# Studying the Effect of Formal Rules on Behavior and Social Norms using Lab and Lab-in-the-Field Experiments

A Dissertation
Presented to
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By

Pavitra Govindan
B.Tech., Indian Institute of Technology, Delhi, 2008
M.A., Delhi School of Economics, 2012
M.A., Brown University, 2013

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Pedro Dal Bó, Advisor

Recommended to the Graduate Council

Date ⎯⎯⎯⎯⎯          ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯

Louis Putterman, Reader

Date ⎯⎯⎯⎯⎯          ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯

Andrew Foster, Reader

Approved by the Graduate Council

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Andrew G. Campbell, Dean of the Graduate School

# VITA

Pavitra Govindan is originally from New Delhi, India. She graduated with a Bachelor of Technology from the Indian Institute of Technology, Delhi in 2008 where she majored in Electrical Engineering (Power) and minored in Business Management. After graduating, she worked for two years as a technology consultant at iRunway India, a start-up firm in Bangalore. As a consultant, she provided litigation support in intellectual property cases to leading corporations and law firms in the United States. Despite her degree in electrical engineering, Pavitra was keenly interested in learning about human behavior both from economic and psychological point of view. This interest led her to pursue and recieve a Masters in Economics from Delhi School of Economics in 2012, and eventually led to her enroll in Brown University's doctoral program in economics. During her PhD, she won two grants for her research project on studying interaction between formal rules and norms in India, one from the National Science Foundation for doctoral dissertation improvement and one from the Center for Contemporary South Asia at Brown University. She was awarded the Brown Economics department's Graduate Teaching Award in 2015. After receiving her Ph.D. from Brown in 2018, Pavitra will join the Universtity of Utah as an Assistant Professor of Economics.

To my parents, Sumathy and Govindan.

**Preface**

In this dissertation, I investigate the effect of formal rules on individual behavior and social norms using lab and lab-in-the-field experiments. I use dictator games in both my experiments wherein the first player, "the allocator" decides how she wants to split her endowments between herself and another person, "the recipient".

In the first chapter, I use a lab-in-the-field experiment in rural India to (1) measure the effect of rules on norms and behaviors and (2) estimate individuals willingness to pay for complying with rules. I study high-caste individuals sharing norms towards disadvantaged low-caste individuals in dictator games. Within the dictator games, I influence (i) initial norms of sharing (low level vs high level of sharing norms), (ii) vary rules of minimum giving (moderate vs radical rules) and (iii) vary fines associated with rule violation. I find that both higher initial norms and more radical rules increase giving behavior in dictator games. Moderate rules are not effective in changing average behavior and norms. High-caste individuals are willing to pay significant amounts of money to be compliant with rules even after controlling for their preferences to conform with social norms. I find that rules change behavior directly via individuals preferences to comply with rules and indirectly by changing beliefs about what actions are socially acceptable. This idea aligns with the expressive law theory wherein law shapes individuals choice of behaviors by changing their intrinsic preferences.

In the second chapter, I use a lab experiment to show that individuals are less likely to comply with a formal rule when they are part of a group with norms conflicting with the rule. In particular, I study sharing norms of a group of "allocators" in dictator games. The allocators share proposals within their group about the appropriate amount to be sent to their respective recipients. After an iterative sharing of proposals, the allocators reach a consensus about the guideline of what should be sent. I consider this consensus as the "norm" of each group. This

norm significantly affects the sending behavior of allocators despite being non-binding. Next, a formal rule is introduced that requires each allocator to share her initial endowment equally. Breaking the rule entails a non-deterrent sanction. I find that the allocators are 22% less likely to obey the rule of equitable sending if they belonged to a group that had a less-than-equal sharing norm. This result is robust to controlling for individuals' personal characteristics like their initial proposal in the discussion about the appropriate amount to be sent. The results suggest that a rule that is conflicting with a group's norm is less likely to be complied with by the group's members. Thus, lawmakers may need to take into account prevailing norms of groups in order to design effective laws.

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## 1.1   Introduction

Developing countries are rife with social norms which exacerbate disadvantage. Policy makers in many of these countries attempt to change such social norms by introducing progressive laws. Sometimes these progressive laws are ineffective in the presence of norms that conflict with these laws (Acemoglu and Jackson 2017). However, in some cases these laws have been able to alter the norms by drawing them closer to the law (Aldashev et al 2011). Understanding what makes a law effective in changing behavior and social norms is essential to crafting better laws. This understanding will help policy makers to replace earlier, regressive norms with more efficient and equitable social norms.

The development economics and legal literature hypothesize that moderate laws may be more effective than radical ones in initiating behavioral change. Acemoglu and Jackson (2017) study how law influences people's behavior when it is different from persistent social norm. They show that "laws that are in strong conflict with prevailing social norms may backfire, while gradual tightening of laws may be more effective in influencing social norms and behavior". Aldashev et al (2011) in their theoretical paper suggest that "modern laws may have an effect on customary rules and that moderate laws may be more effective than radical ones".

Although the literature suggests via theory and empirical examples that moderate laws may be better than radical ones, the causal effect of a moderate and radical law on behavioral and norm change has not yet been explored in the literature. Further, an individual's willingness to

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pay to be compliant with a law has not been studied. This may be because the comparison of societies with different levels of law is confounded by unobservables such as the difference in initial norms, level of legal enforcement, and legitimacy of law.

In this chapter, I study the economic implications of having a moderate versus a radical rule in changing behavior that is under the influence of social norms. I study this in the context of caste norms practiced by the high-caste individuals towards the low-caste individuals in rural India. These norms have been historically regressive and discriminatory towards the low castes. Many of these norms persist to this day. For instance, members of high castes consider the low castes to be "polluted" and exclude them from using public goods like water from public wells and places of worship (Thorat 2002). Despite laws supporting the rights of the low castes, discrimination against these people is still evident in many parts of the country (Hoff and Pandey 2004).

Enforcement of laws that encourage fair behaviors among the high-castes may be difficult as it requires monitoring private behavior of groups and individuals which is costly. This may lead to a low probability of punishment for breaking the laws, thus making the sanctions associated with violation of the law small in expected terms. These sanctions are, thus, non-deterrent for individuals who only care about material payoffs. The success of a law in these cases may rely mainly on people's willingness to comply with the rules and the law's effect on people's collective beliefs about what the "right" thing to do is.

Using a lab-in-the-field experiment in rural Tamil Nadu in India, I study how a high-caste individual shares resources between herself and a low-caste individual in dictator games. Each high-caste individual is the decision-maker and is matched with a low-caste individual who plays the role of the recipient. Within the dictator games, I influence initial norms of sharing and then introduce a rule of minimum required giving. I vary initial norms and formal rules

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across treatments and measure behavioral and norm changes of high-caste individuals towards low-caste individuals. I measure high-caste individuals' willingness to pay to comply with these rules. A brief description of the design is as follows.

Each high-caste individual plays two rounds of dictator games. In each of the rounds, the high-caste individual is allotted money and is asked to divide the money between herself and a matched low-caste individual. In the first round, I influence initial norms by giving subjects information about other subjects' allocation behavior and in another session. I vary the information given in the first round across two between-group treatment conditions. In the second round, I introduce a rule that requires a minimum amount to be sent. Violation of the rule is penalized by a non-deterrent fine. I vary the rule in the second round across three different between–group rule conditions wherein one of the conditions does not have a rule. Thus, I have a 2X3 design wherein I vary norm information across two dimensions and the rule across three dimensions. In addition, I have a control group for which I do not exogenously influence norms and did not introduce any rules.

In addition to measuring individuals' allocation behaviors, I measure the social acceptability associated with each action that an individual can take in the dictator game using the norm-elicitation method in Krupka and Weber (2013). I also measure the beliefs of individuals about what the majority of individuals in their session would have done.

I study the effects of the different treatment conditions on behavior, beliefs about social acceptability of different actions and beliefs about others' behaviors. I find that the information about what others gave and what others approved of giving in another session significantly influences giving among the high-castes and beliefs about what is socially acceptable and unacceptable. The more demanding rules are less complied with but are more effective in changing high-caste individuals' average behaviors, beliefs about what others do and beliefs about which

actions are socially acceptable. In addition, I structurally estimate the preference parameters of high-caste individuals under non-deterrent penalties. High-caste individuals are willing to pay about 65% of their endowment in the dictator game to be compliant with rules.

I find that the rules have heterogeneous effects on different high-caste individuals. Individuals who are less generous in Round 1 increase sending under both moderate and radical rules by about the same amount. Individuals who are more generous in Round 1 do not change their behavior or beliefs under a moderate rule but significantly increase their sending and beliefs about social acceptability and others' actions when exposed to a radical rule. Thus, it may be important to know types of individuals, their composition and heterogeneous effects of rules on their behavior to design optimal rules.

There are experimental studies about the interaction between legal and social norms in public goods games (see for e.g. Kube and Traxler 2011; Galbiati and Vertova 2008; Tyran and Feld 2006) that analyze how mild laws affect behaviors, and find that laws have an expressive role in helping individuals coordinate their actions. The presence of strategic interdependence in public goods games creates difficulties in studying the impact of social influence on norm formation and change. This is because even if one observes change in behavior upon observing other subjects' choices, it is hard to disentangle to what extent these changes are due to social influence and to what extent they are caused by the fact that such information affects the person's strategic decision calculus that includes reciprocity, spite and other strategic behavior. Further, when strategic interdependence is present, subjects' beliefs regarding what constitutes socially appropriate behavior may be influenced by the strategic environment itself (Cason and Mui 1998). Hence, I used dictator games in the experiment because these games are devoid of any strategic interactions if subjects only care about material payoffs, and thus are simpler for studying norm dynamics.

There are various mechanisms that could explain the behavioral response of individuals to different laws. The one I study in this chapter is the expressive law mechanism. Cooter (1998) theorizes that laws can be used to change people's behavior by changing their collective beliefs about what the "appropriate" thing to do is. If a law is able to change these beliefs among people, it could pull a norm towards itself even if the sanctions associated with the law are non-deterrent. This idea aligns with the expressive law theory wherein law shapes individuals' choice of behaviors by changing their intrinsic preferences. I find that rules change behavior directly via individuals' preferences to comply with rules and indirectly by changing beliefs about what actions are socially unacceptable.

The rest of the chapter is organized as follows. I define the social norms, rules and utility function of individuals in Section 2, I describe the experimental design in Section 3, discuss the results in Section 4 and conclude in Section 5.

## 1.2  Measuring Social Norms and Rules

In this chapter, I measure both descriptive and prescriptive norms. Descriptive norms are defined as beliefs about what the majority of others would do in a similar situation (Bicchieri 2006 ).

I use the definition of prescriptive social norms by Krupka and Weber (2013). Prescriptive social norms are collective perceptions among members of a population regarding the social acceptability of certain behaviors. Following the definition in Krupka and Weber (2013), let $A = \{a_1, a_2, ... a_K\}$ be a set of $K$ actions available to a decision-maker. A social norm, $N(a_k)$ $\in \{0, 1\}$ is an empirically measurable belief about whether action $a_k$ is socially unacceptable or acceptable. The beliefs about social acceptability of an action are measured using a binary variable instead of a more continuous variable for simplicity.

For each action, an individual is incentivized to coordinate with others in the session on whether that action will be considered as socially acceptable (or not) by others in the same session. $N(a_k)$ is zero if the action $a_k$ is considered socially unacceptable and is 1 if it is considered to be socially acceptable. Thus, each individual has a set of actions that she considers to be socially acceptable. Let us call this set of socially acceptable actions as $S \subset A$. The decision to have only two choices to coordinate on was made to keep the design as simple as possible.

In the model, the decision-maker cares about both the monetary payoff produced by a certain action and whether that action is considered acceptable by majority of others. In addition, when the decision-maker is exposed to a rule $R$, I assume that she has a preference to comply with rules.

$$U(a_k, R, f) = \beta V(\pi(a_k, R, f)) + \gamma \mathbb{1}_{a_k \in S} + \eta \mathbb{1}_{a_k \geq R} \tag{1.1}$$

The function V() represents the value an individual places on monetary payoff $\pi$; I assume that this function is increasing in $\pi(a_k, R, f)$. An individual's monetary payoff $\pi$ is affected by her choice $a_k$, rule $R$, and fine $f$. The parameter $\gamma$ represents the degree to which an individual cares about social acceptability of her actions. The parameter $\eta$ represents the preference to abide by rules. In my experimental design, I exogenously vary rules, information about social acceptability of certain choices and fine in order to estimate the parameters of this model.

## 1.3 Experimental Design

I employ historically advantaged and disadvantaged groups of high-caste and low-caste individuals as my subjects in the experiment. The low-caste individuals in this experiment belong to the Scheduled caste groups in India. The Scheduled Castes is a set of castes that are recognized by the government of India as being the most economically and socially disadvantaged among all castes. The high-castes in this experiment are all castes other than the Scheduled Castes. The high-caste individuals in this experiment belong to the Other Backward Caste or Other Caste category in Tamil Nadu. The Other Backward Castes are a set of dominant caste groups in Tamil Nadu and have political affluence despite the "Other Backward" name given to their caste groups.

I use dictator games as a major tool in the experiment. In a dictator game, the first player, "the dictator" or the "decision-maker", decides how she wants to split her endowment between herself and another person, "the recipient". High-caste subjects are assigned the role of decision-makers and low-caste subjects are assigned the role of recipients. The high-caste subjects come to the lab while the low-caste subjects do not come to the lab to participate in the experiment. The low-castes do not have any active decisions to make in the experiment and are transferred money allocated to them by the high-caste subjects in their respective households. The high-caste subjects are recruited from villages with a high-caste majority while the low-caste subjects are recruited from villages with a low-caste majority. This is done to avoid potential conflicts between people of different castes within a village. The focus of this chapter will be on the decisions made by the high-caste subjects henceforth referred to as decision-makers.

Each decision-maker in the lab is given an experimental ID and is told that all her decisions would be stored and communicated using this experimental ID. This is done to preserve

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the anonymity of the subjects and to minimize the demand effects in the dictator game. Their responses are collected using paper and pen and the language of instruction is Tamil. Decision-makers play two rounds of dictator games. One of the two rounds is randomly chosen for payment and a coin toss at the end of a session determines which round is paid out. The detailed experimental design is described as follows.

## 1.3.1 Round 1: Norm manipulation in Dictator game

Each decision-maker is given 200 rupees (about $3) of fake paper money and is told that she is matched with a recipient. [1]The decision-maker is given two envelopes of different colors with one marked as "money for recipient" and the other marked as "money for me". The decision-maker decides how much of the 200 rupees she wants to send to the recipient and how much to keep for herself in these envelopes.

The decision-makers are told that the recipient is a male or a female, is greater than 18 years of age, belongs to a village in the state of Tamil Nadu and belongs to the scheduled caste community. The caste identity of the recipient is made salient to activate caste norms among the decision makers about sharing resources with a person of a lower caste.

Before the decision-makers make their allocation decisions, they are exposed to one of three different norm conditions in a between-group design. The norm conditions are assigned at the session level. In the first norm condition, the decision-makers are not given any information about what other decision-makers in a different session did and whether they found that action to be socially acceptable (Control). In the second norm condition, the decision-makers are told that "In another session of the experiment, a majority of decision-makers sent 40 rupees and

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[1]Ten 20 rupee fake notes (similar to that of money used in some Board games such as Monopoly) is given to each decision-maker. The decision-makers are told that they will get real money in exchange for the fake notes at the end of the session if this round is selected for payment.

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believed that it is socially acceptable to send 40 rupees to the recipients" (Norm 40). In the third norm condition, the decision-makers were told that "In another session of the experiment, a majority of decision-makers sent 60 rupees and believed that it is socially acceptable to send 60 rupees to the recipients" (Norm 60). The norm condition of others giving 40 rupees and 60 rupees was constructed from results of a pilot session and did not involve any deception. The different norm conditions are intended to affect subjects' beliefs about what others do and what actions others would find socially acceptable. This methodology is followed as in Bicchieri and Xiao (2009).

The decision-makers are told that their sending decision in round 1 would be shared with another decision-maker at the end of the session. The main reason for having feedback in this experiment is to increase observability of one's actions and thus increase the social pressure associated with adhering with the norms and rules.

I give a set of comprehension questions to the decision-makers to make sure they understood the major elements of the decisions they need to make. I measure three outcome variables in Round 1 of the experiment that are summarized as follows. The first outcome variable is the amount sent by the decision-maker in the dictator game.

The second outcome variable is each decision-maker's beliefs about which actions are socially acceptable in the dictator game in Round 1. The decision-makers answer 11 questions rating social acceptability of each of the actions $a$ in their choice set $C \equiv \{0, 20, 40 \cdots 200\}$ using the methodology of Krupka and Weber (2013). For each possible amount $a$ that could be sent the following question is asked: "Do you think a majority of others in this session will approve of sending $a$ rupees? (a) Yes (b) No". If their answer to this question matches with the answer of the majority of others in the session, they could earn an extra 20 rupees. Thus, they are incentivized to coordinate on the answers to each of these questions. The subjects are in-

formed that one of the 11 questions' answers would be randomly chosen for payment for Round 1. If there are norms about which of these actions are socially acceptable or unacceptable, this coordination game should be able to capture that norm. For each decision-maker, I find the minimum action in the set of socially acceptable actions and call it the minimum socially acceptable action. I use this measure in regression estimations.

The third outcome variable I measure is each decision-maker's belief about what the majority in the session would have sent to their matched recipient. If the decision-maker's answer to this question matched with what the majority sent, then she would earn an extra 20 rupees.

### 1.3.2   Round 2: Introduction of Rules in Dictator game

In the second round, each decision-maker plays dictator games again as in the first round. However, before the decision-maker makes a decision in this round, one of three different rules of minimum acceptable sending is introduced in a between-group design. The rule conditions are randomly assigned at the session level.

The first rule condition is to have no rule in the second round, thus making it identical to the first round. The no-rule condition is used as a base treatment condition to control for any potential order effects. The second rule condition is Rule60 wherein each individual is required to send at least 60 rupees to the recipient matched with her. If she breaks the rule, she will have to pay a fine of 15 rupees. The third rule condition is Rule100 wherein each individual is required to send at least 100 rupees to the recipient matched with her. If she breaks the rule, she will have to pay a fine of 15 rupees. The fine is non-deterrent so that a rational selfish person would not have a reason to change behavior. The non-deterrent fine is put in place as we want to study rules which have low enforceability and thus have a low expected fine.

As in the first round, the decision-makers are told that their sending decision in round 2 would be shared with another decision-maker at the end of the session. I give another set of comprehension questions to the decision-makers to make sure they understood the payoff structure under the rule.

I measure the same three outcome variables in Round 2 of the experiment as the ones measured in Round 1.

### 1.3.3   Feedback

At the end of Round 2, each decision-maker's actions in Round 1 and Round 2 are revealed to another decision-maker in the session. This is done to implement the feedback process that is told to the subjects in both the rounds.

### 1.3.4   Questionnaire

At the end of the session, decision-makers fill a questionnaire where they answer descriptive questions about the experiment such as what were the reasons for sending the amount they sent in each of the rounds and if they remembered the caste of the recipient. They also answer questions regarding their demographic information like gender, income, education, religion, caste, occupation, own income and household income.

## 1.4   Results

I conducted 15 experimental sessions in June and July 2017 in six villages in Dindigul district of Tamil Nadu. A total of 491 subjects participated in the experiment in the role of a decision-maker, with an average of 33 subjects per session. The subjects who played the role of decision-makers were residents of these six villages. They were invited to participate in the ex-

periment by research assistants who visited households in the village giving information about the time and venue of the experiment. Table 1.1 displays the characteristics of these subjects. 66% of the subjects were women, 66% were Christians, 92% of them belonged to the high caste and 37% of them were employed. The average age of a subject is 32 and their average years of education is 12 years. A high number of subjects correctly answered the questions regarding the experiment. For example, 96% of the subjects understood when a fine will be applied to their earnings. The subjects earned an average of 231.71 rupees (about \$3.55), with a maximum of 320 rupees and a minimum of 100 rupees. The average daily earnings of unskilled manual labor in rural Tamil Nadu is 205 rupees (Source: IndiaStat). Given that sessions lasted for on average 90 minutes, the earnings represent a significant hourly rate.

