribution: `15`

In A1, Role A's Score: `23`

In A1, Role F's Score: `33`

In F1, Role A's Score: `26`

In F1, Role F's Score: `26`

Full Instructions Hide - Show

Next

Quiz 1

Correct!

Next

Quiz 2

Please answer the following questions. See full instructions below for solutions.

In N1, Role A's Score: `16`

In N1, Role F's Score: `26`

In N2, Role A's Score: `13`

In N2, Role F's Score: `33`

The Probability of N1 Occurring: `.75`

Full Instructions Hide - Show

Next

Quiz 2 Solution

Correct!

Next

F:

Before we start

You are **Role F**. In Part 2 you contributed on average 14%.

Your counterpart is **Role A**. In Part 2 they contributed on average 89%.

There are two other members of your group. You will not know about their group exchange contribution or earnings in other rounds, but your decisions will affect their score as passive players. Additionally, you will be matched up with a group as a passive player, and the active players' decisions in those rounds will affect your score as a passive player.

Click next

Next

A:

Before we start

You are **Role A**. In Part 2 you contributed on average 89%.

Your counterpart is **Role F**. In Part 2 they contributed on average 14%.

There are two other members of your group. You will not know about their group exchange contribution or earnings in other rounds, but your decisions will affect their score as passive players. Additionally, you will be matched up with a group as a passive player, and the active players' decisions in those rounds will affect your score as a passive player.

Click next

Next

F:

A:

Round 1 of 10 - Select your decision

You will be a **Role A** participant for the remainder of this experiment.

In Part 2 you contributed on average 89% to the group exchange.

Your counterpart contributed on average 13.60% to the group exchange.

○ **A1** - see Baseline Scores in instructions below.

Baseline Scores with A1 Selected

	Role A	Role F	Passive Player 1	Passive Player 2	Total
Group Exchange Contribution:	15	5	20	20	60
Individual Exchange Contribution:	5	15	0	0	
Score:	23.0	33.0	18.0	18.0	

● **A2** - means Role F will be asked to increase their Group Exchange contribution in Stage 2.

Next

Full Instructions Hide - Show

F:

Round 1 of 10 - Select your decision

In making this decision, assume Player A selected A2.

You will be a **Role F** participant for the remainder of this experiment.

In Part 2 you contributed on average 14% to the group exchange.

Your counterpart contributed on average 88.70% to the group exchange.

○ **F1** - see "Scores with F1 Selected" in instructions below.

◉ **F2** - means Role F does not choose to increase their baseline Group Exchange contribution. The Role A participant will then be asked to make another decision in Stage 3.
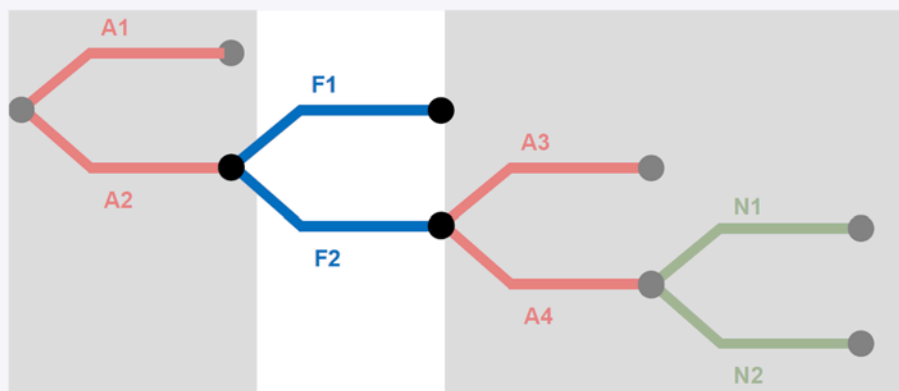
Next

Full Instructions Hide - Show

A:

Please wait

Waiting for the other participant.

F:

Please wait

Waiting for the other participant.

A:

Round 1 of 10 - Select your decision

In making this decision, assume Player F selected F2.

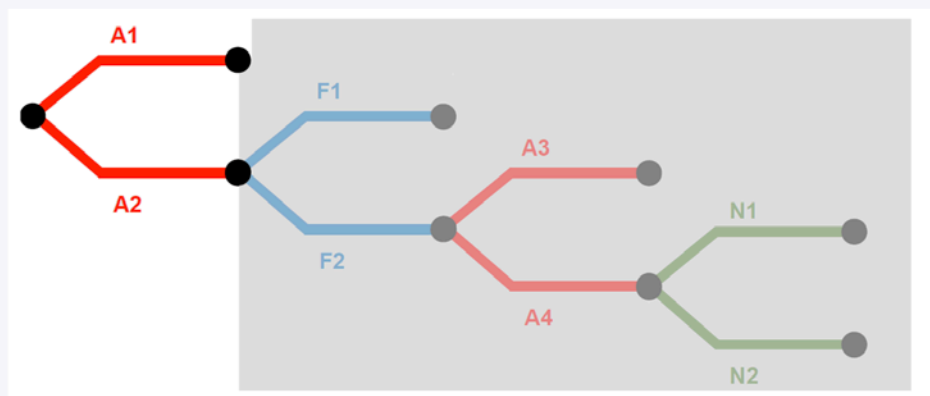In Part 2 you contributed on average 89% to the group exchange.

Your counterpart contributed on average 13.60% to the group exchange.

○ **A3** - see Baseline Scores in instructions below.

◉ **A4** - see Stage 4 instructions below.

If **A4** in selected then both player's scores will be randomly selected by the computer. Either N1 or N2 will be randomly selected. **In either outcome the Role A player will have to pay a fee of 10**.

N1: With probability 0.75 the Role F participant will be compelled to contribute 3.0 times his or her original contribution to the Group Exchange, the amount they would have contributed had Player F chosen F1 in Stage 2.

Scores with N1 - Probability 0.75

	Role A	Role F	Passive Player 1	Passive Player 2	Total
Group Exchange Contribution:	15	15.0	20	20	70
Individual Exchange Contribution:	5	5.0	0	0	
Fee:	- 10	0	0	0	
Score:	16.0	26.0	21.0	21.0	

N2: With probability 0.25, the Role F participant will contribute the same amount that he or she originally contributed.

Scores with N2 (Same as Baseline) - Probability 0.25

	Role A	Role F	Passive Player 1	Passive Player 2	Total
Group Exchange Contribution:	15	5	20	20	60
Individual Exchange Contribution:	5	15	0	0	
Fee:	- 10	0	0	0	
Score:	13.0	33.0	18.0	18.0	

Next

Full Instructions Hide - Show

F:

Round 1 of 10 - Random Move

In having nature make this decision, we assume Player A selected A4. Therefore Role F participant's payoffs would be randomly selected by the computer, either N1 or N2. **In either outcome the Role A player will have to pay a fee of 10**.

N1: With probability 0.75 the Role F participant will contribute 3.0 times his or her original contribution to the Group Exchange, the amount they would have contributed had Player F chosen F1 in Stage 2.
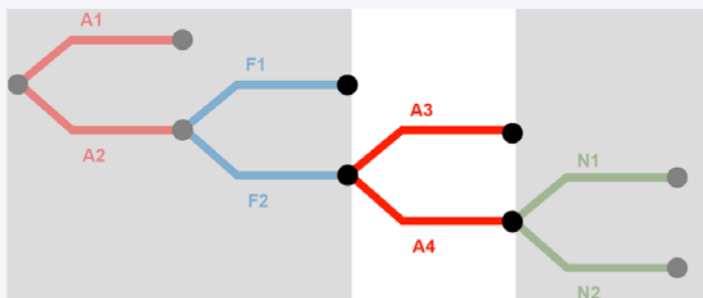
Scores with N1 - Probability 0.75

	Role A	Role F	Passive Player 1	Passive Player 2	Total
Group Exchange Contribution:	15	15.0	20	20	70
Individual Exchange Contribution:	5	5.0	0	0	
Fee:	- 10	0	0	0	
Score:	16.0	26.0	21.0	21.0	

N2: With probability 0.25, the Role F participant will contribute the same amount that he or she originally contributed.

Scores with N2 (Same as Baseline) - Probability 0.25

	Role A	Role F	Passive Player 1	Passive Player 2	Total
Group Exchange Contribution:	15	5	20	20	60
Individual Exchange Contribution:	5	15	0	0	
Fee:	- 10	0	0	0	
Score:	13.0	33.0	18.0	18.0	

Nature has decided **N1**.

Next

Full Instructions Hide - Show

A:

Round 1 of 10 - Random Move

In having nature make this decision, we assume Player A selected A4. Therefore Role F participant's payoffs would be randomly selected by the computer, either N1 or N2. **In either outcome the Role A player will have to pay a fee of 10**.

N1: With probability 0.75 the Role F participant will contribute 3.0 times his or her original contribution to the Group Exchange, the amount they would have contributed had Player F chosen F1 in Stage 2.

Scores with N1 - Probability 0.75

	Role A	Role F	Passive Player 1	Passive Player 2	Total
Group Exchange Contribution:	15	15.0	20	20	70
Individual Exchange Contribution:	5	5.0	0	0	
Fee:	- 10	0	0	0	
Score:	16.0	26.0	21.0	21.0	

N2: With probability 0.25, the Role F participant will contribute the same amount that he or she originally contributed.

Scores with N2 (Same as Baseline) - Probability 0.25

	Role A	Role F	Passive Player 1	Passive Player 2	Total
Group Exchange Contribution:	15	5	20	20	60
Individual Exchange Contribution:	5	15	0	0	
Fee:	- 10	0	0	0	
Score:	13.0	33.0	18.0	18.0	

Nature has decided N1.

Next

Full Instructions Hide - Show

F:

Results Round 1 of 10

You are **Role F**.

In Part 2 you contributed on average 14% to the group exchange.

Your counterpart contributed on average 88.70% to the group exchange.

You and your counterparty ended up at **N1**.

Your payoff is 26.00.

Your counterpart's payoff is 16.00.

Passive Player 1 received 21.00.

Passive Player 2 received 21.00.

Next

Full Instructions Hide - Show

A:

Results Round 1 of 10

You are **Role A**.

In Part 2 you contributed on average 89% to the group exchange.

Your counterpart contributed on average 13.60% to the group exchange.

You and your counterparty ended up at **N1**.

Your payoff is 16.00.

Your counterpart's payoff is 26.00.

Passive Player 1 received 21.00.

Passive Player 2 received 21.00.

Next

Full Instructions Hide - Show

Final Results

Round 8 was randomly selected as your paid round.
You earned a score of **26.00**.
Full Instructions Hide - Show

Round #	Final	Score
1	N1	26.00
2	A1	33.00
3	F1	26.00
4	A3	33.00
5	A1	33.00
6	F1	26.00
7	N1	26.00
8	N1	26.00
9	N1	26.00
10	N1	26.00

Your score from Part 2: 29.74 points.
Your score from Part 3, Active Session: 26.00 points.
Your score from one randomly selected round in which you were a passive player: 21.00 points.
Total Score: 76.74 points.

Converting Part 3 points to AED at a rate of 1.0 points to 1 AED,
you will receive: 77 AED plus your showup allowance of AED 30.00.
Rounding this amount up to the nearest 5AED for a total payment of **AED 110.00**.

Before we go to the final screen, we have a short questionnaire.

Before we go to the final screen, we have a short questionnaire,

What is the month of your birth?

[--------- ‡]

What is the year of your birth?

[   ]

Are you male or female?

[--------- ‡]

What language do you speak most often at home?