In addition to the 15 sessions in the main experiment, I conducted four ancillary sessions with 112 subjects who were treated with a small variation in the fine. I did this in order to disentangle the preference parameters of earnings and rule compliance in a discrete choice model. For the reduced form results in the chapter, I will focus only on the 15 experimental sessions conducted with a single fine. I have a total of 603 decision-makers in the experiment. Since I used dictator games, I recruited another 603 subjects as recipients who received the money that the decision-makers allocated to them. These subjects belonged to the Scheduled Caste community and belonged to three villages, different from the decision-makers' villages. These subjects filled out a small demographic survey and received the money allocated to them by the decision-makers in addition to a participation fee.

### 1.4.1 Round 1 results

The variables measured in the first round are summarized in Table 1.3. The average amount sent in the first round of dictator games is 80 rupees out of a total of 200 rupees. These percentages are similar to dictator games conducted in many experiments in developing countries (Engel

|  | Mean | Standard Deviation |
|---|---|---|
| **Subjects** | | |
| Female | 0.66 | 0.47 |
| High Caste | 0.92 | 0.27 |
| Employed | 0.37 | 0.48 |
| Age | 32.24 | 13.70 |
| Years of education | 11.55 | 3.60 |
| Monthly Household Income | 9150.76 | 9741.98 |
| Christian | 0.66 | 0.47 |
| **Subject Comprehension** | | |
| Total Amount of Money | 0.96 | 0.20 |
| Recipient's Envelope Color | 0.95 | 0.22 |
| Anonymity | 0.97 | 0.17 |
| Application of fine | 0.96 | 0.19 |
| Payoff(Amount Sent $<$ Rule) | 0.88 | 0.32 |
| Payoff(Amount Sent $\geq$ Rule) | 0.96 | 0.20 |
| **Earnings (in Rupees)** | | |
| Maximum | 320.00 | |
| Average | 230.71 | 36.86 |
| Minimum | 100.00 | |
| Observations | 491 | |

Table 1.1: Summary Statistics of Sessions

|  | No rule | Rule: Send at least 60 rupees | Rule: Send at least 100 rupees |
|---|---|---|---|
| No Information | 2, 60 | | |
| Norm Information: 40 | 2, 71 | 3, 94 | 2, 76 |
| Norm Information: 60 | 2, 75 | 2, 63 | 2, 52 |

Table 1.2: Number of Sessions and Sample Size per Treatment

|                            | Mean (in Rs) | Standard deviation |
| -------------------------- | ------------ | ------------------ |
| Amount sent in round 1     | 79.71        | 35.51              |
| Belief: Majority's sending | 74.26        | 33.93              |
| Minimum acceptable amount  | 47.88        | 34.18              |
| Observations               | 491          |                    |

Table 1.3: Summary Statistics of Baseline Variables

2011). About 40% of the subjects sent half the allocation , 50% sent less than half and 10% sent greater than half to their matched recipient. Further, subjects believed on average that a majority of others sent 74 rupees and believed that the minimum socially acceptable amount that can be sent is 48 rupees (about 25% of the total amount).

Table 1.4 shows that the first round behaviors and beliefs are balanced across different rule conditions within a norm condition. The behavior, beliefs about others' behavior and beliefs about minimum socially acceptable behavior are balanced across different rules treatment within each of the norms conditions. I use Generalized Least Squares (GLS) estimates with session level random effects to estimate the balance regressions. All the estimates in this chapter are reported using GLS with session level random errors. This specification captures the random events that happened within each session. For example, there were some sessions where babies cried and one where a non-participant started yelling about something unrelated in the vicinity of the experiment. These session level aberrations are captured by the random effects GLS model.

Table 1.4 also reveals that the average amount sent in round 1 is significantly greater than the average belief about what the majority are sending (p=0.000). It suggests that individuals send more money but do not expect their peers to be as generous as them.

| Norm | | Rules | | | p-values | | |
|---|---|---|---|---|---|---|---|
| | | No rule | Rule 60 | Rule 100 | col1=col2 | col2=col3 | col1=col3 |
| | Amount sent in round 1 | 84.46 | 71.34 | 67.75 | 0.349 | 0.797 | 0.273 |
| | | (10.81) | (8.94) | (10.74) | | | |
| Norm 40 | Belief: Majority's sending | 79.92 | 64.60 | 61.73 | 0.159 | 0.789 | 0.122 |
| | | (8.31) | (6.92) | (8.23) | | | |
| | Minimum acceptable amount | 46.41 | 39.37 | 43.88 | 0.329 | 0.528 | 0.744 |
| | | (5.52) | (4.66) | (5.43) | | | |
| | Amount sent in round 1 | 86.61 | 91.23 | 84.34 | 0.485 | 0.326 | 0.740 |
| | | (4.55) | (4.80) | (5.12) | | | |
| Norm 60 | Belief: Majority's sending | 73.88 | 84.98 | 78.33 | 0.179 | 0.439 | 0.599 |
| | | (5.74) | (5.95) | (6.21) | | | |
| | Minimum acceptable amount | 50.64 | 54.59 | 53.46 | 0.530 | 0.870 | 0.671 |
| | | (4.25) | (4.64) | (5.10) | | | |

Standard errors in parentheses

Note: Last three columns show p-values of comparisons of baseline variables across different rule treatments

Note: Standard errors and p-values are estimated using GLS specification with session level
random effects

Table 1.4: Balance of Baseline Variables across Rule Treatments

| | Amount sent in round 1 | Belief: Majority's sending | Minimum socially acceptable amount |
|---|---|---|---|
| Norm60 | 13.61** | 10.90* | 9.916*** |
| | (6.385) | (6.021) | (3.295) |
| | | | |
| Constant | 73.99*** | 68.15*** | 42.80*** |
| | (4.306) | (4.059) | (2.188) |
| Observations | 431 | 428 | 431 |

Standard errors in parentheses

Note: GLS specification with session level random effects

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: Norm40 is the reference category. This table shows that the initial seeding of information that others sent and approved of sending 60 rupees (compared with 40 rupees) increased sending behaviors, beliefs about majority's sending and beliefs about minimum socially acceptable amount that can be sent.

Table 1.5: Effect of Norm Condition on Behavior and Beliefs

Table 1.5 compares round 1 measures of behavior and beliefs across the norm information conditions. We find that being exposed to the Norm60 information condition (compared with Norm40 information condition) increases sending behavior by 13.6 rupees (p=0.033), beliefs about others' sending by 10.9 rupees(p= 0.070) and the beliefs about minimum socially acceptable behavior by 9.9 rupees(p=0.003) . Thus, the initial seeding about behavior of others in another session was effective in inducing different behaviors and beliefs. This suggests that people take into account what others did and what others believed is socially acceptable while making their own decisions. The minimum socially acceptable amount to be sent is strongly influenced by this treatment.

## 1.4.2 Round 2 results

A rule of sending at least 60 rupees or 100 rupees was introduced before round 2 of the dictator games. In Figure 1.1, we compare the levels of compliance across these two rules within each norm condition. We find that when exposed to the norm of sending 40 rupees, the rule compli-
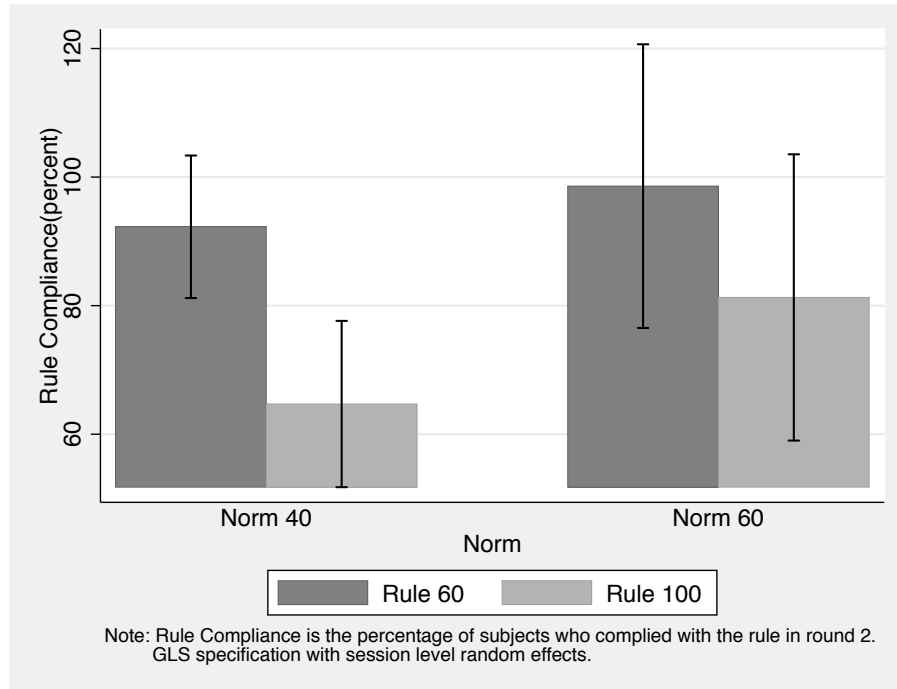
Figure 1.1: Rule Compliance by Norms

ance is 64.69% under Rule100 and is 92.27% under Rule60 and they are statistically different (p=0.002). On the other hand, when exposed to the norm of sending 60 rupees, the rule compliance is 81.27% under Rule100 and 98.60% under Rule 60, and the two are not significantly different from each other (p=0.279). This suggests that under low initial norm conditions, people are less compliant with stricter rules and are more compliant with more moderate rules. This statement, however, may not hold when the initial norms are high and compliance with stricter rules is about the same as compliance with moderate rules.

Next, we focus on change in behavior and beliefs between round 1 and round 2 for each of the rules treatments. In Table 1.6, I present the effect of being in Rule60 and Rule100 treatment conditions under Norm40. The effects are compared with those who had no rules in round 2. We find that Rule 60 has a statistically insignificant effect on the sending behavior under Norm 40 (p=0.199) while Rule 100 increases sending by about 19.5 rupees (p=0.030). The presence of rules, however, changes beliefs about what others are sending under both treatments. The

Rule60 treatment increases beliefs about others' sending by 20.08 rupees (p=0.000) while Rule 100 increases people's beliefs about others' sending by 33.9 rupees (p=0.000). Thus, we find that the rules have a stronger effect on the beliefs about how others will behave and has less impact on one's own behavior. This may be a result of the fact that on average people are sending high amounts and thus don't have a reason to change their behavior by a lot. However, since their beliefs about others' sending is lower, the rule has a bigger impact on change in their beliefs.

The change in the minimum acceptable sending amount is statistically insignificant under Rule 60 condition (p =0.123) while the change in the minimum acceptable sending amount increases by 24 rupees (p=0.000) under Rule 100 condition. Putting these pieces of information together, we can infer that Rule100 is better at changing average behavior, changing beliefs about majority's sending and changing the minimum socially acceptable amount to be sent. See that sending 100 was the most socially acceptable behavior in Round 1 across all treatments (Figure 1.2). Thus, having a rule that supports the most socially acceptable behavior makes people increase their sending and update their beliefs about others' sending and minimum acceptable sending. The constant in the regression for each of the change variables are not statistically different from zero. This implies that there was no significant change in behavior between round 1 and round 2 if there was no rule in round 2.

Table 1.7 presents the effect of being in Rule60 and Rule100 conditions under Norm60. Again, the base treatment is the one where subjects were not exposed to any rules. Under Rule60 condition, we find no statistically significant effect on change in amount sent (p=0.784), change in belief about majority's sending (p=0.259) or change in minimum socially acceptable amount (p=0.314). In this case, the norm condition and the rule are perfectly aligned. We find no additional effect of having a formal rule in this case. Under Rule100 condition, we find that the amount sent increases on average by 15.85 rupees but this increase is not statistically signifi-

|  | Amount sent | Belief: Majority's sending | Minimum socially acceptable amount |
|---|---|---|---|
| Rule60 | 10.73 | 20.08*** | 9.068 |
|  | (8.343) | (4.089) | (5.884) |
| Rule100 | 19.51** | 33.90*** | 24.01*** |
|  | (9.016) | (4.266) | (6.176) |
| Constant | -1.295 | -5.634* | -1.408 |
|  | (6.403) | (3.057) | (4.441) |
| Observations | 239 | 236 | 241 |

Standard errors in parentheses

Note: GLS specification with session level random effects.

Note: The dependent variables are changes between Round 1 and Round 2 in amount sent, beliefs about majority's sending and beliefs about minimum socially acceptable amount that can be sent under Norm40 treatment condition.

Note: No Rule is the reference category. This table shows that having a rule of sending at least 100 rupees compared with having no rule has a significant effect on changes in amount sent and beliefs between Round 1 and Round 2. Having a rule of 60 compared with having no rule has no statistically significant effect on changes in amount sent and beliefs about minimum socially acceptable amount but increases beliefs about the majority's sending.

$^{*}$ $p < 0.10$, $^{**}$ $p < 0.05$, $^{***}$ $p < 0.01$

Table 1.6: Behavioral Change (Norm 40)

|  | Amount sent | Belief: Majority's sending | Minimum socially acceptable amount |
|---|---|---|---|
| Rule60 | 3.418 | -5.877 | 6.752 |
|  | (12.50) | (5.210) | (6.713) |
| Rule100 | 15.86 | 27.38*** | 30.45*** |
|  | (12.60) | (5.429) | (7.044) |
| Constant | -2.205 | 2.182 | -2.933 |
|  | (8.781) | (3.557) | (4.563) |
| Observations | 190 | 188 | 190 |

Standard errors in parentheses

Note: GLS specification with session level random effects

Note: The dependent variables are changes between Round 1 and Round 2 in amount sent, beliefs about majority's sending and beliefs about minimum socially acceptable amount that can be sent under Norm60 treatment condition.

Note: No Rule is the reference category. This table shows that having a rule of sending at least 100 rupees compared with having no rule has a non-significant effect on behavioral change but has a positive significant effect on belief changes about majority's sending and minimum socially acceptable amount. Having a rule of 60 compared with having no rule has no statistically significant effect on changes in behavior and changes in beliefs about majority's sending and minimum socially acceptable amount.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 1.7: Behavioral Change (Norm 60)

cant (p=0.208). However, we find that the belief about what the majority is sending increases by 27.38 rupees (p=0.000) and the minimum socially acceptable amount increases by 30.45 rupees (p=0.000). Thus, under the higher norm within the experiment, we find that the stricter rule performs better at changing beliefs about majority's sending and minimum socially acceptable behavior. The zero intercept in table suggests there is no significant difference between round 1 and round 2 behavior if there were no rule in round 2.

Figure 1.2 shows the impact of rules on social acceptability of different actions. In the first three graphs in the first row, we see that under Norm 40 and no Rule, there is no difference between the social acceptability of actions in round 1 and round 2. However, under Rule 60

Proportion of Subjects who Believe a Given Amount Sent is Socially Acceptable

Note: Subjects rate each value of amount that can be sent as being social acceptable or unacceptable in Round 1 and Round 2. Each graph in in the above panel represents the proportion of people in a round who believed a given amount sent is socially acceptable. In these graphs, we find that No Rule condition in Norm 40 and Norm 60 conditions do not change beliefs about social acceptability between Round 1 and Round 2 of the experiment. Rule 60 condition reduces the social acceptability of sending 40 rupees in Round 2 across both Norm 40 and 60 conditions. Rule 100 condition reduces the social acceptability of sending 40 rupees and 60 rupees in Norm 40 condition. Rule 100 condition reduces the social acceptability of sending 40 rupees, 60 rupees and 80 rupees in Norm 60 condition.

Figure 1.2: Effect of rules on social acceptability of actions

and Rule 100, we find that actions less than 60 and less than 100 respectively become socially unacceptable in round 2. We see a similar pattern when the norm is 60. The rule introduces a discontinuity in social acceptance of certain actions. When the rule is introduced, actions that violate the rule become socially unacceptable.

Table 1.8 presents the effect of being in Rule60 and Rule100 conditions for subjects who sent less than 60 rupees in Round 1. The base treatment is the one where subjects were not exposed to any rules. Under Rule60 condition, we find that amount sent increases on average by 25.98 rupees (p=0.010) but there is no statistically significant change in beliefs about majority's sending (p=0.301) and change in minimum socially acceptable amount (p=0.315). Under Rule100 condition, we find that the amount sent increases on average by 26.49 rupees (p=0.008) and the minimum socially acceptable amount increases by 29.71 rupees (p=0.004). The belief about what the majority sent increases by 30.33 rupees under Rule100 condition but the change

|            | Amount sent | Belief: Majority's sending | Minimum socially acceptable amount |
|------------|-------------|----------------------------|-----------------------------------|
| Rule60     | 25.98***    | 22.42                      | 10.24                             |
|            | (10.05)     | (21.66)                    | (10.18)                           |
| Rule100    | 26.49***    | 30.33                      | 29.71***                          |
|            | (9.953)     | (21.31)                    | (10.18)                           |
| Constant   | 5.236       | 13.77                      | 4.762                             |
|            | (7.627)     | (15.20)                    | (8.244)                           |
| Observations | 101       | 99                         | 101                               |

Standard errors in parentheses

Note: GLS specification with session level random effects.

Note: The dependent variables are changes between Round 1 and Round 2 in amount sent, beliefs about majority's sending and beliefs about minimum socially acceptable amount that can be sent. Data is restricted to those who sent less than 60 rupees in Round 1.

Note: No Rule is the reference category. This table shows that having a rule of sending at least 100 rupees compared with having no rule has a significant effect on changes in behavior and changes in minimum socially acceptable amount between Round 1 and Round 2. Having a rule of 60 compared with having no rule has a statistically significant effect on changes in amount sent but not on beliefs about the majority's sending and beliefs about minimum socially acceptable amount.

$^{*}\ p < 0.10, ^{**}\ p < 0.05, ^{***}\ p < 0.01$

Table 1.8: Heterogeneous Treatment Effects (Amount Sent in Round 1 <60)

is not statistically significant (p=0.155). Thus, for the subjects for whom the rules were binding, we find that the moderate rule performs as well as the radical rule in changing behavior. However, the radical rule is better at changing beliefs about minimum socially acceptable behavior. The zero intercept in Table 1.8 suggests that there is no significant difference between round 1 and round 2 behavior if there were no rule in round 2.

Table 1.9 presents the effect of being in Rule60 and Rule100 conditions for subjects who sent greater than or equal to 60 rupees in Round 1. Again, the base treatment is the one where subjects were not exposed to any rules. Under Rule60 condition, we find that there is no signif-

|  | Amount sent | Belief: Majority's sending | Minimum socially acceptable amount |
|---|---|---|---|
| Rule60 | 0.929 | 5.490 | 6.437 |
|  | (4.834) | (4.000) | (4.677) |
| Rule100 | 12.95** | 27.42*** | 23.35*** |
|  | (5.149) | (4.280) | (5.060) |
| Constant | -2.876 | -3.972 | -3.360 |
|  | (3.485) | (2.839) | (3.252) |
| Observations | 328 | 325 | 330 |

Standard errors in parentheses

Note: GLS specification with session level random effects.

Note: The dependent variables are changes between Round 1 and Round 2 in amount sent, beliefs about majority's sending and beliefs about minimum socially acceptable amount that can be sent. Data is restricted to those who sent at least 60 rupees in Round 1.

Note: No Rule is the reference category. This table shows that having a rule of sending at least 100 rupees compared with having no rule has a significant effect on changes in behavioral and belief changes between Round 1 and Round 2. Having a rule of 60 compared with having no rule has no statistically significant effect on changes in amount sent, beliefs about minimum socially acceptable amount and beliefs about majority's sending.