[   ]
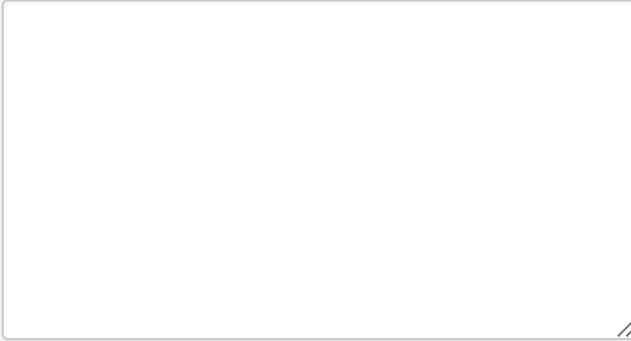
What is your major?

[   ]

In Part 2, how did you decide how much to contribute to the group exchange?

[   ]
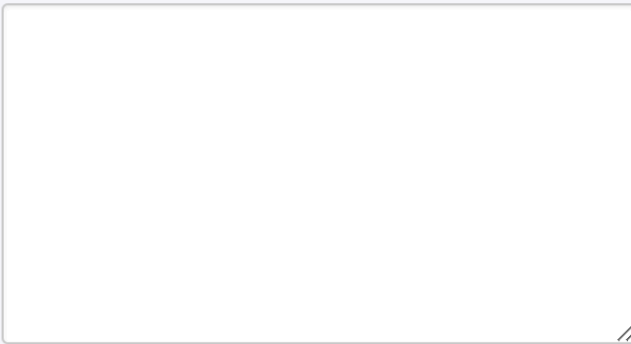
In Part 3, if you were a Role A player, how did you decide between A1 and A2?

[   ]

In Part 3, if you were a Role E player, how did you decide between E1 and E2?

In Part 3, if you were a Role F player, how did you decide between F1 and F2?

In Part 3, if you were a Role A player, how did you decide between A3 and A4?

Next

Final Results

Thank you for taking part in this Experiment. Please remain seated, the experimenter will call you in a moment to pay you.

Round 8 was randomly selected as your paid round.
You earned a score of **26.00**.
Full Instructions Hide - Show

Round #	Final	Score
1	N1	26.00
2	A1	33.00
3	F1	26.00
4	A3	33.00
5	A1	33.00
6	F1	26.00
7	N1	26.00
8	N1	26.00
9	N1	26.00
10	N1	26.00

Your score from Part 2: 29.74 points.

Your score from Part 3, Active Session: 26.00 points.

Your score from one randomly selected round in which you were a passive player: 21.00 points.

Total Score: 76.74 points.

Converting Part 3 points to AED at a rate of 1.0 points to 1 AED,
you will receive: 77 AED plus your showup allowance of AED 30.00.
Rounding this amount up to the nearest 5AED for a total payment of **AED 110.00**.

2. Screenshots: Field Implementation

Instructions

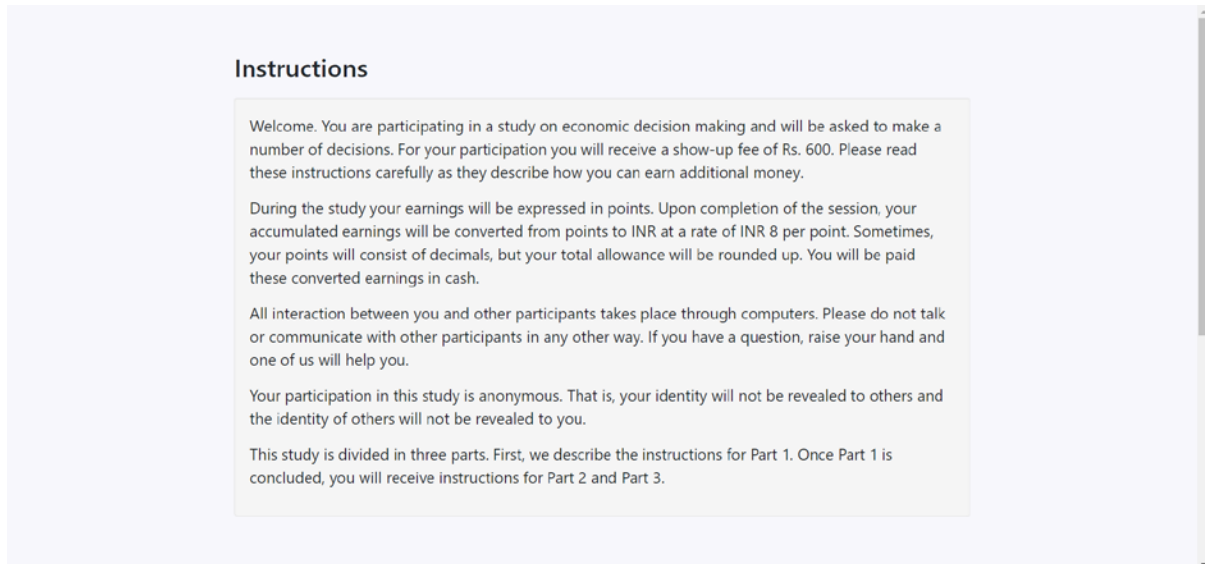Welcome. You are participating in a study on economic decision making and will be asked to make a number of decisions. For your participation you will receive a show-up fee of Rs. 600. Please read these instructions carefully as they describe how you can earn additional money.

During the study your earnings will be expressed in points. Upon completion of the session, your accumulated earnings will be converted from points to INR at a rate of INR 8 per point. Sometimes, your points will consist of decimals, but your total allowance will be rounded up. You will be paid these converted earnings in cash.

All interaction between you and other participants takes place through computers. Please do not talk or communicate with other participants in any other way. If you have a question, raise your hand and one of us will help you.

Your participation in this study is anonymous. That is, your identity will not be revealed to others and the identity of others will not be revealed to you.

This study is divided in three parts. First, we describe the instructions for Part 1. Once Part 1 is concluded, you will receive instructions for Part 2 and Part 3.

Screens below same across conditions

Instructions

You are about to start the **typing task**.

The typing task is to correctly type sequences of randomly selected letters and numbers.

You will have two minutes to type as many sequences as possible. Note that each character has to be correct.

After typing a text sequence, click the **Next** button or click the keyboard button **Enter** to submit it. Then a new text sequence will be generated.

The number of correctly-typed sequences is displayed on the lower part of the screen.

You will get points for each successfully typed sequence, as follows:

Correctly typed text sequences	0	1	2	3	4	5	6	7	8	9	≥10
Points	2	4	6	8	10	12	14	16	18	20	20

Typing Task

Type the text below into the box and click **Next**
or hit the **Enter Key**

dWg5

[   ]   Next

Number of correct words: 0   Time remaining: **2:54**

Points earned: 0

Typing Task

Type the text below into the box and click **Next**
or hit the **Enter Key**

CwNg

[   ]   Next

Your last guess was **incorrect**

Number of correct words: 3   Time remaining: **1:34**

Points earned: 8

Typing Task

Type the text below into the box and click **Next**
or hit the **Enter Key**

L5O8

[   ]   Next

Your last guess was correct

Number of correct words: 9   Time remaining: 1:02

Points earned: 20

Task 1 Summary

You Transcribed 12 text strings correctly.
Your Total Score: <u>20</u> points.

Transcription #	Text	Your Entry	Correct?
1	dWg5	dWg5	True
2	6kdA	6kdA	True
3	ep7o	ep7o	True
4	zflY	ljhg	False
5	CwNg	CwNg	True
6	OhZn	OhZn	True
7	Xw0w	Xw0w	True
8	GJcR	GJcR	True
9	OJ2D	OJ2D	True
10	kJ03	kJ03	True
11	L5O8	L5O8	True
12	1MUj	1MUj	True
13	GleS	GleS	True
14	4gKx	Too Late	False

Note, if you see "False" for a correct answer to your final task, that means the task was submitted after the timer had expired.

Next

45

Instructions

You are about to start **Part 2** of the study.

In this part of the study you will make a series of **10 investment decisions**. For each investment decision you will be placed in a group with **three other participants**.

Each investment decision you make will result in an investment return. **One** of these 10 investment returns will be **randomly selected** to determine a part of your final payment at the end of the experiment. Your **investment returns** will depend on the investment decision that you and the other members of your group make.

You have been assigned to a group of **4 people**. For each round, you will be randomnly assigned to a new group.

Each of you will be given an **investment account** with the amount of points earned in Part 1 in it. You earned **20 points** in Part 1.

In each round, you will divide your points between **two investment opportunities**: the Individual Exchange and the Group Exchange.

The Individual Exchange

The Individual Exchange

Every point you invest in the Individual Exchange will yield you a return of one. Your investments into the Individual Exchange will not affect the other group members' scores.

Your investment into the Individual Exchange	Addition to your score from your Individual Exchange contribution	Addition to your group members' score from the Individual Exchange contribution
20 points	20 points	0 points
10 points	10 points	0 points
0 points	0 points	0 points

The Individual Exchange

The Individual Exchange

It is also true that when the other members of your group invest in the Individual Exchange, your score will remain unaffected:

Your group member's total Individual Exchange contributions	Addition to your score from your group member's Individual Exchange contributions
60 points	0 points
30 points	0 points
0 points	0 points

The Group Exchange

The Group Exchange

Your score from the Group Exchange will depend on the total investment you and your group members make.

Every point that you or a group member invests yields 0.3 point to *each* member, *not just the member who invested it*.

Your investment into the Group Exchange	Added to your score from your Group Exchange contribution	Points to *each* of your group members score from your group exchange contribution
60 points	18.0 points	18.0 points
30 points	9.0 points	9.0 points
0 points	0 points	0 points

Example

For example, suppose you start with 20 points, and each of the other three members of your group also have 20 points.

You decide to invest 10 points into the Individual Exchange, with the remaining 10 points go to the Group Exchange.

Suppose that the other members of your group do the same, giving 10 points each (20 points total) to the Individual Exchange and 10 points each (20 points total) to the group exchange. Your payoff will be determined as the following,

Your individual exchange contribution:	10	10
Your group exchange contribution:	+ 0.3 * 10	+ 3.0
Other group members' individual exchange:	+ 0 * (10 + 10 + 10)	+ 0
Other group members' group exchange:	0.3 * (10 + 10 + 10)	+ 9.0
	Your score:	22

The Investment Decision

Your task is to choose how to invest your points in the Individual Exchange and/or the Group Exchange.

You are free to divide the points between the two Exchanges as you wish. However, your contributions are limited to a minimum of 5% to the group exchange account and a maximum of 95% to the group exchange account.

You will have **20 points** in your investment account each decision round.

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Quiz 1

Every member of your group has 20 points available to invest.

How many points would <u>you</u> earn if you invest 10 points into the Individual Exchange, and 10 points into the Group Exchange?

Assume that the other three players each place 10 points in the Group Exchange.

See Instructions link below for help.

Your score: 22

Next

Quiz 1 Solution

Every member of your group has 20 points available to invest.

How many points would <u>you</u> earn if you invest 10 points into the Individual Exchange, and 10 points into the Group Exchange?

Assume that the other three players each place 10 points in the Group Exchange.

Correct!

You earn 1 point for each point you invest into the Individual Exchange, 0.3 point for each point you invest into the Group Exchange, and 0.3 point for each point that your other group members invested into the Group Exhange, and you earn zero for each point the other player invests into their Individual Exchange:

Your individual exchange contribution:	10	10
Your group exchange contribution:	+ 0.3 * 10	+ 3.0
Other group members' individual exchange:	+ 0 * (10 + 10 + 10)	+ 0
Other group members' group exchange:	0.3 * (10 + 10 + 10)	+ 9.0
	Your score:	<u>22</u>

Next

Quiz 2

You and every other member of your group has 20 points available to invest.

How many points would <u>each of your group members</u> earn if **you** invest 10 points into the Individual Exchange, and 10 points into the Group Exchange?

Assume that the other members of your group distribute to the Individual and Group Exchange the same as you.

See Instructions link below for help.

Your score: 22

Next

Quiz 2 Solution

You and every other member of your group has 20 points available to invest.