$^{*}$ $p < 0.10$, $^{**}$ $p < 0.05$, $^{***}$ $p < 0.01$

Table 1.9: Heterogeneous Treatment Effects (Amount Sent in Round 1 $\geq$60)

icant change in amount sent (p=0.848), beliefs about majority's sending (p=0.170) and change in minimum socially acceptable amount (p=0.169). Under Rule100 condition, we find that the amount sent increases on average by 12.95 rupees (p=0.012), belief about what the majority sent increases by 27.42 rupees (p=0.000) and the minimum socially acceptable amount increases by 23.35 rupees (p=0.000). Thus, for the subjects for whom the moderate rules were not binding, we find that the radical rule performs better than the moderate rule in changing behavior and beliefs. The zero intercept in table suggests there is no significant difference between round 1 and round 2 behavior if there were no rule in round 2.

### 1.4.3 Estimating the utility function

I estimate the preference parameters of the utility function described in the theoretical model, and stated again below for convenience.

$$U(a_k, R, f) = \beta V(\pi(a_k, R, f)) + \gamma \mathbb{1}_{a_k \in S} + \eta \mathbb{1}_{a_k \geq R} \qquad (1.2)$$

The function V() represents the value an individual places on monetary payoff $\pi$; I assume that this function is increasing in $\pi(a_k, R, f)$. An individual's monetary payoff $\pi$ is affected by her choice $a_k$, rule $R$, and fine $f$. The parameter $\gamma$ represents the degree to which an individual cares about social acceptability of her actions. The parameter $\eta$ represents the preference to abide by rules.

In the model, an individual has a preference for having more money, cares about the social acceptability of her actions and also cares about following rules. I estimate a conditional logit regression model with Round 2 choices to get the marginal rates of substitution between different choice characteristics in the utility function. In these estimates, I include 112 observations treated with 10 rupees fine which is different from a treatment of 15 rupees fine in the main data. This ancillary data with a fine of 10 rupees has one session for each of the following treatments with sample size in parentheses: Norm40Rule60 (25), Norm40Rule100 (18), Norm60Rule60 (29) and Norm60Rule100 (40). This variation in fine creates an exogenous variation in earnings which is independent of variation in earnings due to rule compliance. This variation allows me to distinguish the preference parameter for earnings from that of rule compliance. Note that both the fines of 10 rupees and 15 rupees are non-deterrent for an individual who cares only about monetary payoffs. The coefficients on the utility function are estimated for rules with non-deterrent penalties.

In Table 1.10, I run a conditional fixed effects logistic regression where the choice variable is the amount to be sent in Round 2. Each choice of amount sent is characterized by the earnings an individual will make, the belief the individual has about social acceptability of that choice and compliance of the individual with the exogenously specified rule. In some specifications, I add squared and cubic terms of earnings to control for non-linear preferences for earnings. In one of the specification, I add indicator function of whether the choice is equal to the rule. I add this indicator function to know if individuals have a preference for rule compliance or to be at the rule.

Rule compliance variable is a dummy variable which is one if an action is in accordance with rule abidance, the social acceptability is an individual' s belief about which actions are considered socially acceptable by the majority of others in the session. I have also included the square of earnings and the cube of earnings in two of my models to control for non-linear income preferences.

In model 1 with linear earnings, I find that the marginal rate of substitution between rule compliance and earnings is 131.39. In the linear model, individuals are willing to give up 131 rupees to follow the rules. In model 2 and model 3, with polynomial terms of earnings included, we find that the coefficient on rule compliance remains relatively stable. In model 4, I drop the social acceptability variable and I find that the marginal rate of substitution between rule compliance and earnings is 184.72 rupees. Since rule compliance is positively correlated with social acceptance (p=0.000), rule compliance is capturing some aspect of social acceptance as well in model 4. These model estimations suggest that individuals do care significantly about following rules and about taking actions that they believe are socially acceptable.

| | Amount Sent (Round 2) | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Earnings | 0.0108*** | 0.0569*** | 0.0136 | 0.0127*** | 0.0104*** |
| | (0.00222) | (0.00612) | (0.0174) | (0.00293) | (0.00237) |
| Social Acceptability | 2.116*** | 1.697*** | 1.656*** | | 2.115*** |
| | (0.140) | (0.169) | (0.168) | | (0.140) |
| Rule Compliance | 1.419*** | 1.187*** | 1.272*** | 2.346*** | 1.360*** |
| | (0.328) | (0.288) | (0.299) | (0.379) | (0.372) |
| Earnings_sq | | -0.000222*** | 0.000272 | | |
| | | (0.0000295) | (0.000211) | | |
| Earnings_cu | | | -0.00000161** | | |
| | | | (0.000000715) | | |
| $\mathbb{1}_{a=Rule}$ | | | | | 0.0756 |
| | | | | | (0.172) |
| Observations | 6481 | 6481 | 6481 | 6611 | 6481 |

Standard errors in parentheses

Model: Conditional logit with errors clustered at session level

$^{*}$ $p < 0.10$, $^{**}$ $p < 0.05$, $^{***}$ $p < 0.01$

Table 1.10: Estimating preference for rule compliance and social acceptance

## 1.5 Conclusion

Empowering disadvantaged groups of population is a key issue in development. These disadvantaged groups are quantitatively important, as witnessed by scheduled castes and tribes in

India, women in most developing countries, and religious minorities in countries with a dominant religion. In this chapter, I study optimal ways to implement progressive legal reform that empower disadvantaged groups in the presence of contrary social norms. I estimate willingness to pay to comply with rules.

I find that radical rules are effective at changing behavior and beliefs about what is socially acceptable in dictator games among high-caste individuals in India. Moderate rules are not as effective in changing average behavior even though they change beliefs about social acceptability of actions. I find that the treatment effect of rules are heterogeneous and differ across individuals with different initial sending behaviors in the dictator game. Average behavioral change among individuals who were less generous in the first round (i.e. sent $\leq 60$ rupees) is about the same under both the moderate and the radical rules. However, the moderate rule is complied with significantly more than the radical rule by such individuals. Average behavioral change among individuals who were generous in the first round (i.e. sent $\geq 60$ rupees) is economically and statistically significant when the rule is radical but the change is not significant when the rule is moderate. I find that individuals are willing to pay significant amounts to comply with rules.

Thus, to design a law that maximizes revenue for the recipients in an allocation sharing situation, we need to know about the initial distribution of behaviors of the decision-makers and heterogeneous effects of the law on different decision-makers. Thus, if individuals in a sharing situation are selfish, a moderate rule will be complied with more and will increase the revenue for the recipient. However, if individuals are reasonably generous, a more radical rule will prove to be more effective in changing behavior and beliefs about social acceptability.

Further extensions of this chapter taking into account different mechanisms such as enforcement through whistle blowing, inter-group bargaining and beliefs of law enforcers could

provide useful information to craft laws that are easy to enforce for the governing body and to comply with for the citizens. This may provide lawmakers with tools to design effective laws that are fair and maximize social welfare.

# 1.6 Appendix

## 1.6.1 Instructions (No Rule Treatment Condition)

(These instructions were used for varied norm conditions as required. This is an English translation of the actual instructions which were in Tamil. These instructions were read out aloud to the subjects. They did not receive a copy of the instructions. They recieved and responded to the consent form, comprehension questions, questionnaires and exit survey questions.)

**Introduction Script**

Good morning/Good afternoon to everyone! Thank you all very much for coming today. We are students of Gandhigram Rural Institute and are here to interact with you for a research experiment.

We are doing this research to understand how an individual makes decisions across different situations. Today we will do some activities. In these activities, we will ask you to make some decisions. The decisions you make will be anonymous and will be kept confidential. We will never take your name. Neither I nor anyone else will be able to know what decision you made as an individual. For this purpose, we have given each of you an ID number. We and other participants in this room will only know you by that number. We will only know your decisions by your ID number and not your name. This applies to everything you do in these activities.

Your participation in this experiment is completely voluntary. The activities will last up to two hours. If you know you cannot stay for up to two hours, please let us know now. You can decide to withdraw from the experiment at any time. If you do so, you will earn a small show-up fee but if you stay for the entire duration of the experiment, you can get additional money.

29

Before we begin, I request you to switch off your phones. Please do not talk to other participants and do not share with them your decisions. Please let us know if you have any questions.

[ANSWER ANY QUESTIONS]

[SHOW THE CONSENT FORM]

We will be giving these consent forms to you. If you wish to participate in the experiment, please read and sign the form.

[DISTRIBUTE THE CONSENT FORMS]

[ASK THE SUBJECTS TO SIGN AND DATE IN THE RESPECTIVE BLANKS]

[COLLECT THE CONSENT FORMS]

**Consent Form**

You are invited to participate in a research experiment of how individuals make decisions. You need to be above 18 years of age to participate in this experiment. We ask that you read this form and ask questions that you may have before agreeing to be in this experiment. The experiment should take less than two hours to complete. You can earn some money by participating in this experiment. The amount you earn will depend partly on your decisions in the activities, partly on the decisions of others and partly on chance.

These activities are confidential and anonymous. We have given each of you an ID number. We and other participants in this room will only know you by that number. We will never take your name. Neither I nor anyone else will be able to know what decision you made as an individual. This applies to everything you do in these activities. At the end of the experiment, you will be asked to answer a few questions about yourself. Kindly answer those questions. Only your ID number, too, will identify this information.

Your participation in this experiment is completely voluntary. The activities will last up to two hours. If you know you cannot stay for up to two hours, please let us know. You can decide to withdraw from the experiment at any time. If you do so, you will earn the show-up fee. You can get earnings in addition to the show-up fee in the experiment only if you stay for the entire duration of the experiment. At the end of the experiment today, you will be given your earnings and the show-up fee, and will be asked to sign a receipt for them. The receipt form will be used by administrative personnel solely to ascertain that funds allocated for the research project are properly utilized.

The records of this experiment will be kept confidential. In any sort of report we might publish, we will not include any information that will make it possible to identify any participant. Access to research records will be limited to the researchers and other scholars.

If you have any questions or concerns, you can contact the main researcher, Pavitra Govindan (Phone no. +91 9619814988).

**Statement of Consent**

I have read the above information. I have asked questions and received answers. I consent to participate in this experiment.


Signature of participant_____


Date_____

There are two main parts in the experiment. You have the opportunity to earn money in both the parts. Your earnings in the experiment will be determined by your earnings in either Part 1 or Part 2, but not by both. At the end of the experimental session, a coin toss will decide which part will be paid out to you. If the coin toss results in a tail, you will be paid Part 1 earnings and if it results in a head, you will be paid Part 2 earnings.

We will discuss details about the Part 2 of the activity when we get to that part. For now, it is sufficient to know that your decisions in Part 1 have no effect on your situation in Part 2.

**Instructions (Part 1)**

Please pay attention to the information that we are about to give you. You will need this information to make decisions and answer questions in the experiment.

Now, you will be given two different colored envelopes [SHOW THE TWO ENVELOPES] and 200 rupees in 20-rupee paper notes. [SHOW THE BUNDLE OF FAKE MONEY].

[ENVELOPES AND MONEY ARE DISTRIBUTED]

[ASK THE RESPONDENTS TO CHECK WHETHER THEY RECEIVED THE TWO DIFFERENT ENVELOPES AND ASK THEM TO COUNT THE MONEY.]

[ASK THEM TO CHECK WHETHER THE ENVELOPES ARE EMPTY.]

[CHECK THE ID NUMBERS IN ENVELOPES AND READ OUT THE WRITINGS ON THE ENVELOPES]

As mentioned on the white envelope, each of you has been matched with another person, also known as your counterpart. This person belongs to a village in Tamil Nadu and is part of the scheduled caste community. This person could be either a man or a woman and is above 18 years of age. You will not know who this person is or what their name is. Similarly, this person will not know your actual identity.

Please consider the 200 rupees you have as real money.

Of the 200 rupees given to you, you will be asked to decide how much of the money, if any, you want to send to the counterpart matched with you.

After that, you will place the amount you want to send to your counterpart in the white envelope and place the amount you want to keep for yourself in the brown envelope. Please note that it is for you to decide whether or not to send any money to your counterpart.

We will conduct a similar experiment for your counterparts. The earnings of the counterpart you are matched with will comprise of a small show-up fee and the amount you send to them. Unlike you, they will not be making any decisions within the experiment.

At the end of the experiment today, we will toss a coin. If the coin tosses results in a tail, you and your counterpart will receive real money earned in this part in exchange for the fake money. So you should treat that fake money like it is real. At the very end of the experiment, your decision of the amount you sent to the counterpart and your ID number will be revealed to one other person in this room. This other person will only know your ID number but not your name.

Does anybody have any questions so far? [ANSWER ANY QUESTIONS]

To make sure that you understood all the experimental instructions, you will be given a set of comprehension questions. [SHOW THE PAPER THAT HAS THE SET OF COMPREHENSION QUESTIONS.] Please answer these questions to the best of your ability; your answers will not affect your earnings from the experiment.

[COMPREHENSION QUESTION 1 IS DISTRIBUTED. ASK THE RESPONDENTS TO DOUBLE CHECK THEIR ID NUMBERS ON THE COMPREHENSION QUESTION HANDOUT]

[EXPLAIN TO THEM THAT THEY NEED TO CHECK THE BOX NEXT TO THE CORRECT ANSWER]

[COLLECT COMPREHENSION QUESTIONS. AND TELL THEM THE CORRECT ANSWER]

**Comprehension Questions: Part 1**

1. How many 20 rupee notes have been given to you?

☐5 notes                ☐10 notes

2. Which color envelope will you use to send money to your counterpart?

☐White Color                ☐ Brown Color

3. Will your counterpart know your name?

☐Yes                ☐ No

4. Is there a chance that you and your counterpart will get real money in exchange for the fake money you use in the experiment?

☐Yes                ☐ No

Answers to the Comprehension Question

1. 10 Notes
2. White Color
3. No
4. Yes

[DISTRIBUTE THE NORMS TREATMENT SLIP AND READ WHAT IS WRITTEN ON IT]

We would like to inform you that:

**"In another session of a similar experiment we conducted in the last few weeks, many of the subjects sent 40 rupees (60 rupees) to their counterpart and said that it was socially acceptable to send 40 rupees (60 rupees)."**

Please let us know if you have any questions.

[ANSWER ANY QUESTIONS]

Now you can put the amount you want to send to your counterpart in the white envelope and put the amount you want to keep for your self in the brown envelope assigned to you. After you make your decision, please put the envelope for the counterpart in this box.

[WAIT FOR SUBJECTS TO MAKE THEIR DECISION AND COLLECT THE WHITE ENVELOPS]

In this part, a person could have sent any amount to their counterpart. For example, a person could have sent 20 rupees, or 40 rupees or 100 rupees or 140 rupees or could have decided to not send any amount to their counterpart. Of these options, subjects in this room would consider sending what amounts do you think as socially acceptable?

[DISTRIBUTE FORM A]

There are 11 questions in Form A. One of these questions will be chosen by lottery. If your answer matches with the majority's answer for that question, you will earn extra 20 rupees.

**Part 1: Questionnaire A**

1.  Suppose a person did not send any money to her counterpart and kept 200 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

☐ Yes                             ☐ No

2. Suppose a person sent 20 rupees to her counterpart and kept the remaining 180 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

☐ Yes                             ☐ No

3. Suppose a person sent 40 rupees to her counterpart and kept the remaining 160 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

☐ Yes                             ☐ No

4. Suppose a person sent 60 rupees to her counterpart and kept the remaining 140 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

☐ Yes                             ☐ No

5. Suppose a person sent 80 rupees to her counterpart and kept the remaining 120 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

☐ Yes                             ☐ No

6. Suppose a person sent 100 rupees to her counterpart and kept the remaining 100 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

☐ Yes                             ☐ No

7. Suppose a person sent 120 rupees to her counterpart and kept the remaining 80 rupees for

herself, do you think a majority of people in this session will find it socially acceptable?

☐Yes ☐ No

8. Suppose a person sent 140 rupees to her counterpart and kept the remaining 60 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

☐Yes ☐ No

9. Suppose a person sent 160 rupees to her counterpart and kept the remaining 40 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

☐Yes ☐ No

10. Suppose a person sent 180 rupees to her counterpart and kept the remaining 20 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

☐Yes ☐ No

11. Suppose a person sent 200 rupees to her counterpart and kept no money for herself, do you think a majority of people in this session will find it socially acceptable?

☐Yes ☐ No

[COLLECT FORM A. DISTRIBUTE FORM B]

We now ask for your beliefs about what decisions majority of others in this room made, when deciding how much (if anything) to send to their counterpart. If you guessed correctly, you will earn a bonus of 20 rupees. Please check only one of the following options.

[EXPLAIN HOW TO ANSWER THE QUESTION]

**Part 1: Questionnaire B**

What amount do you think a majority (more than half) of the others in this room would have sent to their counterpart?

☐Would have sent nothing

☐Would have sent 20 rupees

☐Would have sent 40 rupees

☐Would have sent 60 rupees

☐Would have sent 80 rupees

☐Would have sent 100 rupees

☐Would have sent 120 rupees

☐Would have sent 140 rupees

☐Would have sent 160 rupees

☐Would have sent 180 rupees

☐Would have sent 200 rupees

[COLLECT FORM B]

**Instructions -Part 2**

This is part 2 of the experiment. You are matched with the same counterpart as in Part 1. As in the first part, you will be given two different colored envelopes [SHOW THE TWO ENVELOPES] and 200 rupees in 20 rupees paper notes [SHOW THE BUNDLE OF FAKE MONEY].

[ENVELOPES AND MONEY ARE DISTRIBUTED]

[ASK THE RESPONDENTS TO CHECK WHETHER THEY RECEIVED THE TWO DIFFERENT ENVELOPES AND ASK THEM TO COUNT THE MONEY.]

[ASK THEM TO CHECK WHETHER THE ENVELOPES ARE EMPTY.]

[CHECK THE ID NUMBERS IN ENVELOPES AND READ OUT THE WRITINGS ON THE ENVELOPES]

Please consider the 200 rupees you have as real money.

[HOLD THE FAKE MONEY NEXT TO A REAL 20 RUPEE NOTE]

Of the 200 rupees given to you, you will be asked to decide how much of the money, if any, you want to send to the counterpart matched with you.

After that, you will place the amount you want to send to your counterpart in the green envelope and place the amount you want to keep for yourself in the brown envelope. Please note that it is for you to decide whether or not to send any money to your counterpart.

At the end of the experiment today, we will toss a coin. If the coins toss results in a head, you and your counterpart will receive real money earned in this part in exchange for the fake money. Does anybody have any questions so far?

[ANSWER ANY QUESTIONS]

At the very end of the experiment, your decision of the amount you sent to the counterpart and your ID number will be revealed to one other person in this room. This other person will only know your ID number but not your name. Please let us know if you have any questions.

Now you can put the amount you want to send to your counterpart in the green envelope and put the amount you want to keep for your self in the brown envelope assigned to you. After you make your decision, please put the envelope for the counterpart in this box.

[WAIT FOR SUBJECTS TO MAKE THEIR DECISION AND COLLECT THE GREEN ENVELOPS]

In this part, a person could have sent any amount to their counterpart. For example, a person could have sent 20 rupees, or 40 rupees or 100 rupees or 140 rupees or could have decided to not send any amount to their counterpart. Of these options, sending what amounts do you think would be considered as socially acceptable by subjects in this room?

[DISTRIBUTE FORM C]

There are 11 questions in Form C. One of these questions will be chosen by lottery. If your answer matches with the majority's answer for that question, you will earn extra 20 rupees.

[ASK THE RESPONDENTS TO CHECK IF THE ID NUMBER ON THE FORM MATCHES THEIR ID]


[EXPLAIN HOW TO ANSWER THE QUESTION AND READ OUT ONE OR TWO QUESTIONS IF NECESSARY]

**Part 2: Questionnaire C**

1. Suppose a person did not send any money to her counterpart and kept 200 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

☐Yes                              ☐ No


2. Suppose a person sent 20 rupees to her counterpart and kept the remaining 180 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

☐Yes                              ☐ No


3. Suppose a person sent 40 rupees to her counterpart and kept the remaining 160 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

☐Yes                              ☐ No


4. Suppose a person sent 60 rupees to her counterpart and kept the remaining 140 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

☐Yes                              ☐ No


5. Suppose a person sent 80 rupees to her counterpart and kept the remaining 120 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

☐Yes                              ☐ No


6. Suppose a person sent 100 rupees to her counterpart and kept the remaining 100 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

☐Yes                              ☐ No


7. Suppose a person sent 120 rupees to her counterpart and kept the remaining 80 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

□Yes                                    □ No


8. Suppose a person sent 140 rupees to her counterpart and kept the remaining 60 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

□Yes                                    □ No


9. Suppose a person sent 160 rupees to her counterpart and kept the remaining 40 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

□Yes                                    □ No


10. Suppose a person sent 180 rupees to her counterpart and kept the remaining 20 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

□Yes                                    □ No


11. Suppose a person sent 200 rupees to her counterpart and kept no money for herself, do you think a majority of people in this session will find it socially acceptable?

□Yes                                    □ No


[COLLECT FORM C. DISTRIBUTE FORM D]

We now ask for your beliefs about what decisions majority of others in this room made in this part, when deciding how much (if anything) to send to their counterpart. If you guessed correctly, you will earn a bonus of 20 rupees. Please check only one of the following options.

[EXPLAIN HOW TO ANSWER THE QUESTION]

**Part 2: Questionnaire D**

What amount do you think a majority (more than half) of the others in this room would have sent to their counterpart?

☐Would have sent nothing

☐Would have sent 20 rupees

☐Would have sent 40 rupees

☐Would have sent 60 rupees

☐Would have sent 80 rupees

☐Would have sent 100 rupees

☐Would have sent 120 rupees

☐Would have sent 140 rupees

☐Would have sent 160 rupees

☐Would have sent 180 rupees

☐Would have sent 200 rupees

[COLLECT FORM D]

**Feedback**

Each of you will see the sending decision of another person in this room in Part 1 and Part 2. Your own decisions will be shared with another person in this room.


[DISTRIBUTE THE FEEDBACK FORM]


ID number _____ sent _____ rupees to her counterpart in Part 1.


ID number _____ sent _____ rupees to her counterpart in Part 2.


[COLLECT BACK THE FEEDBACK FORM]


[DISTRIBUTE THE EXIT FORM AND EXPLAIN HOW TO ANSWER QUESTIONS]

**Exit Survey**

1. Why did you give the amount you gave in Part 1? Choose the option that most closely describes your reason.

☐ I wanted to make more money for myself.

☐ I wanted to be fair to my counterpart.

☐ I wanted to take an action that would be accepted by others.

☐ I wanted to do what others would do in this situation.

☐ Other reason. Please specify. _____


2. Why did you give the amount you gave in Part 2? Choose the option that most closely describes your reason.

☐ I wanted to make more money for myself.

☐ I wanted to be fair to my counterpart.

☐ I wanted to take an action that would be accepted by others.

☐ I wanted to do what others would do in this situation.

☐ Other reason. Please specify. _____


3. What was the caste of the person with whom you were matched?

☐ SC                              ☐ BC/MBC


4. Does it matter if your neighbor is a Hindu? ☐ Yes           ☐ No


5. Does it matter if your neighbor is a Christian? ☐ Yes           ☐ No


6. Does it matter if your neighbor is a Muslim? ☐ Yes           ☐ No


7. Does it matter if your neighbor is a SC? ☐ Yes           ☐ No

8. Does it matter if your neighbor is a BC? ☐ Yes ☐ No

9. If you were to employ a person from within the village and you have two applications of same quality but both candidates belongs to two different jaatis (one candidate from your own jaati and second candidate is an SC), would you prefer the person of your own jaati? ☐ Yes ☐ No

10. What is your gender?

☐ Male

☐ Female

11. What is your exact age? _____

12. What was the last class you finished? _____

13. What is your religion?

☐ Hindu

☐ Muslim

☐ Christian

☐ Others

14. What is your caste?

☐ SC/ST

☐ BC/MBC

☐ OC

15. Do you have a job? If yes, what is your occupation?

☐ Yes _____          ☐ No


16. If you have a job, how much money did YOU YOURSELF earn in the past month?

_____


17. How much money does your HOUSEHOLD earn in the past month? _____


18. Are you involved in any of the following community-level organizations?

☐ Self-help groups          ☐ Village Development Groups

☐ Village Panchayat          ☐ None

We are done with the experiment now. We will toss the coin and prepare the payments for you. Thanks for your patience!

[TOSS THE COIN IN FRONT OF THE SUBJECTS AND ANNOUNCE THE TOSS RESULTS]

ANNOUNCE: Please do not disclose the details of the experiment to any one, as we would like to conduct more sessions in the village.

## 1.6.2   Instructions (Rule40/60 Treatment Conditions)

(These instructions were used for varied rules, norm and fine conditions as required.)

**Introduction Script**

Good morning/Good afternoon to everyone! Thank you all very much for coming today. We are students of Gandhigram Rural Institute and are here to interact with you for a research experiment.

We are doing this research to understand how an individual makes decisions across different situations. Today we will do some activities. In these activities, we will ask you to make some decisions. The decisions you make will be anonymous and will be kept confidential. We will never take your name. Neither I nor anyone else will be able to know what decision you made as an individual. For this purpose, we have given each of you an ID number. We and other participants in this room will only know you by that number. We will only know your decisions by your ID number and not your name. This applies to everything you do in these activities.

Your participation in this experiment is completely voluntary. The activities will last up to two hours. If you know you cannot stay for up to two hours, please let us know now. You can decide to withdraw from the experiment at any time. If you do so, you will earn a small show-up fee but if you stay for the entire duration of the experiment, you can get additional money.

Before we begin, I request you to switch off your phones. Please do not talk to other participants and do not share with them your decisions. Please let us know if you have any questions.

[ANSWER ANY QUESTIONS]

[SHOW THE CONSENT FORM]


We will be giving these consent forms to you. If you wish to participate in the experiment, please read and sign the form.

[DISTRIBUTE THE CONSENT FORMS]


[ASK THE SUBJECTS TO SIGN AND DATE IN THE RESPECTIVE BLANKS]


[COLLECT THE CONSENT FORMS]

**Consent Form**

You are invited to participate in a research experiment of how individuals make decisions. You need to be above 18 years of age to participate in this experiment. We ask that you read this form and ask questions that you may have before agreeing to be in this experiment. The experiment should take less than two hours to complete. You can earn some money by participating in this experiment. The amount you earn will depend partly on your decisions in the activities, partly on the decisions of others and partly on chance.

These activities are confidential and anonymous. We have given each of you an ID number. We and other participants in this room will only know you by that number. We will never take your name. Neither I nor anyone else will be able to know what decision you made as an individual. This applies to everything you do in these activities. At the end of the experiment, you will be asked to answer a few questions about yourself. Kindly answer those questions. Only your ID number, too, will identify this information.

Your participation in this experiment is completely voluntary. The activities will last up to two hours. If you know you cannot stay for up to two hours, please let us know. You can decide to withdraw from the experiment at any time. If you do so, you will earn the show-up fee. You can get earnings in addition to the show-up fee in the experiment only if you stay for the entire duration of the experiment. At the end of the experiment today, you will be given your earnings and the show-up fee, and will be asked to sign a receipt for them. The receipt form will be used by administrative personnel solely to ascertain that funds allocated for the research project are properly utilized.

The records of this experiment will be kept confidential. In any sort of report we might publish, we will not include any information that will make it possible to identify any participant. Access to research records will be limited to the researchers and other scholars.

If you have any questions or concerns, you can contact the main researcher, Pavitra Govindan (Phone no. +91 9619814988).

**Statement of Consent**

I have read the above information. I have asked questions and received answers. I consent to participate in this experiment.

Signature of participant_____

Date_____

There are two main parts in the experiment. You have the opportunity to earn money in both the parts. Your earnings in the experiment will be determined by your earnings in either Part 1 or Part 2, but not by both. At the end of the experimental session, a coin toss will decide which part will be paid out to you. If the coin toss results in a tail, you will be paid Part 1 earnings and if it results in a head, you will be paid Part 2 earnings.

We will discuss details about the Part 2 of the activity when we get to that part. For now, it is sufficient to know that your decisions in Part 1 have no effect on your situation in Part 2.

**Instructions (Part 1)**

Please pay attention to the information that we are about to give you. You will need this information to make decisions and answer questions in the experiment.

Now, you will be given two different colored envelopes [SHOW THE TWO ENVELOPES] and 200 rupees in 20-rupee paper notes. [SHOW THE BUNDLE OF FAKE MONEY].

[ENVELOPES AND MONEY ARE DISTRIBUTED]

[ASK THE RESPONDENTS TO CHECK WHETHER THEY RECEIVED THE TWO DIFFERENT ENVELOPES AND ASK THEM TO COUNT THE MONEY.]

[ASK THEM TO CHECK WHETHER THE ENVELOPES ARE EMPTY.]

[CHECK THE ID NUMBERS IN ENVELOPES AND READ OUT THE WRITINGS ON THE ENVELOPES]

As mentioned on the white envelope, each of you has been matched with another person, also known as your counterpart. This person belongs to a village in Tamil Nadu and is part of the scheduled caste community. This person could be either a man or a woman and is above 18 years of age. You will not know who this person is or what their name is. Similarly, this person will not know your actual identity.

Please consider the 200 rupees you have as real money.

Of the 200 rupees given to you, you will be asked to decide how much of the money, if any, you want to send to the counterpart matched with you.

After that, you will place the amount you want to send to your counterpart in the white envelope and place the amount you want to keep for yourself in the brown envelope. Please note that it is for you to decide whether or not to send any money to your counterpart.

We will conduct a similar experiment for your counterparts. The earnings of the counterpart you are matched with will comprise of a small show-up fee and the amount you send to them. Unlike you, they will not be making any decisions within the experiment.

At the end of the experiment today, we will toss a coin. If the coin tosses results in a tail, you and your counterpart will receive real money earned in this part in exchange for the fake money. So you should treat that fake money like it is real. At the very end of the experiment, your decision of the amount you sent to the counterpart and your ID number will be revealed to one other person in this room. This other person will only know your ID number but not your name.

Does anybody have any questions so far? [ANSWER ANY QUESTIONS]

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To make sure that you understood all the experimental instructions, you will be given a set of comprehension questions. [SHOW THE PAPER THAT HAS THE SET OF COMPREHENSION QUESTIONS.] Please answer these questions to the best of your ability; your answers will not affect your earnings from the experiment.

[COMPREHENSION QUESTION 1 IS DISTRIBUTED. ASK THE RESPONDENTS TO DOUBLE CHECK THEIR ID NUMBERS ON THE COMPREHENSION QUESTION HANDOUT]

[EXPLAIN TO THEM THAT THEY NEED TO CHECK THE BOX NEXT TO THE CORRECT ANSWER]

[COLLECT COMPREHENSION QUESTIONS. AND TELL THEM THE CORRECT ANSWER]

**Comprehension Questions: Part 1**

1. How many 20 rupee notes have been given to you?

☐5 notes          ☐10 notes


2. Which color envelope will you use to send money to your counterpart?

☐White Color          ☐ Brown Color


3. Will your counterpart know your name?

☐Yes          ☐ No


4. Is there a chance that you and your counterpart will get real money in exchange for the fake money you use in the experiment?

☐Yes          ☐ No


Answers to the Comprehension Question


1. 10 Notes

2. White Color

3. No

4. Yes

[DISTRIBUTE THE NORMS TREATMENT SLIP AND READ WHAT IS WRITTEN ON IT]

We would like to inform you that:

**"In another session of a similar experiment we conducted in the last few weeks, many of the subjects sent 40 rupees (60 rupees) to their counterpart and said that it was socially acceptable to send 40 rupees (60 rupees)."**

Please let us know if you have any questions.

[ANSWER ANY QUESTIONS]

Now you can put the amount you want to send to your counterpart in the white envelope and put the amount you want to keep for your self in the brown envelope assigned to you. After you make your decision, please put the envelope for the counterpart in this box.

[WAIT FOR SUBJECTS TO MAKE THEIR DECISION AND COLLECT THE WHITE ENVELOPS]

In this part, a person could have sent any amount to their counterpart. For example, a person could have sent 20 rupees, or 40 rupees or 100 rupees or 140 rupees or could have decided to not send any amount to their counterpart. Of these options, subjects in this room would consider sending what amounts do you think as socially acceptable?

[DISTRIBUTE FORM A]

There are 11 questions in Form A. One of these questions will be chosen by lottery. If your answer matches with the majority's answer for that question, you will earn extra 20 rupees.

**Part 1: Questionnaire A**

1.  Suppose a person did not send any money to her counterpart and kept 200 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

☐Yes                          ☐ No

2. Suppose a person sent 20 rupees to her counterpart and kept the remaining 180 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

☐Yes                          ☐ No

3. Suppose a person sent 40 rupees to her counterpart and kept the remaining 160 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

☐Yes                          ☐ No

4. Suppose a person sent 60 rupees to her counterpart and kept the remaining 140 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

☐Yes                          ☐ No

5. Suppose a person sent 80 rupees to her counterpart and kept the remaining 120 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

☐Yes                          ☐ No

6. Suppose a person sent 100 rupees to her counterpart and kept the remaining 100 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

☐Yes                          ☐ No

7. Suppose a person sent 120 rupees to her counterpart and kept the remaining 80 rupees for

herself, do you think a majority of people in this session will find it socially acceptable?

☐Yes ☐ No

8. Suppose a person sent 140 rupees to her counterpart and kept the remaining 60 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

☐Yes ☐ No

9. Suppose a person sent 160 rupees to her counterpart and kept the remaining 40 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

☐Yes ☐ No

10. Suppose a person sent 180 rupees to her counterpart and kept the remaining 20 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

☐Yes ☐ No

11. Suppose a person sent 200 rupees to her counterpart and kept no money for herself, do you think a majority of people in this session will find it socially acceptable?

☐Yes ☐ No

[COLLECT FORM A. DISTRIBUTE FORM B]

We now ask for your beliefs about what decisions majority of others in this room made, when deciding how much (if anything) to send to their counterpart. If you guessed correctly, you will earn a bonus of 20 rupees. Please check only one of the following options.

[EXPLAIN HOW TO ANSWER THE QUESTION]

**Part 1: Questionnaire B**

What amount do you think a majority (more than half) of the others in this room would have sent to their counterpart?

☐Would have sent nothing

☐Would have sent 20 rupees

☐Would have sent 40 rupees

☐Would have sent 60 rupees

☐Would have sent 80 rupees

☐Would have sent 100 rupees

☐Would have sent 120 rupees

☐Would have sent 140 rupees

☐Would have sent 160 rupees

☐Would have sent 180 rupees

☐Would have sent 200 rupees

[COLLECT FORM B]

**Instructions -Part 2**

This is part 2 of the experiment. You are matched with the same counterpart as in Part 1. As in the first part, you will be given two different colored envelopes [SHOW THE TWO ENVELOPES] and 200 rupees in 20 rupees paper notes [SHOW THE BUNDLE OF FAKE MONEY].

[ENVELOPES AND MONEY ARE DISTRIBUTED]

[ASK THE RESPONDENTS TO CHECK WHETHER THEY RECEIVED THE TWO DIFFERENT ENVELOPES AND ASK THEM TO COUNT THE MONEY.]

[ASK THEM TO CHECK WHETHER THE ENVELOPES ARE EMPTY.]

[CHECK THE ID NUMBERS IN ENVELOPES AND READ OUT THE WRITINGS ON THE ENVELOPES]

Please consider the 200 rupees you have as real money.

[HOLD THE FAKE MONEY NEXT TO A REAL 20 RUPEE NOTE]

The difference in Part 2 is that a RULE is in place that requires you to send at least 60 rupees [Or 100 rupees] of the 200 rupees to your counterpart. If the amount you send to your counterpart is less than 60 rupees [100 rupees], you will have to pay a fine of 15 rupees [10 rupees].

Of the 200 rupees given to you, you will be asked to decide how much of the money, if any, you want to send to the counterpart matched with you.

After that, you will place the amount you want to send to your counterpart in the green envelope and place the amount you want to keep for yourself in the brown envelope. Please note that it is for you to decide whether or not to send any money to your counterpart.

At the end of the experiment today, we will toss a coin. If the coins toss results in a head, you and your counterpart will receive real money earned in this part in exchange for the fake money. Does anybody have any questions so far?

[ANSWER ANY QUESTIONS]

For example, if you decide to send less than 60 rupees [100 rupees], say you send 20 rupees, your counterpart will receive 20 rupees, you will keep 180 rupees but you will have to pay a fine of 15 rupees [10 rupees] making your earnings 165 rupees [170 rupees]. If you decide to send 60 rupees [100 rupees] or more to your counterpart, you will not be fined. Please let us know if you have any questions about this.

At the very end of the experiment, your decision of the amount you sent to the counterpart and your ID number will be revealed to one other person in this room. This other person will only know your ID number but not your name. Please let us know if you have any questions.

To make sure that you understood all the experimental instructions, you will be given a set of comprehension questions.

[SHOW THE PAPER THAT HAS THE SET OF COMPREHENSION QUESTIONS.]

Please answer these questions to the best of your ability; your answers will not affect your

earnings from the experiment.

[COMPREHENSION QUESTION 2 IS DISTRIBUTED. ASK THE RESPONDENTS TO DOUBLE CHECK THEIR ID NUMBERS ON THE COMPREHENSION QUESTION HANDOUT]

[EXPLAIN TO THEM THAT THEY NEED TO CHECK THE BOX NEXT TO THE CORRECT ANSWER]

[COLLECT COMPREHENSION QUESTIONS. AND TELL THEM THE CORRECT ANSWER]

[FINE 15]

**Comprehension Questions: Part 2**

1. If someone sent 40 rupees to their counterpart, will she face a fine of 15 rupees?

☐ Yes ☐ No

2. If someone sent 40 rupees to her counterpart, what would be the amount remaining with her after subtracting the 15 rupees fine?

☐ 145 rupees ☐ 160 rupees

3. If someone sent 120 rupees to her counterpart, what would be the amount remaining with her?

☐ 80 rupees ☐ 65 rupees

Answers to the Comprehension Question

1. Yes

2. 145 rupees

3. 80 rupees

[FINE 10]

**Comprehension Questions: Part 2**

1. If someone sent 40 rupees to their counterpart, will she face a fine of 10 rupees?

☐ Yes ☐ No

2. If someone sent 40 rupees to her counterpart, what would be the amount remaining with her after subtracting the 10 rupees fine?

☐ 150 rupees ☐ 160 rupees

3. If someone sent 120 rupees to her counterpart, what would be the amount remaining with her?

☐ 80 rupees ☐ 70 rupees

Answers to the Comprehension Question

1. Yes
2. 150 rupees
3. 80 rupees

Now you can put the amount you want to send to your counterpart in the green envelope and put the amount you want to keep for your self in the brown envelope assigned to you. After you make your decision, please put the envelope for the counterpart in this box.

[WAIT FOR SUBJECTS TO MAKE THEIR DECISION AND COLLECT THE GREEN ENVELOPS]

In this part, a person could have sent any amount to their counterpart. For example, a person could have sent 20 rupees, or 40 rupees or 100 rupees or 140 rupees or could have decided to not send any amount to their counterpart. Of these options, sending what amounts do you think would be considered as socially acceptable by subjects in this room?

[DISTRIBUTE FORM C]

There are 11 questions in Form C. One of these questions will be chosen by lottery. If your answer matches with the majority's answer for that question, you will earn extra 20 rupees.

Please remember that in this part there was a rule that required one to send a minimum of 60 rupees.