How many points would <u>each of your group members</u> earn if **you** invest 10 points into the Individual Exchange, and 10 points into the Group Exchange?

Assume that the other members of your group distribute to the Individual and Group Exchange the same as you.

Correct!

You earn 1 point for each point you invest into the Individual Exchange, 0.3 point for each point you invest into the Group Exchange, and 0.3 point for each point that your other group members invested into the Group Exhange, and you earn zero for each point the other player invests into their Individual Exchange:

One other player's individual exchange contribution:	10	10
Your group exchange contribution:	+ 0.3 * 10	+ 3.0
Total individual exchange contributions:	+ 0 * (10 + 10 + 10 + 10)	+ 0
Total Group Exchange contributions:	0.3 * (10 + 10 + 10 + 10)	+ 12.0
	One other player's score:	22

Next

Full Instructions Hide - Show

Quiz 3

Every member of your group has 20 points available to invest.

How many points would <u>you</u> earn if you invest all of your points into the Individual Exchange, (0 points into the Group Exchange)?

Assume that the other three players each place 10 points in the Group Exchange.

See Instructions link below for help.

Your score: 29

Next

Quiz 3 Solution

Every member of your group has 20 points available to invest.

How many points would <u>you</u> earn if you invest all of your points into the Individual Exchange, (0 points into the Group Exchange)?

Assume that the other three players each place 10 points in the Group Exchange.

Correct!

You earn 1 point for each point you invest into the Individual Exchange, 0.3 point for each point you invest into the Group Exchange, and 0.3 point for each point that your other group members invested into the Group Exhange, and you earn zero for each point the other player invests into their Individual Exchange:

Your individual exchange contribution:	20	20
Your group exchange contribution:	+ 0.3 * 0	+ 0.0
Other group members' individual exchange:	+ 0 * (10 + 10 + 10)	+ 0
Other group members' group exchange:	0.3 * (10 + 10 + 10)	+ 9.0
	Your score:	<u>29</u>

Next

Full Instructions Hide - Show

Quiz 4

Every member of your group has 20 points available to invest.

How many points would <u>you</u> earn if you invest all of your points into the Group Exchange, (0 points into the Individual Exchange)?

Assume that the other three players each place 10 points in the Group Exchange.

See Instructions link below for help.

Your score: 15

Next

Quiz 4 Solution

Every member of your group has 20 points available to invest.

How many points would you earn if you invest all of your points into the Group Exchange, (0 points into the Individual Exchange)?

Assume that the other three players each place 10 points in the Group Exchange.

Correct!

You earn 1 point for each point you invest into the Individual Exchange, 0.3 point for each point you invest into the Group Exchange, and 0.3 point for each point that your other group members invested into the Group Exhange:

Your individual exchange contribution:	0	0
Your group exchange contribution:	+ 0.3 * 20	+ 6.0
Other group members' individual exchange:	+ 0 * (10 + 10 + 10)	+ 0
Other group members' group exchange:	0.3 * (10 + 10 + 10)	+ 9.0
	Your score:	15.0

Next

Full Instructions Hide - Show

Quiz 5

Every member of your group has 20 points available to invest.

How many points would <u>you</u> earn if you invest 10 points into the Individual Exchange, and 10 points into the Group Exchange?

Now assume that the other three players each place all their points in the Group Exchange.

See Instructions link below for help.

Your score: 31

Next

Quiz 5 Solution

Each member of your group has 60 points available to invest.

How many points would **you** earn if you invest 30 points into the Individual Exchange, and 30 points into the Group Exchange?

Assume that the other members place all their points in the Group Exchange.

Correct!

You earn 1 point for each point you invest into the Individual Exchange, 0.3 point for each point you invest into the Group Exchange, and 0.3 point for each point that your other group members invested into the Group Exhange:

Your individual exchange contribution:	10	10
Your group exchange contribution:	+ 0.3 * 10	+ 3.0
Other group members' individual exchange:	+ 0 * (0 + 0 + 0)	+ 0
Other group members' group exchange:	0.3 * (20 + 20 + 20)	+ 18.0
	Your score:	31

Next

Full Instructions Hide - Show

Instructions to Part 2

You received 20 points in the typing task.

In a moment your experimenter will start the first decision.

Next

Please wait

Waiting for the other participants.

Select your group exchange contribution

Investment round :	**1 of 10**
Other members in your group received the following::	**20, 20, 20**
Other group members' total points available for investing:	**60 points**
Your points available for investing:	**20 points**

Select Group Exchange Percent Contribution:

[==================== 50] percent

**Group Exchange
Percent Contribution: ...%**

Your Group Exchange Contribution: ...

Your Individual Exchange Contribution: ...

Click "Next" when you are ready
to confirm your contribution
allocation.

Next

Select your group exchange contribution

Investment round :	**1 of 10**
Other members in your group received the following::	**20, 20, 20**
Other group members' total points available for investing:	**60 points**
Your points available for investing:	**20 points**

Select Group Exchange Percent Contribution:

[○ | 82] percent

**Group Exchange
Percent Contribution: 82%**

Your Group Exchange Contribution: 16.40

Your Individual Exchange Contribution: 3.60

Click "Next" when you are ready
to confirm your contribution
allocation.