[ASK THE RESPONDENTS TO CHECK IF THE ID NUMBER ON THE FORM MATCHES THEIR ID]

[EXPLAIN HOW TO ANSWER THE QUESTION AND READ OUT ONE OR TWO QUESTIONS IF NECESSARY]

**Part 2: Questionnaire C**

1. Suppose a person did not send any money to her counterpart and kept 200 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

☐Yes                    ☐ No

2. Suppose a person sent 20 rupees to her counterpart and kept the remaining 180 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

☐Yes                    ☐ No

3. Suppose a person sent 40 rupees to her counterpart and kept the remaining 160 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

☐Yes                    ☐ No

4. Suppose a person sent 60 rupees to her counterpart and kept the remaining 140 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

☐Yes                    ☐ No

5. Suppose a person sent 80 rupees to her counterpart and kept the remaining 120 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

☐Yes                    ☐ No

6. Suppose a person sent 100 rupees to her counterpart and kept the remaining 100 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

☐Yes                    ☐ No

7. Suppose a person sent 120 rupees to her counterpart and kept the remaining 80 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

☐ Yes                              ☐ No

8. Suppose a person sent 140 rupees to her counterpart and kept the remaining 60 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

☐ Yes                              ☐ No

9. Suppose a person sent 160 rupees to her counterpart and kept the remaining 40 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

☐ Yes                              ☐ No

10. Suppose a person sent 180 rupees to her counterpart and kept the remaining 20 rupees for herself, do you think a majority of people in this session will find it socially acceptable?

☐ Yes                              ☐ No

11. Suppose a person sent 200 rupees to her counterpart and kept no money for herself, do you think a majority of people in this session will find it socially acceptable?

☐ Yes                              ☐ No

[COLLECT FORM C. DISTRIBUTE FORM D]

We now ask for your beliefs about what decisions majority of others in this room made in this part, when deciding how much (if anything) to send to their counterpart. If you guessed correctly, you will earn a bonus of 20 rupees. Please check only one of the following options.

[EXPLAIN HOW TO ANSWER THE QUESTION]

**Part 2: Questionnaire D**

What amount do you think a majority (more than half) of the others in this room would have sent to their counterpart?

☐Would have sent nothing

☐Would have sent 20 rupees

☐Would have sent 40 rupees

☐Would have sent 60 rupees

☐Would have sent 80 rupees

☐Would have sent 100 rupees

☐Would have sent 120 rupees

☐Would have sent 140 rupees

☐Would have sent 160 rupees

☐Would have sent 180 rupees

☐Would have sent 200 rupees

[COLLECT FORM D]

**Feedback**

Each of you will see the sending decision of another person in this room in Part 1 and Part 2. Your own decisions will be shared with another person in this room.

[DISTRIBUTE THE FEEDBACK FORM]

ID number _____ sent _____ rupees to her counterpart in Part 1.

ID number _____ sent _____ rupees to her counterpart in Part 2.

[COLLECT BACK THE FEEDBACK FORM]

[DISTRIBUTE THE EXIT FORM AND EXPLAIN HOW TO ANSWER QUESTIONS]

**Exit Survey**

1. Why did you give the amount you gave in Part 1, which had no rule? Choose the option that most closely describes your reason.

☐ I wanted to make more money for myself.

☐ I wanted to be fair to my counterpart.

☐ I wanted to take an action that would be accepted by others.

☐ I wanted to do what others would do in this situation.

☐ Other reason. Please specify. _____

2. Why did you give the amount you gave in Part 2, which had a rule? Choose the option that most closely describes your reason.

☐ I wanted to make more money for myself.

☐ I wanted to be fair to my counterpart.

☐ I wanted to take an action that would be accepted by others.

☐ I wanted to do what others would do in this situation.

☐ I wanted to follow the rule.

☐ Other reason. Please specify. _____

3. Did you think the rule in Part 2 was tough? ☐ Yes          ☐ No

4. What was the caste of the person with whom you were matched?

☐ SC                        ☐ BC/MBC

5. Does it matter if your neighbor is a Hindu? ☐ Yes          ☐ No

6. Does it matter if your neighbor is a Christian? ☐ Yes          ☐ No

7. Does it matter if your neighbor is a Muslim? ☐ Yes ☐ No

8. Does it matter if your neighbor is a SC? ☐ Yes ☐ No

9. Does it matter if your neighbor is a BC? ☐ Yes ☐ No

10. If you were to employ a person from within the village and you have two applications of same quality but both candidates belongs to two different jaatis (one candidate from your own jaati and second candidate is an SC), would you prefer the person of your own jaati? ☐ Yes ☐ No

11. What is your gender?
☐ Male
☐ Female

12. What is your exact age? _____

13. What was the last class you finished? _____

14. What is your religion?
☐ Hindu
☐ Muslim
☐ Christian
☐ Others

15. What is your caste?

☐ SC/ST

☐ BC/MBC

☐ OC

16. Do you have a job? If yes, what is your occupation?

☐ Yes _____          ☐ No

17. If you have a job, how much money did YOU YOURSELF earn in the past month?

_____

18. How much money does your HOUSEHOLD earn in the past month? _____

19. Are you involved in any of the following community-level organizations?

☐ Self-help groups          ☐ Village Development Groups

☐ Village Panchayat          ☐ None

We are done with the experiment now. We will toss the coin and prepare the payments for you. Thanks for your patience!

[TOSS THE COIN IN FRONT OF THE SUBJECTS AND ANNOUNCE THE TOSS RESULTS]

ANNOUNCE: Please do not disclose the details of the experiment to any one, as we would like to conduct more sessions in the village.

# HOW DO GROUP NORMS AFFECT INDIVIDUALS' COMPLIANCE WITH FORMAL RULES?

## 2.1   Introduction

Policy makers in many societies attempt to change social norms by introducing progressive laws. Often these progressive laws are ineffective in the presence of norms that conflict with these laws (Acemoglu and Jackson 2017, Aldashev et al 2011). Even though there are economic theories (Acemoglu and Jackson 2017, Benabou and Tirole 2011) and examples (Platteau 2000 and Aldashev et al. 2010) suggesting how the presence of norms may affect response to a new law, there are few empirical papers that study how the presence of a conflicting norm affects an individual's compliance with a law.

The empirical literature on how norms affect compliance with the law is scarce and this scarcity can be attributed to lack of good measures of norms, lack of exogenously implemented laws, and lack of reliable data on violations of law. However, with the use of the tools of experimental economics we can reasonably control for possible confounding variables and understand the mechanisms of how the presence of norms affects individuals' response to a new law. Of course, lab experiments may have difficulty capturing some dimensions of norms formed in large scale social evolution over centuries, but adding this method to our toolkit for understanding the issue is likely to be of considerable value despite its own limitations.

I conduct a novel experiment to study how the presence of a group norm (similar to a social norm in a society) affects the implementation of a formal rule. I use dictator games wherein the first player "allocator" decides how to allocate money between herself and second player called

the "recipient". The experiment has two between-group treatments.

In the control group, subjects play two rounds of dictator games. In the first round, an allocator decides how to allocate money between herself and a recipient. In the second round, a formal rule is introduced that requires allocators to send half their money to the recipient. If the allocators decide to not follow the rule, they pay a small non-deterrent fine.

The treatment is identical to the control except that in the treatment group, allocators create group "guidelines" that suggest how much to send before they make any sending decision. A group of allocators share proposals about what is the appropriate amount of money that should be sent to a recipient in the dictator game. After an iterative sharing of proposals, the allocators reach a consensus about the "guideline" on how much to send. I study how the presence of a guideline affects allocator decisions in the first round of dictator games. In the second round, when there is a rule that requires allocators to send half their money to the recipients, I study how the presence of the guideline influences compliance with the rule.

I find that the control groups have a highly varied amount of sending within a group while the treatment groups cluster around the groups' guidelines. I find that about 58% of allocators in the treatment group followed the group guideline in the first round of dictator games even though it was non-binding. About 42% of the allocators believed that other allocators in their group would follow the group guideline. The guideline influenced behaviors and beliefs of allocators in the treatment group which makes it similar to a societal norm.

In the second round of the dictator game, when allocators were exposed to a rule, I find that a higher group guideline led to a higher compliance with the rule for allocators. I find that belonging to a group with a guideline conflicting with the rule, decreased rule compliance by 22 percentage points (p=0.075) after controlling for their initial proposals.

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The guidelines formed by group members are similar in nature to a group's norm in the society. This chapter studies the influence of a group norm on individual behavior and on an individual's compliance with a formal rule.

The rest of the paper is organized as follows. Section 2 discusses related literature, Section 3 discusses the experimental design, Section 4 states the hypothesis, Section 5 discusses the experimental results and Section 6 concludes the paper.

## 2.2   Related Literature

Bicchieri (2006) defines a social norm as "a rule of behavior such that individuals prefer to conform to it on conditions that they believe that most people in their relevant network conform to it, and most people in their relevant network believe they ought to conform to it". One of the reasons why individuals conform to social norms is to signal that they are cooperative members of the society (Bernheim 1994). A change in behavior of individuals following these norms would require a change in the social norms. Changing a social norm means changing beliefs about what others are doing, and what others think the "appropriate" thing to do is. Legal scholars like Cooter 1998 theorize that laws can be used as an instrument to change people's behavior by changing their collective beliefs about what the "appropriate" thing to do is.

There are experimental studies about the interaction between legal and social norms in public goods games (see for e.g. Kube and Traxler 2011; Galbiati and Vertova 2008; Tyran and Feld 2006) that analyze how non-deterrent laws affect norms, and find that laws have an expressive role in helping individuals coordinate their actions. The study closest to this chapter is Galbiati and Vertova (2008) who study the effect of obligations on individual behavior in

social dilemma games. Particularly, they study how changing minimum contribution laws in a Voluntary Contribution Mechanism (VCM) game affect contribution levels. They design the experiment such that minimum contribution levels do not affect marginal incentives to contribute, and thus "rational" agents would not be expected to differ in their behavior whatever be the contribution requirements. The authors observe that these obligations do affect average contributions significantly, thus emphasizing the importance of the expressive power of law. In their study, however, the presence of strategic interdependence in public goods games creates difficulties in studying the impact of laws on behavior in the presence of norms. This is because if one changes her behavior upon observing other subjects' choices, it is hard to disentangle to what extent these changes are due to social influence and to what extent they are caused by the fact that such information affects the person's strategic decision calculus that includes reciprocity, spite and other strategic behavior. Further, when strategic interdependence is present, subjects' beliefs regarding what constitutes socially appropriate behavior may be influenced by the strategic environment itself (Cason and Mui 1998). Hence, I use dictator games in my experiment to study norms as it helps to confound reciprocity and strategic behavior.

There are a set of experiments that study norms using dictator games. For example, Bicchieri and Xiao(2009) discuss how much dictators give when they are given information about what other dictators in another experimental session did or believed one should do. They found that the empirical information had an effect on dictators' behavior whereas the normative information had no effect on the behaviors of the dictators. Cason and Mui (1998) discuss a dictator game with two rounds, in which the dictators get information about what another dictator gave in the previous round in the "relevant information treatment" and what another dictator's birth date is in the "irrelevant information treatment". They find that in the irrelevant information treatment, dictators tend to become more self-regarding in the second period than in the relevant information treatment. Duffy and Kornienko (2010) did an experimental study to understand how information about other dictators' giving affects giving in dictator games. In the three dif-

ferent information treatments, the experimenters informed dictators about their ranks wherein the ranks were determined either randomly(control treatment), based on wealth acquired (selfish treatment) or based on altruism (altruistic treatment). These ranks were disclosed to the subjects in each of the treatments. They observed that the level of giving went down in all their treatments, but went down the most in the "selfish treatment" and the least in their "altruistic treatment".

Fehr and Fischbacher (2004) suggest that third party punishments can be used to study norms as they help confound reciprocity and strategic behavior. In their experiment, they have dictator games with a third player who decides to punish dictators at a cost to herself. They assume that there is an egalitarian norm and find that anyone who deviates from that norm is punished by the third party. In all these experiments, we find that the dictators in a dictator game are influenced by what other dictators do and/or believe the appropriate thing to do is. In my study, I allow the creation of informal guidelines akin to social norms within the experiment, and extend the study to understand how these guidelines affect response to a formal rule.

Another strand of literature discusses the theoretical underpinnings of the economics of laws and norms. Acemoglu and Jackson (2017) study how law influences people's behavior when it is different from the persistent social norm. They show in their theoretical paper that "laws that are in strong conflict with prevailing social norms may backfire, while gradual tightening of laws can be more effective in influencing social norms and behavior". The main mechanism that drives this result in this paper is the level of whistleblowing in the society. This chapter does not deal with the mechanism of whistle blowing per se but instead deals with individuals' concerns about peers' expectations and the desires to conform. These desires to conform with peers complement the law enforcement in the case of non deterrent sanctions. A related paper that provides micro-foundations for existence of norms is Bernheim (1994) wherein individuals conform to social norms in order to signal that they are cooperative members of the society.

Basu (2015) provides a game theoretic framework of how laws may lead to change of behavior. He states that, "The law changes human behavior, or, in the context of games, the outcomes of games, by changing people's beliefs about what other people may or not do. In other words, the only way the law can affect behavior and outcomes is by deflecting society from one (pre-existing) [Nash] equilibrium to another (pre-existing) [Nash] equilibrium." In particular, this paper suggests that if citizens believe that law enforcers are not going to enforce the law, the citizens are not going to abide by the law. In equilibrium, the law enforcers will not enforce the law, making the law ineffective. This chapter does not focus on the enforcement aspect of the law, but a possible extension of this chapter could be to study how including law enforcers in the experiment will affect compliance with rules in the presence of societal guidelines.

A strand of legal literature that relates to this chapter is that on "expressive law" (e.g. Cooter, 1998; Scott, 2000). The idea herein is that laws express the reigning norms in a society, and create a focal point of behavior at which people can coordinate. Laws can also shape new social norms by aggregating and enforcing majority preferences. Thus, laws can be used to change behavior even if the legal sanctions involved are non deterrent (Posner 2000). The sanction associated with the rule in this chapter is kept non-deterrent so as to study how the expressive power of law can be used to change behavior in the presence of a norm.

The rest of the chapter is organized as follows. Section 2 discusses the experimental design, Section 3 states the hypothesis, Section 4 discusses the experimental results and Section 5 concludes the chapter.

## 2.3 Experimental Design

In each experimental session, the subjects make their decisions anonymously through computers.[1] Each session is assigned either the control or the treatment condition. Each of the sessions consist of 20 subjects randomly divided into two groups of ten. Within each group for the entire session, five subjects are randomly assigned the role of an "allocator" and the remaining five are assigned the role of a "receiver". Each allocator is randomly matched with a receiver in her group, so as to play dictator games wherein the allocator splits $20 between herself and the receiver. The allocators are matched with different recipients (stranger matching) in the two dictator games that they play in two different parts of the experiment. At the beginning of the session, all subjects are told that they would be assigned an experimental ID that remains the same throughout the session.

The control condition consists of three parts while the treatment condition consists of four parts. Only Part 1 and Part 2 are directly payoff relevant, and one of them is selected with equal probability for subject payment. The subjects are given complete information about Part 0, Part 1 and Part 3, and partial information about Part 2 at the beginning of the experiment. They answer a few comprehension questions before the start of the experiment to test their comprehension of the experiment. After Part 1, the subjects are given full information about Part 2 and are again asked a few questions to test their comprehension about that part. The parts are described in detail in the following subsections.

### 2.3.1 Part 0: Guideline Creation

This part is present only in the treatment condition. In this part, allocators in a group exchange proposals among themselves about what the appropriate amount of money that should be sent

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[1]z-tree software (Fischbacher 2007) was used to program the experiment.

to the receivers is. Specifically, each allocator proposes the appropriate suggested guideline for the amount of money to be sent to a receiver. After that, all the five allocators in the group are shown the proposals of each of the allocators in their group along with their experimental IDs. If at least four out of five allocators in the group had same proposals, then that is announced as the suggested guideline to the entire group of allocators and receivers. If there is no such agreement in the first iteration of sharing proposals, the allocators are asked to report their new set of proposals. This process continues till at least four out of the five allocators in the group agree on an amount. If there is no agreement after five iterations of proposal exchange, the experimenter announces that there is no agreement and selects the modal value in the fifth iteration as the suggested guideline.[2] The agreed upon suggested guideline is then announced to all the allocators and recipients of the group.

The purpose of having this suggested guideline for the group of allocators is to induce a set of normative expectations among them. We will see in the results section that this part also created empirical expectations among the allocators in the experiment.

While the allocators are exchanging proposals, the receivers are asked to answer a bunch of unrelated questions, such as "What is the capital of New Mexico?". The purpose of these questions is to preserve anonymity by keeping the number of key strokes similar between the allocators and receivers. The remaining parts are identical in both the control and treatment conditions.

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[2]In case there were more than one mode, the experimenter randomly selected one of the modal values and announced that to be the guideline. The allocators could see the proposals of all the allocators in their group at the end of each iteration. Thus, they were aware if the suggested guideline was chosen by a majority or by a tie breaking done by the experimenter in the event of a tie between the proposals in the fifth iteration.

### 2.3.2 Part 1: Dictator Game with No Rule

In this part, each allocator is asked to send a part of her endowment of $20 to a receiver who she is randomly matched with. The amount sent by an allocator $i$ in this part is denoted by $S_{i1}$. After all the allocators in a group make their decision, they are asked to elicit their beliefs ($B_{i1}$) about the average amount sent by other allocators in their group ($A_{-i1}$). The allocators are paid depending on how close their beliefs are to the actual average amounts sent by other allocators in their groups. The payoff for each allocator's elicitation is $Max\{\$0, \$1 - 0.25 * |B_{i1} - A_{-i1}|\}$. This payoff structure implies that if an allocator's elicited belief is within $4 range of the actual average of other allocators, she gets an additional amount, other wise she gets zero. Similarly, a receiver $j$ who is paired with allocator $i$ is asked to elicit her belief about how much she expects to receive ($B_{j1}$), and is paid $Max\{\$0, \$1 - 0.25 * |B_{j1} - S_{i1}|\}$ for her guess. The belief elicitation is done to understand the influence of guidelines on allocators' and recipients' beliefs regarding others' behavior in the experiment.

### 2.3.3 Part 2: Dictator Game with a Rule

In the second part, a rule is introduced that requires each allocator to transfer at least $10 (i.e. half of her endowment) to the recipient. Violation of the rule leads to a fixed penalty of $1 to the allocator. The penalty is not deterrent, and is kept small to emphasize the expressive role of law. The dictator game is again played within the group, and the allocators are informed that they are sending money to a different recipient in this part. We again elicit beliefs of the allocators and recipients, and pay them using a similar payoff function described in the previous part.

### 2.3.4  Part 3: Feedback

In the third part, feedback about each allocator's decision in Part 1 and Part 2 is given to every one in their group. The subjects are informed about this part at the beginning of the experiment. The purpose of this part is to create a social pressure for the allocators to follow guidelines in Part 1. The guideline is more likely to be followed by the allocators if they knew that their actions are observable by others in their group. Note, however, that the feedback is given only after all decisions have been made by the allocators. Hence, there is no direct effect of observed Part 1 sending decisions of other allocators on an allocator's Part 2 sending decision.

## 2.4  Hypothesis

The main hypothesis that I want to test in this chapter is that initial norms in a group affect the group members' compliance with the rule. In order to test that hypothesis in the experiment, we first need to test if the guidelines established in the group resemble social norms in a society. If the guidelines established in Part 0 within each group influences the sending behavior and beliefs, we will observe that the within-group standard deviation in behavior and beliefs will be lower in the treatment groups than in the control groups. This is stated in the Hypothesis 1 and Hypothesis 2.

**Hypothesis 1**: Within-group standard deviation of amount sent by allocators in Part 1 will be lower in the treatment group than in the control group due to the guideline, i.e.,

$$\sigma_{Amt\_Sent\_Part1,Treatment} < \sigma_{Amt\_Sent\_Part1,Control}$$

**Hypothesis** 2: Within-group standard deviation of beliefs about amount sent by other allocators in Part 1 will be lower in the treatment group than in the control group due to the guideline, i.e.,

$$\sigma_{Belief\_Part1,Treatment} < \sigma_{Belief\_Part1,Control}$$

In Part 2, an exogenous rule with a small non deterrent sanction is implemented, and we observe how the guidelines in the treatment group affected individual rule abiding behavior. My main hypothesis in this chapter is that rule compliance will be higher in groups that have a higher guideline (Hypothesis 3). Further, rule compliance would be lower if the rule conflicts with the guideline (Hypothesis 4).

**Hypothesis 3:** Rule compliance will be higher for subjects who are in groups with higher guidelines.

**Hypothesis 4:** Rule compliance will be lower for subjects who are in groups with guidelines conflicting with the rule.

## 2.5   Results

I conducted 15 experimental sessions with 290 subjects from November 2015 to March 2017 in a computer lab at Brown University. The subjects were recruited through the Brown University Social Science Lab (BUSSEL) website which is an online portal for recruitment. Table 2.1 displays the characteristics of subjects. 57% of the subjects were female, 22% of them were Economics majors and on average the subjects had taken 1.53 courses in Economics. A high number of subjects correctly answered the questions regarding the experiment. For example, more than 90 percent of the subjects understood the payoffs in the experiment correctly. The subjects earned an average of $15.35, with a maximum of $26 and a minimum of $5. Given that sessions lasted on average little more than half an hour, the earnings represent a significant hourly rate.

|                              | Mean  | Standard Deviation |
| ---------------------------- | ----- | ------------------ |
| **Subjects**                 |       |                    |
| Female (percent)             | 57    |                    |
| Economics (percent)          | 22    |                    |
| Semesters in college         | 3.67  | 2.46               |
| Economics courses taken      | 1.53  | 2.80               |
| **Subject Comprehension**    |       |                    |
| Number of members in a group | 0.94  | 0.24               |
| Unique experimental ID       | 0.99  | 0.08               |
| Part 1 payoffs               | 0.93  | 0.25               |
| Randomized payment           | 0.99  | 0.08               |
| Guideline formation          | 0.97  | 0.18               |
| Part 2 payoffs               | 0.97  | 0.17               |
| **Earnings**                 |       |                    |
| Maximum                      | 26.00 |                    |
| Average                      | 15.35 | 5.56               |
| Minimum                      | 5.00  |                    |
| Observations                 | 290   |                    |

Subject comprehension is the fraction of subjects that answered questions about the experiment correctly. 94% of the subjects answered correctly that there are 10 members in their group. 99% answered correctly that they have a unique experimental ID for the entire experiment. 93% subjects answered correctly about payoff structure in Part 1 of the experiment. 99% subjects answered correctly that payment will be made for either Part 1 or Part 2 of the experiment chosen randomly. 97% of the subjects understood the guideline formation process. 97% of the subjects answered correctly about payoff structure in Part 2 of the experiment.

Table 2.1: Summary Statistics of Sessions

## 2.5.1 Results from Part 0 (Treatment)

In this part, the allocators created "guidelines" within each of their groups. Data from nineteen treatment groups[3] for this part are shown in Figure 2.1. The "proposals" are numbers shared by the allocators in each group about what is the appropriate amount to be sent to a receiver matched with them in their group. In round 1, the proposals are highly varied and range over $0 to $16 among all groups. The variance of proposals within each group reduced over the number of rounds as the subjects continued to share and modify their proposals. On average, the subjects converged to a group guideline in 3.26 rounds, and the average guideline was to send $7.11. Out of the nineteen groups, nine groups converged to a guideline of sending $10 to their matched recipient and the remaining ten groups converged to guidelines of sending less than $10. Of the groups that had guidelines of sending less than $10, three converged to a guideline of sending $0, another three converged to a guideline of sending $5, one converged to a guideline of sending $7 and the remaining three converged to a guideline of sending $8. [4]

## 2.5.2 Results from Part 1

Figure 2.2 plots the amount sent by allocators within each group for both control and treatment groups. The size of the circles in this graph represents the number of subjects in a group that sent a given amount. The control groups have a highly varied amount of sending within a group while the sending in treatment groups cluster around the groups' guidelines. 57.89% of allocators in the treatment group followed their groups' guidelines, even though these guidelines were non-binding. 43.10% of allocators followed the guideline even though their initial proposals were different from the guidelines.

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[3]I dropped a group from the data due to a programming error that occurred during one of the sessions.

[4]The presence of many groups with guideline equal to the the rule made it impossible to test the hypothesis that conditional on guidelines conflicting with the rule in the treatment group, rule compliance will be lower in the treatment than the control.
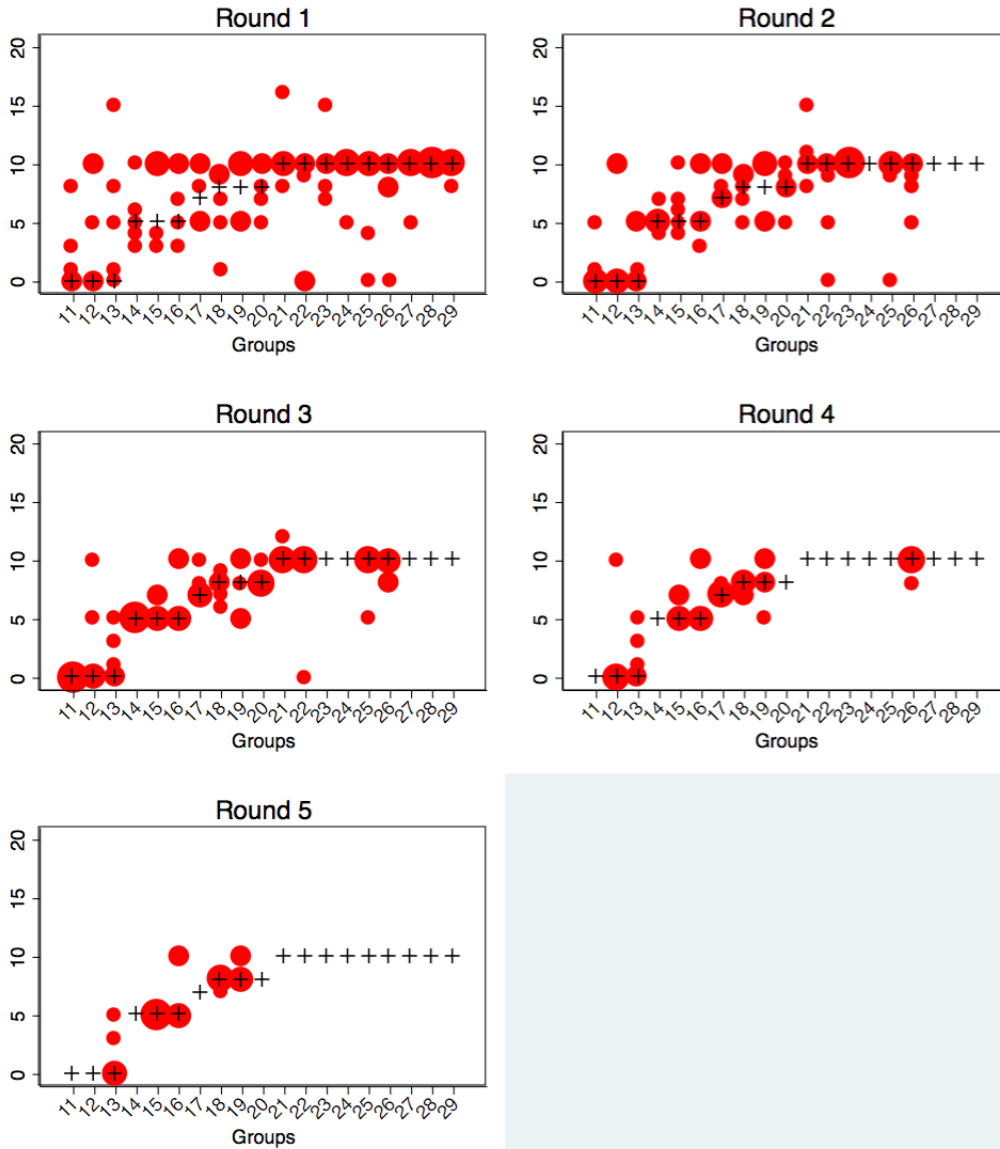
The x-axis in each of the graphs above represent different groups in the treatment condition.
The y-axis represents the proposals made by allocators within a group in each of the five rounds in Part 0.
The size of the circle indicates number of subjects in a group that made that proposal.
The plus sign represents the guideline that a group agreed upon.
The groups have been sorted by guideline i.e. groups with lower guidelines have lower group labels.
There are some groups that do not have proposals in a round because they already agreed on a guideline in one of the previous rounds.

Figure 2.1: Proposals in five rounds leading to a guideline

Groups 1-10 are control groups, and 11-29 are treatment groups.
The plus sign represents the guideline that a group agreed upon.
The horizontal lines are in each case the average of Amount Sent in Part 1
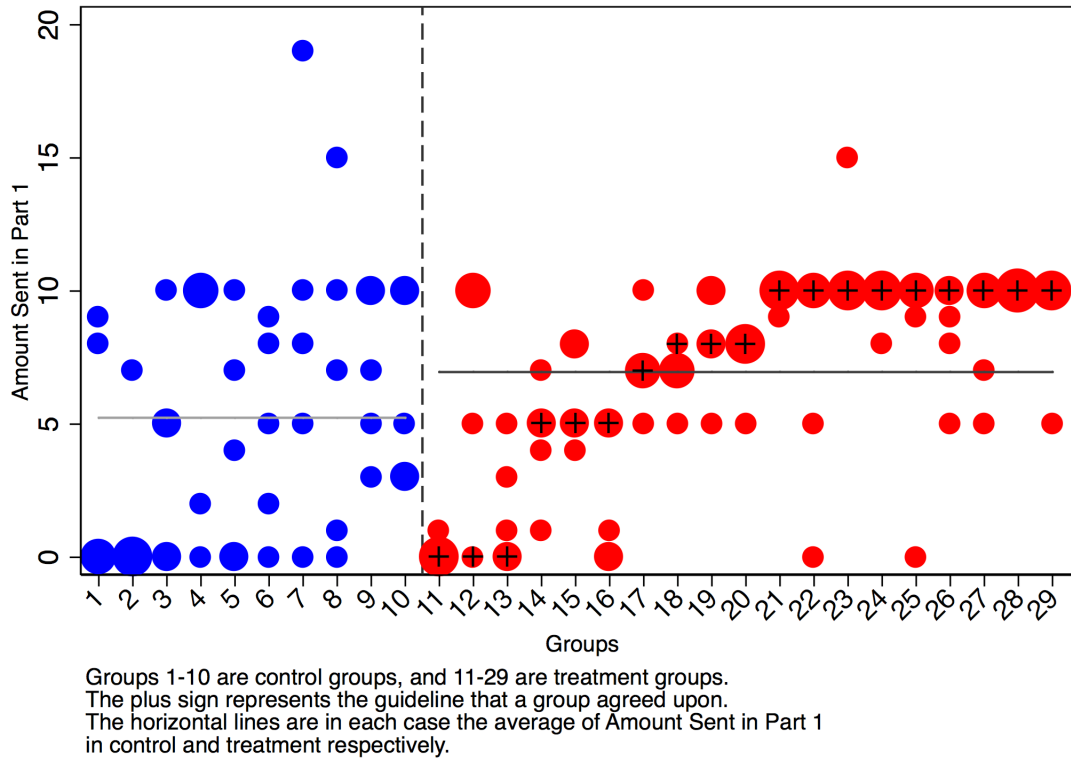in control and treatment respectively.

Figure 2.2: Amount Sent in Part 1

An unintended effect of the guideline creation part was that the subjects in the treatment behaved more altruistically than the ones in the control. In Figure 2.2, we see that the amount sent by allocators in control and treatment is on average \$5.24 and \$6.96 respectively, with a p-value of 0.007 for a t-test that the amount sent is lower in control than the treatment. This is an interesting result in the experiment that suggests that when subjects interact with each other to create guidelines, they end up being more altruistic.

Figure 2.3 plots the within group standard deviation of amount sent in round 1 for each group. As stated in Hypothesis 1, we find that the within-group standard deviation of the amount sent in this part is lower for the treatment than the control groups (p=0.000). In Figure 2.3, we see that the standard deviation is 4.51 and 2.06 in control and treatment respectively.

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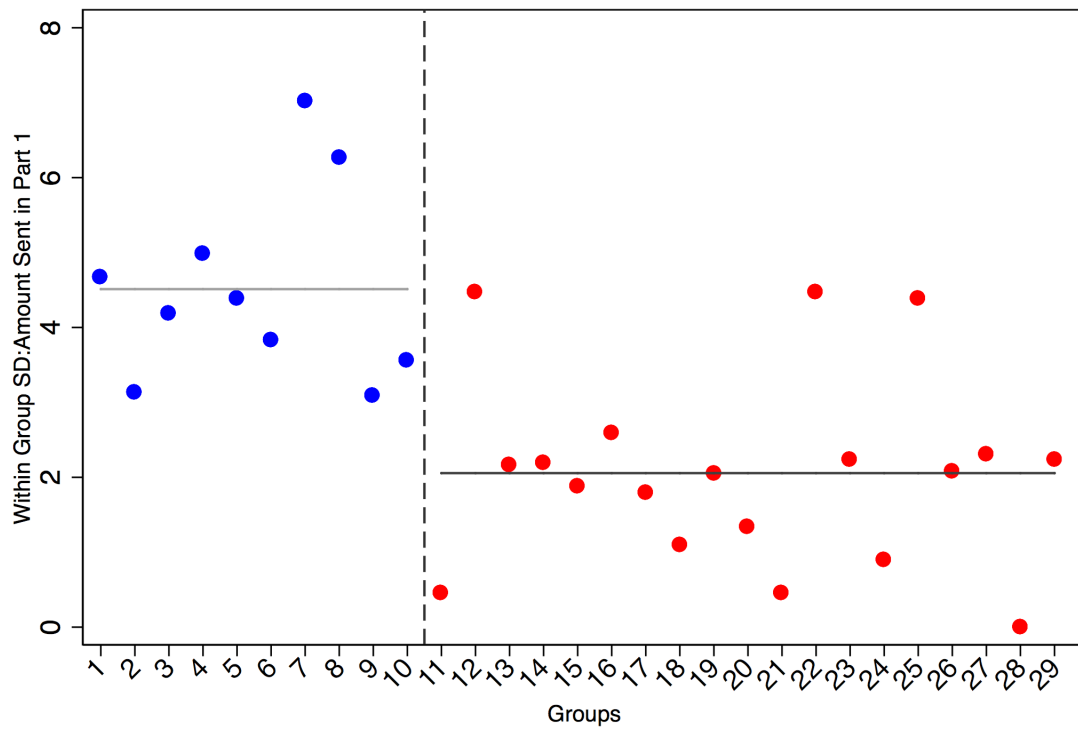
Groups 1-10 are control groups, and 11-29 are treatment groups.

Figure 2.3: Standard deviation of amount sent in Part 1

Next, we look at the impact of the guideline on the beliefs of allocators about what other allocators in their group would send. From Figure 2.4, we see that the beliefs of allocators about others' sending differ significantly between treatment ($6.89) and control($5.05) at a p-value of 0.0012. 42.11% of the allocators believed that other allocators in their group followed the guideline. We also find that the beliefs cluster around the guidelines in the treatment group.

Figure 2.5 shows that treatment has a lower within group standard deviation than the control. This pattern is similar to the pattern of actual amount sent. The within-group standard deviation of beliefs is 3.02 and 1.37 in control and treatment respectively, and are significantly different from each other (p-value=0.00). This suggests that the guideline influenced both the beliefs and the sending behaviors of the allocators. Thus, the guidelines created in the experiment were similar in nature to a "social norm" within the groups in the experiment.

### 2.5.3 Results from Part 2

In Part 2, we test if rule compliance is higher for individuals in groups with higher guidelines (Hypothesis 3) and if rule compliance is lower for individuals in groups with guidelines conflicting with the rule (Hypothesis 4). For testing these hypotheses, I will study the allocators only in the treatment condition because the control condition does not have any guidelines. Since the guidelines are not exogenously given to the group, I control for individuals' initial proposals while studying the effect of guidelines on rule compliance. The assumption I make here is that individuals' proposal in round 1 captures their true characteristic, and once we control for that, the guideline is randomly assigned. In other words, we compare individuals with similar proposals in round 1 who ended up in groups with different guidelines.

In Table **??**, we study the effect of the guideline on rule compliance controlling for round 1 proposal in linear and fixed effect regressions. We find that increasing the sending guide-
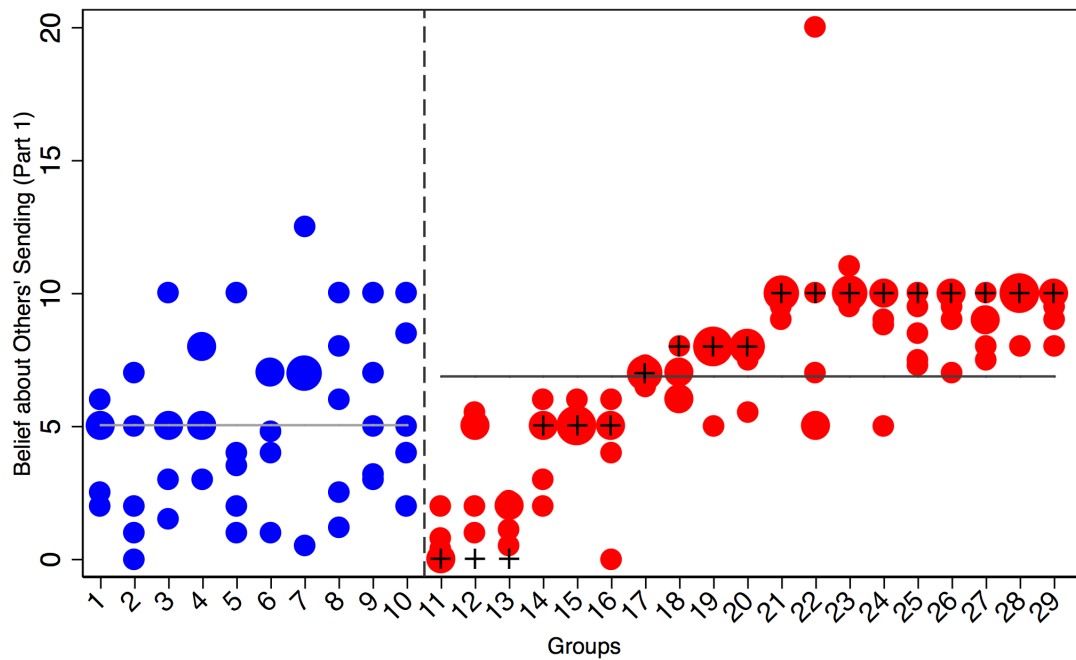
96

Groups 1-10 are control groups, and 11-29 are treatment groups.
The plus sign represents the guideline that a group agreed upon.
The horizontal lines are in each case the average of Belief about Others' Sending (Part 1)
in control and treatment respectively.

Figure 2.4: Beliefs about amount sent by others in Part 1
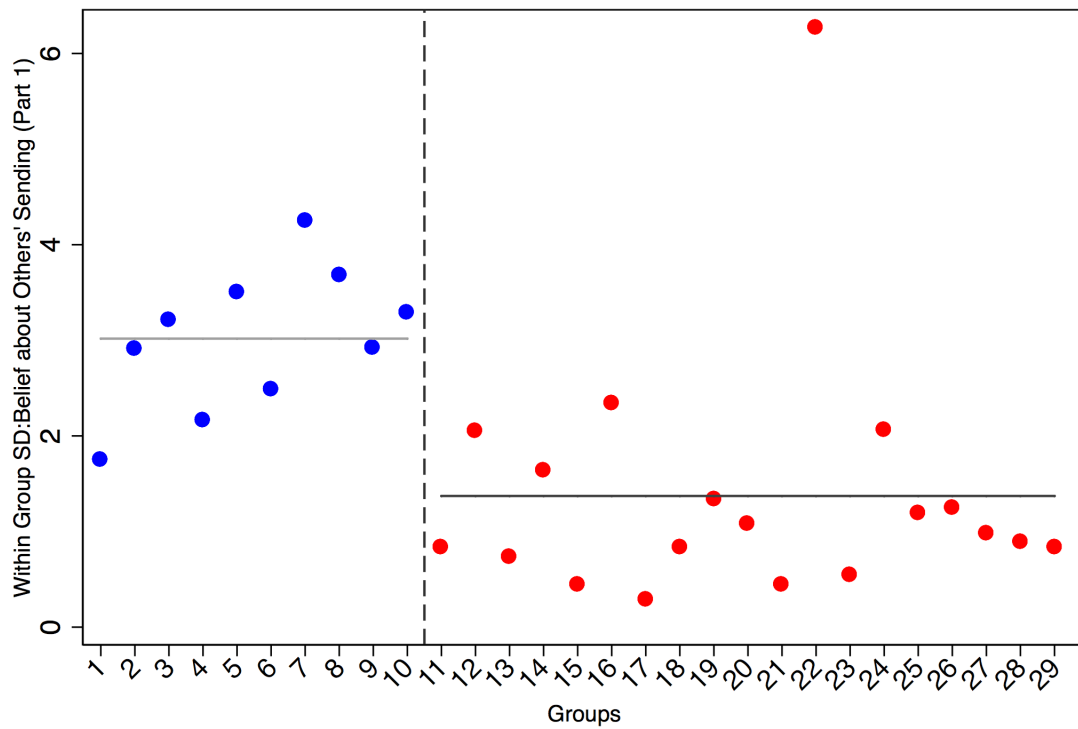
Groups 1-10 are control groups, and 11-29 are treatment groups.