Next

P1:

Round 1 Review

Your points available for investing:	20 points	
Your Individual Exchange contribution:	95% or 19.00 points	
Your Group Exchange contribution:	5% or 1.00 points	
Your individual exchange contribution:	19.00	19.00
Your group exchange contribution:	+ 0.3 * 1.00	+ 0.30
Other group members' individual exchange:	+ 0 * (3.6 + 14.8 + 5.0)	+ 0.00
Other group members' group exchange:	0.3 * (16.4 + 5.2 + 15.0)	+ 10.98
You have received the following earnings from Round 1:		30.28

Next

P2:

Round 1 Review

Your points available for investing:	20 points	
Your Individual Exchange contribution:	74% or 14.80 points	
Your Group Exchange contribution:	26% or 5.20 points	
Your individual exchange contribution:	14.80	14.80
Your group exchange contribution:	+ 0.3 * 5.20	+ 1.56
Other group members' individual exchange:	+ 0 * (3.6 + 19.0 + 5.0)	+ 0.00
Other group members' group exchange:	0.3 * (16.4 + 1.0 + 15.0)	+ 9.72
You have received the following earnings from Round 1:		26.08

Next

P3:

Round 1 Review

Your points available for investing:	20 points	
Your Individual Exchange contribution:	25% or 5.00 points	
Your Group Exchange contribution:	75% or 15.00 points	
Your individual exchange contribution:	5.00	5.00
Your group exchange contribution:	+ 0.3 * 15.00	+ 4.50
Other group members' individual exchange:	+ 0 * (3.6 + 19.0 + 14.8)	+ 0.00
Other group members' group exchange:	0.3 * (16.4 + 1.0 + 5.2)	+ 6.78
You have received the following earnings from Round 1:		16.28

Next

P4:

Round 1 Review

Your points available for investing:	20 points	
Your Individual Exchange contribution:	18% or 3.60 points	
Your Group Exchange contribution:	82% or 16.40 points	
Your individual exchange contribution:	3.60	3.60
Your group exchange contribution:	+ 0.3 * 16.40	+ 4.92
Other group members' individual exchange:	+ 0 * (19.0 + 14.8 + 5.0)	+ 0.00
Other group members' group exchange:	0.3 * (1.0 + 5.2 + 15.0)	+ 6.36
You have received the following earnings from Round 1:		14.88

Next

P1:

Part 2 Summary

Round 8 was randomly selected as your paid round.
You earned a score of **24.34.**

Round #	Your individual exchange	Your group exchange	Group exchange percent	Your score
1	14.80	5.20	26.0%	26.08
2	15.00	5.00	25.0%	24.84
3	11.80	8.20	41.0%	24.58
4	11.80	8.20	41.0%	25.12
5	12.20	7.80	39.0%	24.74
6	14.20	5.80	29.0%	25.66
7	13.20	6.80	34.0%	25.80
8	12.40	7.60	38.0%	24.34
9	12.40	7.60	38.0%	25.18
10	12.80	7.20	36.0%	23.54

P2:

Part 2 Summary

Round 8 was randomly selected as your paid round.
You earned a score of **29.74.**

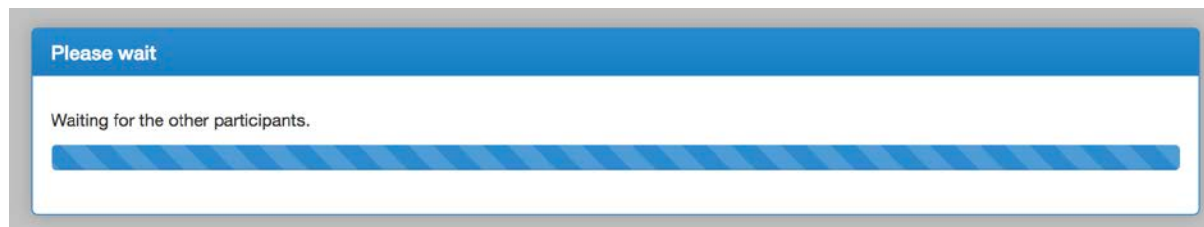| Round #	Your individual exchange	Your group exchange	Group exchange percent	Your score
1	19.00	1.00	5.0%	30.28
2	17.60	2.40	12.0%	27.44
3	16.40	3.60	18.0%	29.18
4	16.00	4.00	20.0%	29.32
5	16.40	3.60	18.0%	28.94
6	17.60	2.40	12.0%	29.06
7	17.80	2.20	11.0%	30.40
8	17.80	2.20	11.0%	29.74
9	17.00	3.00	15.0%	29.78
10	17.20	2.80	14.0%	27.94

In debug mode only,

Next

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P3:

Part 2 Summary

Round 8 was randomly selected as your paid round.
You earned a score of **13.14**.

Round #	Your individual exchange	Your group exchange	Group exchange percent	Your score
1	3.60	16.40	82.0%	14.88
2	4.40	15.60	78.0%	14.24
3	1.80	18.20	91.0%	14.58
4	2.20	17.80	89.0%	15.52
5	2.20	17.80	89.0%	14.74
6	1.00	19.00	95.0%	12.46
7	1.00	19.00	95.0%	13.60
8	1.20	18.80	94.0%	13.14
9	1.00	19.00	95.0%	13.78
10	4.20	15.80	79.0%	14.94

P4:

Part 2 Summary

Round 8 was randomly selected as your paid round.
You earned a score of **20.74**.

Round #	Your individual exchange	Your group exchange	Group exchange percent	Your score
1	5.00	15.00	75.0%	16.28
2	10.20	9.80	49.0%	20.04
3	7.40	12.60	63.0%	20.18
4	5.60	14.40	72.0%	18.92
5	7.40	12.60	63.0%	19.94
6	9.00	11.00	55.0%	20.46
7	6.00	14.00	70.0%	18.60
8	8.80	11.20	56.0%	20.74
9	7.00	13.00	65.0%	19.78
10	10.00	10.00	50.0%	20.74

Please wait

Waiting for the other participants.

Above screens exactly same as lab (ran the exact same code) – Part 3 below is different:

Part 3 Instructions

You are about to start **Part 3** of the study.

You have been assigned to be a **Role A** participant.

Every Role A participant has been **paired** with a **Role F** participant. The Role F player is an automated player programmed to make contributions that correspond to those made by real players in a previous, comparable experiment. You will have the same partner and you will **keep the same role** throughout the rest of the study.

Stages

There are four stages.