Figure 2.5: Standard deviation of beliefs of other's amount sent in Part 1

line of a group by a dollar, increases an allocators' rule compliance by 4.3 percentage points (p=0.008) when we control for the round 1 proposal linearly. We also find that the increase in an allocator's round 1 proposal by a dollar increases rule compliance by 5.21 percentage points (p=0.023). Thus, whether to follow a rule or not is influenced by both the allocators' initial proposals for guidelines and the guidelines themselves. When controlling for the proposals in round 1 as fixed effects, we find that an increase in guideline by a dollar increases allocators' rule compliance by 4.07 percentage points (p=0.007). Thus, we find evidence supporting Hypothesis 3 that rule compliance is higher for allocators in groups with higher guidelines.

In Table 2.3, we study the effect of guideline conflicting with the rule on rule compliance, controlling for round 1 proposal in linear and fixed effect regressions. We find that belonging to a group with a guideline conflicting with the rule, decreases rule compliance by 22 percentage points (p=0.075) when we control for the round 1 proposal linearly. We also find that the increase in an allocator's round 1 proposal by a dollar increases her rule compliance by 5.82 percentage points (p=0.003). When controlling for the proposals in round 1 as fixed effects, we find that being in a group with guideline conflicting with the rule decreases the rule compliance by 19.9 percentage points (p=0.121). Thus, we find evidence supporting Hypothesis 4 that rule compliance is lower for individuals in groups with guidelines in conflict with the rule, even though the evidence is not statistically significant at 5% level.

To understand which allocators in the sample are driving these results, I divide my allocators into two sets depending on their initial proposals (Table 2.4). We find that within the set of allocators with low initial proposals(Proposal1$\leq 5$), being in a group with a guideline$<10$ makes them 21.7 percentage points more likely to comply with the rule compared to being in a group with a guideline of sending \$10 ($p = 0.049$). This result is counter intuitive as this implies that these allocators in higher guideline groups are less likely to follow the rule of sending a higher amount. This suggests that subjects whose intrinsic motives contradict the guidelines use the

|  | Rule Compliance | Rule Compliance |
| --- | --- | --- |
| Guideline | 0.0430*** | 0.0407*** |
|  | (0.008) | (0.007) |
| Proposal 1 | 0.0521** | |
|  | (0.023) | |
| Proposal 1 (Fixed Effects) | N | Y |
| Constant | -0.148*** | 0.593 |
|  | (0.000) | (0.126) |
| Observations | 95 | 95 |

*p*-values in parentheses

Standard errors are clustered at group level using wild cluster bootstrap.

$^{*}$ $p < 0.10$, $^{**}$ $p < 0.05$, $^{***}$ $p < 0.01$

Table 2.2: Effect of Guideline on Rule Compliance

|  | Rule Compliance | Rule Compliance |
| --- | --- | --- |
| Guideline<10 | -0.220* | -0.199 |
|  | (0.075) | (0.121) |
| Proposal 1 | 0.0582*** |  |
|  | (0.003) |  |
| Proposal 1 (Fixed Effects) | N | Y |
| Constant | 0.233*** | 1.000*** |
|  | (0.000) | (0.000) |
| Observations | 95 | 95 |

$p$-values in parentheses

Standard errors are clustered at group level using wild cluster bootstrap.

Guideline<10 is a dummy variable which is 1 if the guideline in a group

is to send less than \$10 and is 0 if the guideline in a group is to send \$10.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 2.3: Effect of Guideline<10 on Rule Compliance

|  | Rule Compliance (Proposal1≤5) | Rule Compliance (Proposal1>5) |
|---|---|---|
| Guideline<10 | 0.217 ** | -0.351 ** |
|  | (0.049) | (0.032) |
| Proposal 1 | 0.0388 | 0.0280 |
|  | (0.225) | (0.773) |
| Constant | -0.0906 *** | 0.590*** |
|  | (0.000) | (0.000) |
| Observations | 31 | 64 |

*p*-values in parentheses

Standard errors are clustered at group level using wild cluster bootstrap.

$^{*}$ $p < 0.10$, $^{**}$ $p < 0.05$, $^{***}$ $p < 0.01$

Table 2.4: Heterogeneous Effects: Effect of Guideline<10 on Rule Compliance

fine incorporated in the rule as a price to get around the rule, and the high guideline. This is an interesting result in the light of Gneezy and Rustichini 2000, wherein subjects used fine as a price to not follow a rule especially when the fine is relatively low.

On the other hand, for subjects who have high initial proposals(Proposal1>5), being in a group with guideline<10 makes them 35.1 percentage points less likely to follow the rule of giving $10 when compared with the ones in a group with guideline of sending $10 ($p = 0.032$). This implies that when the subjects' altruistic intrinsic motives are aligned with the high guideline, the rule strengthens the guideline, and subjects are more likely to follow it.

## 2.6 Conclusion

In this chapter, I study how being exposed to a group guideline affects an individual's compliance with the rule. I allowed guideline creation within the experiment wherein "allocators" shared proposals within their group about the appropriate amount to be sent to their respective recipients in dictator games. After an iterative sharing of proposals, most of the allocators reached a consensus about the guideline of what should be sent. I find that this guideline significantly affects the sending behavior of allocators despite being non-binding. Next, I introduced a formal rule within the experiment that required each allocator to share her initial endowment equally. I find that the subjects were 22% less likely to obey the rule of equitable sending if they belonged to a group having a less-than-equal sharing norm. This result is robust to controlling for individuals' personal characteristics like their initial proposal in the discussion about the appropriate amount to be sent.

The current research can be extended in various directions. One possible direction is to understand how the distance of a new rule from a current norm would affect behavioral change. Another direction is to study how different forms of enforcement will affect compliance with the rule in the presence of a norm. One form of enforcement could be whistle blowing by individuals in a group as suggested by Acemoglu and Jackson (2017). Another form of enforcement could be a "police enforcement" wherein the police would be a randomly selected group member as mentioned in Basu (2015). Another direction could be to understand how different levels of sanctions affect compliance with the rule especially when the rule conflicts with the norms.

Since many societies attempt to change norms using legal reforms, understanding how individuals exposed to norms respond to formal rules is essential. The results and further extensions of this project could provide useful information to craft laws that are easy to enforce for the governing body and to comply with for the citizens.

# 2.7 Appendix

## 2.7.1 Instructions for Control Group

*General Instructions*

Hello everyone! Thanks for coming. Please sign the consent form before we start the session.

Welcome. You are about to participate in a study on decision-making, and you will be paid for your participation in cash, at the end of the session. What you earn depends partly on your decisions, partly on the decisions of others, and partly on chance. Please turn off your cell phones now. Please close any program you may have opened on the computer. The entire session will take place through computer terminals, and all interaction between you and other participants will take place through the designated program on the computers. Please do not talk or in any way try to communicate with other participants during the session. We will start with a brief instruction period. During the instruction period, you will be given a description of the main features of the session. If you have any questions during this period, raise your hand and an experimenter will come to answer your question.

In this experiment, each of you will be assigned randomly to a group of ten. Members of a group will interact only with one another for the entire experiment, never interacting with those in the other group. Each group consists of five allocators and five recipients. Whether you are an allocator or a recipient will be randomly determined. Each of you is equally likely to have either role in today's session, with your role remaining the same once it is determined.

Each of you will be assigned a unique ID number that can be thought of as identities within the experiment; once randomly assigned, they are fixed throughout the experiment. You will not be informed which ID number belongs to which named participant either during or after the

experiment, and the experimenters also cannot link ID numbers to specific named participants.

Any questions?

There are two parts to this experiment. In the first part, each allocator will be randomly paired with a recipient in his/her group. Then the allocator will be allotted $20 and asked to decide how much of the money, if any, he or she wants to send to the recipient.

In the second part of the experiment, the allocators will be asked to make another sending decision, with further details to be discussed when we get to that part. For now, it is sufficient to know that your role will be the same in Part 2 as in Part 1, that your decision in Part 1 remains known to you only, that your Part 1 decision has no effect on your situation in Part 2, and that allocators are paired with different recipients in Part 2 than in Part 1.

Thus, allocators get to decide how much of the $20 to keep and how much to send to the recipients with whom they are paired, and recipients's earnings from these decisions depend entirely on the choices of the allocators to whom they have been assigned.

At the end of the experiment, each allocator's decision in Part 1 and Part 2, and his/her corresponding ID numbers will be revealed to all the group members of both roles.

Any questions?

Your earnings in the experiment will be determined by your earnings in either Part 1 or Part 2, but not by both. Which of those two parts becomes the basis for payment will be randomly determined. That is, your payment over and above the $5 show-up fee will be either your earnings in Part 1 or your earnings in Part 2, with equal probability. Your final payment will be

rounded up to the nearest dime.

Any questions?

We will start with comprehension questions to make sure that you understood the experimental instructions. Please answer such questions promptly to the best of your ability; your answers will not affect your earnings from the experiment.

*(Following are the messages on the computer screen for the subjects)*

**COMPUTER SCREEN 1**

**Comprehension Question 1**

How many members are there in a group in this experiment? _____

Answer: You are correct! There are ten members in a group in this experiment. There are five allocators and five recipients in the group.
OR
Answer: Sorry, that is not the correct answer. There are ten members in a group in this experiment. There are five allocators and five recipients in the group.

**COMPUTER SCREEN 2**

**Comprehension Question 2**

You have been assigned a unique ID number for this experiment. Will it be same throughout

the experiment? Please answer Yes/No. _____

Answer: You are correct! Your ID number is your identity in this experiment and will remain the same throughout the experiment.

OR

Answer: Sorry, that is not the correct answer. Your ID number is your identity in this experiment and will remain the same throughout the experiment.

**COMPUTER SCREEN 3**

**Comprehension Question 3**

In Part 1 of the experiment, the allocator is allotted $20 and asked to decide how much of the money, if any, he or she wants to send to the recipient. Suppose the allocator sends $y to the recipient. What are the earnings of the allocator and the recipient for this decision? Please select the correct answer from the following options.

(a) Allocator earns $ (20+y) and Recipient earns $ (y)

(b) Allocator earns $ (20-y) and Recipient earns $ (y)

(c) Allocator earns $ (y) and Recipient earns $ (20-y)

Answer: You are correct! When the allocator sends $y (of the $20 allotted to him/her) to the recipient, the allocator earns $ (20-y) and the recipient earns $ y.

OR

Answer: Sorry, that is not the correct answer. When the allocator sends $y (of the $20 allotted to him/her) to the recipient, the allocator earns $ (20-y) and the recipient earns $ y.

**COMPUTER SCREEN 4**

**Comprehension Question 4**

There are two parts to this experiment. If your earnings in Part 1 is $x, in Part 2 is $y and your show up fee is $5, what is your total earnings in this experiment? Please select the correct answer from the following options.

(a) $ (5+x)

(b) $ (5+y)

(c) $ (5+x) or $ (5+y) with equal probability

Answer: You are correct! Your payment over and above the $5 show-up fee will be either your earnings in Part 1 or your earnings in Part 2, with equal probability i.e., $ (5+x) or $ (5+y) with equal probability.

OR

Answer: Sorry, that is not the correct answer. Your payment over and above the $5 show-up fee will be either your earnings in Part 1 or your earnings in Part 2, with equal probability, i.e., $ (5+x) or $ (5+y) with equal probability.

Please wait as others are still finishing their comprehension questions.

**COMPUTER SCREEN 5**

You are assigned the role of an allocator in Group 1 (or Group 2), and you are paired with a recipient in your group. Your experimental ID is <ID>.

We start with part 1 now.

*Meanwhile, instructions for recipients on the computer screen are as follows.*

**COMPUTER SCREEN 6**

You are assigned the role of a recipient in Group 1 (or Group 2) and are paired with an allocator in your group. Your ID for the experiment is 6.

To keep the number of keystrokes roughly similar among subjects in different roles, you will sometimes be asked to answer a question unrelated to the experiment, for example: What is the capital of Virginia? (1) Roanoke, (2) Raleigh, (3) Richmond.

At each point when such a question is introduced, you'll see a screen heading: "Please answer the following question which does not affect your earnings, then press continue." Please answer such questions promptly to the best of your ability; your answers will not affect your earnings from the experiment.

We are starting with the part 1 of the experiment now.

*Part 1 Instructions for Allocators*

**COMPUTER SCREEN 7**

You are allotted $20. Please select the amount of money that you want to send to the recipient paired with you. _____

**COMPUTER SCREEN 8**

Please wait as others are still making their decisions.

**COMPUTER SCREEN 9**

The other four allocators in your group have made their decisions. You are asked to guess how much the other four allocators sent on average. When calculating this average, do not include the amount you sent. You will be rewarded for the accuracy of your guess, which can be in denominations of 10 cents.

Your earnings for this guess will be determined by the formula: $Max \{(1-0.25*|Average of Others' Sending -Your Guess|), 0\}. This means that if your guess is within $4 of the average amount sent by the other allocators, you will receive some additional money, for example, if the amount that you guessed is $2 more or $2 less than the actual average, you will receive $1 - $0.25*2 = $0.50. If the difference between the actual average and your guess is $4 or more, you will receive no additional payment.

How much do you think the other four allocators sent on average? _____

*Part 1 Instructions for Recipients*

**COMPUTER SCREEN 10**

The allocator has been allotted $20 and has been asked to decide what part of the money to send to you. How much do you think the allocator will send? _____

You will be rewarded for the accuracy of your guess which can be in denominations of 10 cents.

Your earnings for this guess will be determined by the following formula: $Max {(1-0.25*| Amount Sent by allocator-Your Guess|), 0}. This means that if your guess is within $4 of the amount sent by the allocator, you will receive some additional money, for example, if the amount that you guessed is $2 more or $2 less than the actual amount sent, you will receive $1 - $0.25*2 = $0.50. If the difference between the amount sent and your guess is $4 or more, you will receive no additional payment.

**COMPUTER SCREEN 11**

You will find out what the allocator sent to you in this part at the end of the experiment.

**COMPUTER SCREEN 12**

Please answer the following question, which does not affect your earnings, then press continue.

What is the next prime number after 7?

(a) 9
(b) 11
(c) 13

Answer: You are correct! The prime number after 7 is 11.
OR

Answer: Sorry, that is not the correct answer. The prime number after 7 is 11.

**COMPUTER SCREEN 13**

This is the end of Part 1. Please wait for further instructions.

*Part 2 Instructions*

This is the second part of the experiment. As indicated before, your role and the decision to be made in this part are largely like they were in Part 1.

The difference is that in this part, a rule is in place under which an allocator is asked to send at least $10 of his or her $20 to the recipient that he/she is paired with. If the amount the allocator sends is less than $10, the allocator will be assessed a fine of $1. For example, if the allocator sends $x and keeps $20-x, the allocator ends up earning $20-x-1 for this part, if x is less than 10, and earns $20-x, if x is greater than 10.

Please raise your hand if you have any questions?

We will start with comprehension questions to make sure that you understood the experimental instructions for this part. Please answer such questions promptly to the best of your ability; your answers will not affect your earnings from the experiment.

**COMPUTER SCREEN 14**

Comprehension Question 6

In Part 2 of the experiment, the allocator is allotted $20 and asked to decide how much of the money, if any, he or she wants to send to the recipient. Suppose the allocator sends $y to

the recipient and the value of y is less than $10. What are the earnings of the allocator and the recipient for this decision? Please select the correct answer from the following options.

(a) Allocator earns $ (20-y) and Recipient earns $ (y-1)

(b) Allocator earns $ (20-y) and Recipient earns $ (y)

(c) Allocator earns $ (20-y-1) and Recipient earns $ (y)

Answer: You are correct! When the allocator sends $y (of the $20 allotted to him/her) to the recipient and the value of y is less than $10, the allocator pays a fine of $1, and earns $ (20-y-1) and the recipient earns $ y.

OR

Answer: Sorry, that is not the correct answer. When the allocator sends $y (of the $20 allotted to him/her) to the recipient and the value of y is less than $10, the allocator pays a fine of $1, and earns $ (20-y-1) and the recipient earns $ y.

We will start with Part 2 of the experiment shortly.

*Part 2 Instructions for Allocators*

**COMPUTER SCREEN 15**

You are allotted $20 and are paired with a different recipient in this part of the experiment. Please select the amount of money that you want to send to this recipient. _____

Keep in mind that there is a rule in place under which you are asked to send at least $10 to the recipient. If you send less than $10, you will be assessed a fine of $1 applied to your earnings in this part.

**COMPUTER SCREEN 16**

Please wait as others are still making their decisions.

**COMPUTER SCREEN 17**

The other four allocators in your group have made their decisions. You are asked to guess how much the other allocators sent on average? When calculating this average, do not include the amount you sent.

Like before, you will be rewarded for the accuracy of your guess which can be in denominations of 1 cent, with the reward formula again being: $Max {(1-0.25*| Average of Others' Sending – Your Guess|), 0}.

How much do you think the other four allocators sent on average? _____

*Part 2 Instructions for Recipients*

**COMPUTER SCREEN 18**

You are paired with a different allocator in your group in this part of the experiment.

The allocator has been allotted $20 and asked to decide what part of the money to send to you. Remember that a rule is in place under which the allocator has been asked to send at least $10 of his or her $20 to you. If the amount the allocator sends is less than $10, he/she will be assessed a fine of $1.

How much do you think the allocator will send? _____

Like before, you will be rewarded for the accuracy of your guess which can be in denominations of 10 cents, with the reward formula again being: $Max {(1-0.25*| Amount Sent by allocator – Your Guess|), 0}.

**COMPUTER SCREEN 19**

You will find out what the allocator sent to you in this part at the end of the experiment.

**COMPUTER SCREEN 20**

Please answer the following question, which does not affect your earnings, then press continue.

When was the Constitution of the United States created?

(a) 1776
(b) 1787
(c) 1796

Answer: You are correct! The American constitution was created in 1787.
OR
Answer: Sorry, that is not the correct answer. The American constitution was created in 1787.

**COMPUTER SCREEN 21**


This is the end of Part 2. Please wait.


*Part 3: Feedback*

**COMPUTER SCREEN 22**


You will receive information about your group's allocators' sending decisions from Part 1 of the experiment. (Click to continue)


**COMPUTER SCREEN 23**

In your group, Allocator ID1 sent $ x 1, ID2 sent $ x 2, ID3 sent $ x 3, ID4 sent $ x 4 and ID5 sent $ x 5 in Part 1.


You were paired with allocator ID4 in this part. (This sentence will be displayed only to the recipients)


*Part 4: Feedback*

**COMPUTER SCREEN 24**


You will receive information about your group's allocators' sending decisions from Part 2 of the experiment. (Click to continue)


**COMPUTER SCREEN 25**

In your group, Allocator ID1 sent $ x 1, ID2 sent $ x 2, ID3 sent $ x 3, ID4 sent $ x 4 and ID5 sent $ x 5 in Stage 1.

You were paired with allocator ID3 in this part. (This sentence will be displayed only to the recipients)

*Payments*

**COMPUTER SCREEN 26**

The computer is currently determining your payments for this experiment. Your earnings in either Part 1 or Part 2 will be selected with equal probability for payment.