- RED moves are taken by the Role A participant,
- BLUE moves are taken by Role F participant and
- GREEN moves are taken by Nature, through randomization.
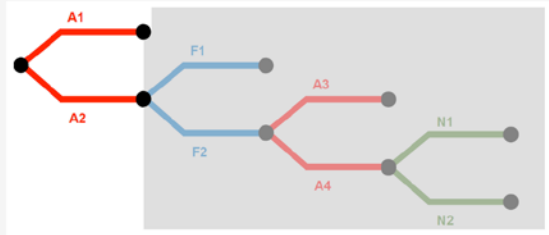
Stage 1 - Player A Chooses

Scores are calculated similar to that of rounds in Part 2, but with fixed amounts to be distributed to the Group or Individual exchange.

Example:

- **Role A** has 20 points, and starts off placing 15 points into the Group Exchange and 5 into the Individual Exchange.

- **Role F** has 20 points, and starts off placing 5 points into the Group Exchange and 15 into the Individual Exchange.

Scores awarded to each player in the example are listed below.

Example Scores with A1 Selected

	Role A	Role F	Total
Group Exchange Contribution:	15	5	
Individual Exchange Contribution:	5	15	
Score:	11	21	32

The Role A participant will make the first decision. He or she will choose between A1 and A2.

- **A1** means the round ends and both participants receive the example scores listed above.

- **A2** means Role F will be asked to increase their Group Exchange contribution in Stage 2.

Stage 2 - Player F Chooses
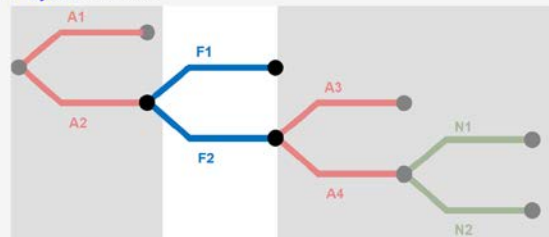
If the Role A participant chooses A2, then the Role F participant will be asked to make the following decision:

- **F1** means the games ends with Role F increasing their Group Exchange contribution by 3.0 times their initial score. Role A will contribute to the Group Exchange by the same amount as their initial scores, producing the scores below.
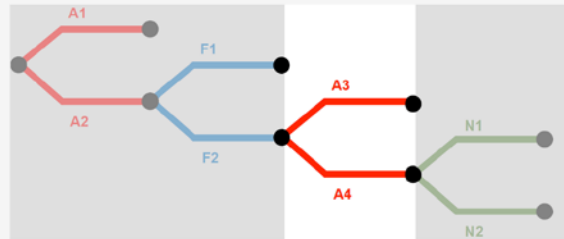
Scores with F1 Selected

	Role A	Role F	Total
Group Exchange Contribution:	15	15	
Individual Exchange Contribution:	5	5	
Score:	14.0	14.0	28

- **F2** means Role F does not choose to increase their initial Group Exchange contribution. The Role A participant will then be asked to make another decision in Stage 3.

Stage 3 - Player A Chooses

If the Role F participant chooses F2, the Role A participant chooses between A3 and A4:

- If the Role A participant chooses **A3**, the round ends and both participants receive the amount they would have earned if they contributed to the group account equal to the average amount they contributed in Part 2.

Scores with A3 Selected (same as the initial scores)

	Role A	Role F	Total
Group Exchange Contribution:	15	5	
Individual Exchange Contribution:	5	15	
Score:	11	21	32

Stage 4 - Random Event

If the Role A participant chooses **A4** in Stage 3, then both player's scores will be randomly selected by the computer. **In either outcome the Role A player will have to pay a fee of 10**

- **N1**: **With probability 0.75** the Role F participant will contribute 3.0 times his or her original contribution to the Group Exchange, the amount they would have contributed had Player F chosen F1 in Stage 2.

Scores with N1 - Probability 0.75

	Role A	Role F	Total
Group Exchange Contribution:	15	15	
Individual Exchange Contribution:	5	5	
Fee:	- 10	0	
Score:	4.0	14.0	18

- **N2**: With probability 0.25, the Role F participant will contribute the same amount that he or she contributed in the initial example.

>

Scores with N2 (same as the initial example) - Probability 0.25

	Role A	Role F	Total
Group Exchange Contribution:	15	5	
Individual Exchange Contribution:	5	15	
Fee:	- 10	0	
Score:	1	21	22

- **In N1 and N2 Role A** will pay a 10 point fee.

Final Payment

The final amount you receive at the end of today's session will include the score you received from Part 2 (20.26 points), plus a randomly selected round from the upcoming part of the experiment.

Quiz 1

Please answer the following questions. See full instructions below for solutions.

In A1, Role F's Group Exchange
Contribution: [ ]

In A1, Role A's Group Exchange
Contribution: [ ]

In A1, Role A's Score: [ ]

In A1, Role F's Score: [ ]

In F1, Role A's Score: [ ]

In F1, Role F's Score: [ ]

Full Instructions Hide - Show

[Next]

Quiz 1

Correct!

[Next]

Quiz 2

Please answer the following questions. See full instructions below for solutions.

In N1, Role A's Score: [ ]

In N1, Role F's Score: [ ]

In N2, Role A's Score: [ ]

In N2, Role F's Score: [ ]

The Probability of N1 Occurring: [ ]

Full Instructions Hide - Show

[Next]

Before we start

You are **Role A**. In Part 2 you contributed on average 41%.

Click next to continue.

Next

Round 1 of 10 - Select your decision

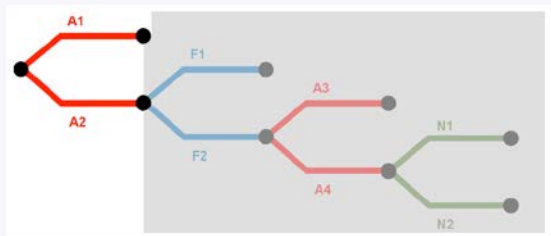You will be a **Role A** participant for the remainder of this experiment.

In Part 2 you contributed on average 41% to the group exchange.

○ A1 - see Baseline Scores in instructions below.

Baseline Scores with A1 Selected

	Role A	Role F	Total
Group Exchange Contribution:	15	5	
Individual Exchange Contribution:	5	15	
Score:	11	21	32

○ A2 - means Role F will be asked to increase their Group Exchange contribution in Stage 2.

Next

Full Instructions Hide - Show

Round 1 of 10 - Select your decision

In making this decision, assume Player F selected F2.

In Part 2 you contributed on average 41% to the group exchange.

○ A3 - see Baseline Scores in instructions below.

Scores with A3 Selected (Same as Baseline)

	Role A	Role F	Total
Group Exchange Contribution:	15	5	20
Individual Exchange Contribution:	5	15	20
Score:	11	21	32

○ A4 - see Stage 4 instructions below.

If **A4** in selected then both player's scores will be randomly selected by the computer. Either N1 or N2 will be randomly selected. <u>**In either outcome the Role A player will have to pay a fee of 10**</u>.

N1: With probability 0.75 the Role F participant will be compelled to contribute 3.0 times his or her original contribution to the Group Exchange, the amount they would have contributed had Player F chosen F1 in Stage 2.
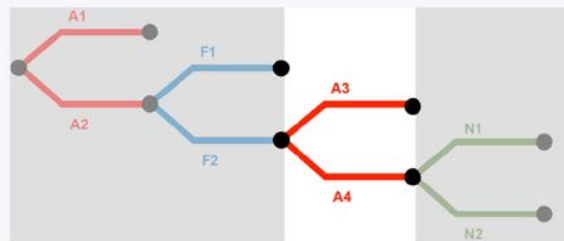
Scores with N1 - <u>Probability 0.75</u>

	Role A	Role F	Total
Group Exchange Contribution:	15	15	30
Individual Exchange Contribution:	5	5	10
Fee:	- 10	0	- 10
Score:	4	14	18

N2: With probability 0.25, the Role F participant will contribute the same amount that he or she originally contributed.

Scores with N2 (Same as Baseline) - Probability 0.25

	Role A	Role F	Total
Group Exchange Contribution:	15	5	20
Individual Exchange Contribution:	5	15	20
Fee:	- 10	0	- 10
Score:	1	21	22

Next

Round 1 of 10 - Random Move

In having nature make this decision, we assume Player A selected A4. Therefore Role F participant's payoffs would be randomly selected by the computer, either N1 or N2. **In either outcome the Role A player will have to pay a fee of 10.**

N1: With probability 0.75 the Role F participant will contribute 3.0 times his or her original contribution to the Group Exchange, the amount they would have contributed had Player F chosen F1 in Stage 2.

>

Scores with N1 - Probability 0.75

	Role A	Role F	Total
Group Exchange Contribution:	15	15	
Individual Exchange Contribution:	5	5	
Fee:	- 10	0	
Score:	4.0	14.0	18

- **N2**: With probability 0.25, the Role F participant will contribute the same amount that he or she contributed in the initial example.

>

Scores with N2 (same as the initial example) - Probability 0.25

	Role A	Role F	Total
Group Exchange Contribution:	15	5	
Individual Exchange Contribution:	5	15	
Fee:	- 10	0	
Score:	1	21	22

Nature has decided N1.

Next

Results Round 1 of 10

You are **Role A.**

In Part 2 you contributed on average 41% to the group exchange.

You and your counterparty ended up at **A1.**

Your payoff is 11.00.

Your counterparty's payoff is 21.00.

Next

Full Instructions Hide - Show

Final Results

Round 8 was randomly selected as your paid round.
You earned a score of **11.00**.
Full Instructions Hide - Show

Round #	Final	Score
1	A1	11.00
2	A1	11.00
3	A1	11.00
4	A1	11.00
5	A1	11.00
6	A1	11.00
7	A1	11.00
8	A1	11.00
9	A1	11.00
10	A1	11.00

Your score from Part 2: 20.46 points.
Your score from Part 3, Active Session: 11.00 points.
Total Score: 31.00 points.

Converting your points to INR at a rate of 1 point to 8 INR,
you will receive: 252 INR plus your showup allowance of INR 600.00.
Rounding this amount up to the nearest 5 INR for a total payment of **INR 855.00**.

Before we go to the final screen, we have a short questionnaire,

What is the month of your birth?

[--------- ▾]

What is the year of your birth?

[   ]

Are you male or female?

[--------- ▾]

What language do you speak most often at home?

[   ]

What is your highest completed education level?
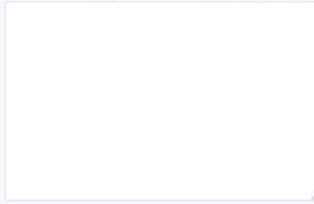
[--------- ▾]

If you studied at university or vocational school, what field did you study?

[   ]

What was your household's approximate income last month:
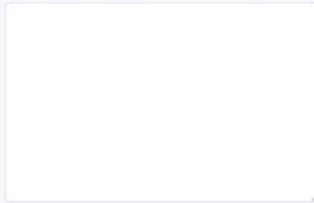
[   ]

How many years have you worked with Blue Ribbon?

[   ]

Approximately how many hours do you volunteer for Blue Ribbon in a typical week?
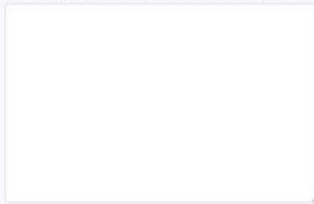
[   ]

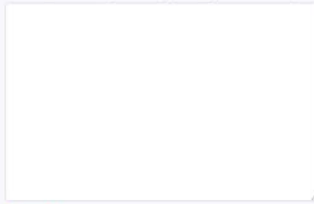In Part 2, how did you decide how much to contribute to the group exchange?

[ ]

In Part 3, how did you decide between A1 and A2?

[ ]

In Part 3, how did you decide between A3 and A4?

[ ]

In Part 3, how did your strategy change over the many rounds you played?

[ ]

Next

Final Results

Thank you for taking part in this experiment. Please remain seated, the experimenter will call you in a moment to pay you.

3. Field Implementation Photographs

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