**COMPUTER SCREEN 27** *(for allocator)*

You will be paid for your decisions and guess in Part x. Your total earnings today are $y. Please wait while the experimenter prepares your payment.

**COMPUTER SCREEN 28** *(for recipient)*

You will be paid for your guess and for the decision of the allocator with whom you were matched in Part x. Your total earnings today are $y. Please wait while the experimenter prepares your payment.

## COMPUTER SCREEN 29

Please answer the following questions (The information you provide is confidential and does not affect your earnings in today's experiment.):

Please indicate your concentration/s._____

How many semesters of college or university (not including this semester) have you completed?
(Answers: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, graduate student)

How many economics courses (not including this semester) have you taken?_____

Gender: Male_____ Female_____

Continue

The information you provide is confidential and does not affect your earnings in today's experiment

## 2.7.2 Instructions for Treatment Group

*General Instructions*

Hello everyone! Thanks for coming. Please sign the consent form before we start the session.

Welcome. You are about to participate in a study on decision-making, and you will be paid for your participation in cash, at the end of the session. What you earn depends partly on your decisions, partly on the decisions of others, and partly on chance. Please turn off your cell phones now. Please close any program you may have opened on the computer. The entire session will take place through computer terminals, and all interaction between you and other participants will take place through the designated program on the computers. Please do not talk or in any way try to communicate with other participants during the session. We will start with a brief instruction period. During the instruction period, you will be given a description of the main features of the session. If you have any questions during this period, raise your hand and an experimenter will come to answer your question.

In this experiment, each of you will be assigned randomly to a group of ten. Members of a group will interact only with one another for the entire experiment, never interacting with those in the other group. Each group consists of five allocators and five recipients. Whether you are an allocator or a recipient will be randomly determined. Each of you is equally likely to have either role in today's session, with your role remaining the same once it is determined.

Each of you will be assigned a unique ID number that can be thought of as identities within the experiment; once randomly assigned, they are fixed throughout the experiment. You will not be informed which ID number belongs to which named participant either during or after the experiment, and the experimenters also cannot link ID numbers to specific named participants.

Any questions?

There are two parts to this experiment. In the first part, each allocator will be randomly paired with a recipient in his/her group. Then the allocator will be allotted $20 and asked to decide how much of the money, if any, he or she wants to send to the recipient.

In the second part of the experiment, the allocators will be asked to make another sending decision, with further details to be discussed when we get to that part. For now, it is sufficient to know that your role will be the same in Part 2 as in Part 1, that your decision in Part 1 remains known to you only, that your Part 1 decision has no effect on your situation in Part 2, and that allocators are paired with different recipients in Part 2 than in Part 1.

Thus, allocators get to decide how much of the $20 to keep and how much to send to the recipients with whom they are paired, and recipients' earnings from these decisions depend entirely on the choices of the allocators to whom they have been assigned.

At the end of the experiment, each allocator's decision in Part 1 and Part 2, and his/her corresponding ID numbers will be revealed to all the group members of both roles.

Any questions?

Your earnings in the experiment will be determined by your earnings in either Part 1 or Part 2, but not by both. Which of those two parts becomes the basis for payment will be randomly determined. That is, your payment over and above the $5 show-up fee will be either your earnings in Part 1 or your earnings in Part 2, with equal probability. Your final payment will be rounded up to the nearest dime.

Any questions?

Before we start the first part of the experiment, the allocators in each group are asked to share proposals and agree on a suggested guideline for the amount of money to be sent, of the $20 allotted to them. If at least four out of five of the allocators in a group agree on a suggested guideline, that will be announced as the guideline to all the members in your group, including the recipients.

If there is no agreement between at least four of the five allocators in the initial set of proposals, the proposals made will be displayed to the allocators, and they will be asked to offer new proposals. If agreement is still not achieved, the process will repeat itself for up to five rounds of proposals, in total. If there is still no agreement between at least four of the five allocators, in round five, the value supported by the most allocators will be declared as the suggested guideline to the entire group and any ties will be randomly broken.

Any questions?

We will start with comprehension questions to make sure that you understood the experimental instructions. Please answer such questions promptly to the best of your ability; your answers will not affect your earnings from the experiment.

*(Following are the messages on the computer screen for the subjects)*

**COMPUTER SCREEN 1**

**Comprehension Question 1**

How many members are there in a group in this experiment? _____

Answer: You are correct! There are ten members in a group in this experiment. There are five allocators and five recipients in the group.

OR

Answer: Sorry, that is not the correct answer. There are ten members in a group in this experiment. There are five allocators and five recipients in the group.

**COMPUTER SCREEN 2**

**Comprehension Question 2**

You have been assigned a unique ID number for this experiment. Will it be same throughout the experiment? Please answer Yes/No. _____

Answer: You are correct! Your ID number is your identity in this experiment and will remain the same throughout the experiment.

OR

Answer: Sorry, that is not the correct answer. Your ID number is your identity in this experiment and will remain the same throughout the experiment.

**COMPUTER SCREEN 3**

**Comprehension Question 3**

In Part 1 of the experiment, the allocator is allotted $20 and asked to decide how much of the money, if any, he or she wants to send to the recipient. Suppose the allocator sends $y to

the recipient. What are the earnings of the allocator and the recipient for this decision? Please select the correct answer from the following options.

(a) Allocator earns $ (20+y) and Recipient earns $ (y)

(b) Allocator earns $ (20-y) and Recipient earns $ (y)

(c) Allocator earns $ (y) and Recipient earns $ (20-y)

Answer: You are correct! When the allocator sends $y (of the $20 allotted to him/her) to the recipient, the allocator earns $ (20-y) and the recipient earns $ y.

OR

Answer: Sorry, that is not the correct answer. When the allocator sends $y (of the $20 allotted to him/her) to the recipient, the allocator earns $ (20-y) and the recipient earns $ y.

**COMPUTER SCREEN 4**

**Comprehension Question 4**

There are two parts to this experiment. If your earnings in Part 1 is $x, in Part 2 is $y and your show up fee is $5, what is your total earnings in this experiment? Please select the correct answer from the following options.

(a) $ (5+x)

(b) $ (5+y)

(c) $ (5+x) or $ (5+y) with equal probability

Answer: You are correct! Your payment over and above the $5 show-up fee will be either your earnings in Part 1 or your earnings in Part 2, with equal probability i.e., $ (5+x) or $ (5+y)

with equal probability.

OR

Answer: Sorry, that is not the correct answer. Your payment over and above the $5 show-up fee will be either your earnings in Part 1 or your earnings in Part 2, with equal probability, i.e., $ (5+x) or $ (5+y) with equal probability.

**COMPUTER SCREEN 5**

Comprehension Question 5

The allocators in each group are asked to share proposals and agree on a suggested guideline for the amount of money to be sent, of the $20 allotted to them. If four of the allocators propose a suggested guideline of sending $x while the fifth one proposes sending $y (where y is not equal to x), what value will be declared as the suggested guideline? Please select the correct answer from the following options.

(a) $ x

(b) $ y

(c) $ x or $ y with equal probability

Answer: You are correct! If four of the allocators propose a suggested guideline of sending $x, while the fifth one proposes sending $y (where y is not equal to x), then sending $x will be declared as the suggested guideline.

OR

Answer: Sorry, that is not the correct answer. If four of the allocators propose a suggested guideline of sending $x, while the fifth one proposes sending $y (where y is not equal to x), then sending $x will be declared as the suggested guideline.

Please wait as others are still finishing their comprehension questions.

We will start with the sharing of proposals on the computer shortly.

*Part 0 Instructions for Allocators*

**COMPUTER SCREEN 6**

You are assigned the role of an allocator in Group 1 (or Group 2), and you are paired with a recipient in your group. Your experimental ID is <ID>.

This is the first round of proposals. Please select your proposed guideline of the amount of money to be sent to a recipient with whom an allocator in your group, yourself included, will be matched. _____

**COMPUTER SCREEN 7**

The allocators' suggestions are as follows: ID1 suggests $x, ID2 suggests $y, ID3 suggests $z, ID4 suggests $t, ID5 suggests $u.
There is no general agreement among allocators in your group in this round.

*If there is no agreement, the computer screen reads as follows for second iteration:*

**COMPUTER SCREEN 8**

This is the second round of proposals.
Please select your proposed guideline of the amount of money to be sent to a recipient in

your group. _____

**COMPUTER SCREEN 9**

The allocators' suggestions are as follows: ID1 suggests $x, ID2 suggests $y, ID3 suggests $z, ID4 suggests $t, ID5 suggests $u.

There was no general agreement among allocators in your group in this round.

*If there is no agreement, the computer screen reads as follows for third/fourth iteration:*

**COMPUTER SCREEN 10**

This is the third/fourth/(fifth and final) round of proposals.

Please select your proposed guideline of the amount of money to be sent to a recipient. _____

*If there is agreement, the computer screen reads as follows:*

**COMPUTER SCREEN 11**

The allocators' suggestions are as follows: ID1 suggests $x, ID2 suggests $y, ID3 suggests $z, ID4 suggests $t, ID5 suggests $u.

At least four out of five of you agreed on the suggested guideline of sending $x to the recipient. This will be announced to all the allocators and the recipients in your group.

**COMPUTER SCREEN 12**

The suggested guideline of the amount of money to be sent to the recipient is $x.

*If there is no general agreement by the fifth round, the screen to the allocators will read:*

**COMPUTER SCREEN 13**

The allocators' suggestions are as follows: ID1 suggests $x, ID2 suggests $y, ID3 suggests $z, ID4 suggests $t, ID5 suggests $u.

There was no general agreement among the allocators in your group in this round. The suggested guideline will be selected according to the procedure previously described. This will be announced to all the allocators and the recipients in your group.

**COMPUTER SCREEN 14**

The suggested guideline of the amount of money to be sent to a recipient in your group is $y.

We start with part 1 now.

*Part 0 Instructions for Recipients*

*Meanwhile, instructions for recipients on the computer screen are as follows.*

**COMPUTER SCREEN 15**

You are assigned the role of a recipient in Group 1 (or Group 2) and are paired with an allocator in your group. Your ID for the experiment is 6.

To keep the number of keystrokes roughly similar among subjects in different roles, you will sometimes be asked to answer a question unrelated to the experiment, for example: What is the capital of Virginia? (1) Roanoke, (2) Raleigh, (3) Richmond.

At each point when such a question is introduced, you'll see a screen heading: "Please answer the following question which does not affect your earnings, then press continue." Please answer such questions promptly to the best of your ability; your answers will not affect your earnings from the experiment.

**COMPUTER SCREEN 16**

Please answer the following question, which does not affect your earnings, then press continue.

What is the capital of New Mexico?

(1) Santa Fe

(2) Albuquerque

(3) Taos

Answer: You are correct! The capital of New Mexico is Santa Fe.

OR

Answer: Sorry, that is not the correct answer. The capital of New Mexico is Santa Fe.

**COMPUTER SCREEN 17**

Please answer the following question, which does not affect your earnings, then press continue.

What is the average of 4, 5 and 6?

(a) 5

(b) 6

(c) 7

Answer: You are correct! The average of 4, 5 and 6 is 5.

OR

Answer: Sorry, that is not the correct answer. The average of 4, 5 and 6 is 5.

**COMPUTER SCREEN 18**

Please answer the following question, which does not affect your earnings, then press continue.

What year was Darwin's Origin of the Species published?

1. 1847

2. 1859

3. 1899

Answer: You are correct! Darwin's Origin of the Species was published in 1859.

OR

Answer: Sorry, that is not the correct answer. Darwin's Origin of the Species was published in 1859.

**COMPUTER SCREEN 19**

What is the sum of 106 and 57?

1. 165
2. 163
3. 172

Answer: You are correct! The sum of 106 and 57 is 163.

OR

Answer: Sorry, that is not the correct answer. The sum of 106 and 57 is 163.

**COMPUTER SCREEN 20**

How many states are there in the United States of America?

1. 52
2. 50
3. 55

Answer: You are correct! The United States has 50 states.

OR

Answer: Sorry, that is not the correct answer. The United States has 50 states.

**COMPUTER SCREEN 21**

Please wait while the allocators in your group finalize the suggested guideline of the amount of money to be sent to a recipient in your group.

**COMPUTER SCREEN 22**

The suggested guideline of the amount of money to be sent to a recipient in your group is $y.

We are starting with the part 1 of the experiment now.

*Part 1 Instructions for Allocators*

**COMPUTER SCREEN 23**

You are allotted $20. Please select the amount of money that you want to send to the recipient paired with you. _____

**COMPUTER SCREEN 24**

Please wait as others are still making their decisions.

**COMPUTER SCREEN 25**

The other four allocators in your group have made their decisions. You are asked to guess how much the other four allocators sent on average. When calculating this average, do not in-

clude the amount you sent. You will be rewarded for the accuracy of your guess, which can be in denominations of 10 cents.

Your earnings for this guess will be determined by the formula: $Max {(1-0.25*|Average of Others' Sending -Your Guess|), 0}. This means that if your guess is within $4 of the average amount sent by the other allocators, you will receive some additional money, for example, if the amount that you guessed is $2 more or $2 less than the actual average, you will receive $1 - $0.25*2 = $0.50. If the difference between the actual average and your guess is $4 or more, you will receive no additional payment.

How much do you think the other four allocators sent on average? _____

*Part 1 Instructions for Recipients*

**COMPUTER SCREEN 26**

The allocator has been allotted $20 and has been asked to decide what part of the money to send to you. How much do you think the allocator will send? _____

You will be rewarded for the accuracy of your guess which can be in denominations of 10 cents.

Your earnings for this guess will be determined by the following formula: $Max {(1-0.25*| Amount Sent by allocator-Your Guess|), 0}. This means that if your guess is within $4 of the amount sent by the allocator, you will receive some additional money, for example, if the amount that you guessed is $2 more or $2 less than the actual amount sent, you will receive $1 - $0.25*2 = $0.50. If the difference between the amount sent and your guess is $4 or more, you

will receive no additional payment.

**COMPUTER SCREEN 27**

You will find out what the allocator sent to you in this part at the end of the experiment.

**COMPUTER SCREEN 28**

Please answer the following question, which does not affect your earnings, then press continue.

What is the next prime number after 7?

(a) 9

(b) 11

(c) 13

Answer: You are correct! The prime number after 7 is 11.

OR

Answer: Sorry, that is not the correct answer. The prime number after 7 is 11.

**COMPUTER SCREEN 29**

This is the end of Part 1. Please wait for further instructions.

*Part 2 Instructions*

This is the second part of the experiment. As indicated before, your role and the decision to be made in this part are largely like they were in Part 1.

The difference is that in this part, a rule is in place under which an allocator is asked to send at least $10 of his or her $20 to the recipient that he/she is paired with. If the amount the allocator sends is less than $10, the allocator will be assessed a fine of $1. For example, if the allocator sends $x and keeps $20-x, the allocator ends up earning $20-x-1 for this part, if x is less than 10, and earns $20-x, if x is greater than 10.

Please raise your hand if you have any questions?

We will start with comprehension questions to make sure that you understood the experimental instructions for this part. Please answer such questions promptly to the best of your ability; your answers will not affect your earnings from the experiment.

**COMPUTER SCREEN 30**

Comprehension Question 6

In Part 2 of the experiment, the allocator is allotted $20 and asked to decide how much of the money, if any, he or she wants to send to the recipient. Suppose the allocator sends $y to the recipient and the value of y is less than $10. What are the earnings of the allocator and the recipient for this decision? Please select the correct answer from the following options.

   (a) Allocator earns $ (20-y) and Recipient earns $ (y-1)

   (b) Allocator earns $ (20-y) and Recipient earns $ (y)

   (c) Allocator earns $ (20-y-1) and Recipient earns $ (y)

Answer: You are correct! When the allocator sends $y (of the $20 allotted to him/her) to the recipient and the value of y is less than $10, the allocator pays a fine of $1, and earns $ (20-y-1) and the recipient earns $ y.

OR

Answer: Sorry, that is not the correct answer. When the allocator sends $y (of the $20 allotted to him/her) to the recipient and the value of y is less than $10, the allocator pays a fine of $1, and earns $ (20-y-1) and the recipient earns $ y.

We will start with Part 2 of the experiment shortly.

*Part 2 Instructions for Allocators*

**COMPUTER SCREEN 31**

You are allotted $20 and are paired with a different recipient in this part of the experiment. Please select the amount of money that you want to send to this recipient. _____

Keep in mind that there is a rule in place under which you are asked to send at least $10 to the recipient. If you send less than $10, you will be assessed a fine of $1 applied to your earnings in this part.

**COMPUTER SCREEN 32**

Please wait as others are still making their decisions.

**COMPUTER SCREEN 33**

The other four allocators in your group have made their decisions. You are asked to guess how much the other allocators sent on average? When calculating this average, do not include the amount you sent.

Like before, you will be rewarded for the accuracy of your guess which can be in denominations of 1 cent, with the reward formula again being: $Max {(1-0.25*| Average of Others' Sending – Your Guess|), 0}.

How much do you think the other four allocators sent on average? _____

*Part 2 Instructions for Recipients*

**COMPUTER SCREEN 34**

You are paired with a different allocator in your group in this part of the experiment.

The allocator has been allotted $20 and asked to decide what part of the money to send to you. Remember that a rule is in place under which the allocator has been asked to send at least $10 of his or her $20 to you. If the amount the allocator sends is less than $10, he/she will be assessed a fine of $1.

How much do you think the allocator will send? _____

Like before, you will be rewarded for the accuracy of your guess which can be in denominations of 10 cents, with the reward formula again being: $Max {(1-0.25*| Amount Sent by allocator – Your Guess|), 0}.

**COMPUTER SCREEN 35**

You will find out what the allocator sent to you in this part at the end of the experiment.

**COMPUTER SCREEN 36**

Please answer the following question, which does not affect your earnings, then press continue.

When was the Constitution of the United States created?

(a) 1776

(b) 1787

(c) 1796

Answer: You are correct! The American constitution was created in 1787.

OR

Answer: Sorry, that is not the correct answer. The American constitution was created in 1787.

**COMPUTER SCREEN 37**

This is the end of Part 2. Please wait.

*Part 3: Feedback*

**COMPUTER SCREEN 38**

You will receive information about your group's allocators' sending decisions from Part 1 of the experiment. (Click to continue)

**COMPUTER SCREEN 39**

In your group, Allocator ID1 sent $ x 1, ID2 sent $ x 2, ID3 sent $ x 3, ID4 sent $ x 4 and ID5 sent $ x 5 in Part 1.

You were paired with allocator ID4 in this part. (This sentence will be displayed only to the recipients)

*Part 4: Feedback*

**COMPUTER SCREEN 40**

You will receive information about your group's allocators' sending decisions from Part 2 of the experiment. (Click to continue)

**COMPUTER SCREEN 41**

In your group, Allocator ID1 sent $ x 1, ID2 sent $ x 2, ID3 sent $ x 3, ID4 sent $ x 4 and ID5 sent $ x 5 in Stage 1.

You were paired with allocator ID3 in this part. (This sentence will be displayed only to the recipients)

*Payments*

**COMPUTER SCREEN 42**

The computer is currently determining your payments for this experiment. Your earnings in either Part 1 or Part 2 will be selected with equal probability for payment.

**COMPUTER SCREEN 43** *(for allocator)*

You will be paid for your decisions and guess in Part x. Your total earnings today are $y. Please wait while the experimenter prepares your payment.

**COMPUTER SCREEN 44** *(for recipient)*

You will be paid for your guess and for the decision of the allocator with whom you were matched in Part x. Your total earnings today are $y. Please wait while the experimenter prepares your payment.

*Questionnaire*

**COMPUTER SCREEN 45**

Please answer the following questions (The information you provide is confidential and does not affect your earnings in today's experiment.):

Please indicate your concentration/s._____

How many semesters of college or university (not including this semester) have you completed?

(Answers: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, graduate student)

How many economics courses (not including this semester) have you taken?_____

Gender: Male_____ Female_____

Continue

The information you provide is confidential and does not affect your earnings in today's experiment

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