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Do the Right Thing: But Only if Others Do So

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ABSTRACT

Social norms play an important role in individual decision making. Bicchieri (2006)
argues that two different expectations influence our choice to obey a norm: what we
expect others to do (empirical expectations) and what we believe others think we ought to
do (normative expectations). Little is known about the relative importance of these two
types of expectation in individuals' decisions, an issue that is particularly important when
normative and empirical expectations are in conflict (e.g., systemic corruption, high
crime cities). In this paper, we report data from Dictator game experiments where we
exogenously manipulate dictators' expectations in the direction of either selfishness or
fairness. When normative and empirical expectations are in conflict, we find that
empirical expectations about other dictators' choices significantly predict a dictator's
own choice. However, dictators' expectations regarding what other dictators think ought
to be done do not have a significant impact on their decisions after controlling for
empirical expectations. Our findings about the crucial influence of empirical expectations
are important for designing institutions or policies aimed at discouraging undesirable
behavior.

KEY WORDS   social norms; decision making; expectations; fairness; dictator game

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Leges sine moribus vanae
- Horace, *Odes 3, 24*

INTRODUCTION

People often follow social norms, such as norms of reciprocity or fairness, even when obedience is not in their immediate self-interest and there is no obvious sanction looming over the potential transgressor. Social norms are thus recognized as important motivations behind individual decision making in several economic models (see, e.g., Elster, 1989; Rabin, 1993; Fehr & Schmidt, 1999; Bolton & Ockenfels, 2000; Camerer, 2003). Empirical studies of norm conformity clearly show that focusing people on an existing norm is an important step toward compliance (Cialdini et al., 1990). Moreover, as argued by Bicchieri (2006), whether people obey a norm depends crucially on two types of expectations: empirical and normative. That is, individuals have preferences for conforming to social norms that are *conditional* on both types of expectations being present. However, how different types of expectations affect norm compliance, especially when they are in conflict, has gone largely unstudied. This paper provides, to our knowledge, the first evidence regarding the relative influence of empirical and normative expectations on individual decisions in situations involving social norms.

The distinction between normative and empirical expectations is a long-standing one in the sociology and philosophy literatures (Goffman, 1963; Paprzycka, 1999). By an empirical expectation of conformity to a given norm we mean that one expects the norm to be followed by a majority of people in the appropriate circumstances. Such expectations can be grounded on past observations of conformity or its consequences, on

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indirect knowledge or even on projection, as when we think our own behavior is representative of what most other people would do in similar circumstances. [1] Previous research suggests that people tend to do what they believe others who are similar to them in relevant respects would do in a similar situation (Cialdini et al., 1990).

Yet expecting others to follow a pro-social norm may not be a compelling reason to conform, because social norms usually prescribe behavior that may be in conflict with narrow, self-interested motives. Take for example, a norm of cooperation in a social dilemma game. Suppose such a norm exists and it is known that a large majority of individuals obeys it. As cooperation always involves costs, an individual may be tempted to skirt the norm unless he/she also has some further reason to conform to it. As discussed elsewhere (Bicchieri, 2006), empirical expectations of majority conformity is a necessary, but might not be a sufficient condition for norm compliance. Normative expectations are the second, important ingredient in leading people to follow a norm (Sugden, 1998, 2004; Bicchieri, 2006)

A normative expectation is the belief that *others* expect one to conform to a given norm.[2] Normative expectations should not be confused with second-degree empirical expectations; a normative expectation involves the beliefs that others think one *ought to* conform to the norm in the appropriate circumstances, that one has an obligation to do so. It is also important to distinguish normative expectations from personal normative beliefs. The latter refer to *one's own belief* regarding what ought to be done and has been

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[1] It is likely that an empirical expectation obtained by projection in the absence of any information will be different from one derived by observation or indirect knowledge. What matters to our study, however, is how variation in expectations affects behavior. We use information here as a means to exogenously generate variation in expectations.
[2] The word "normative" has different meanings in different disciplines. Here it means "what *ought to* be" as opposed to "what is."

shown to play an important role in decision making (e.g., Fishbein, 1967; Budd &

Spencer, 1985; Baron, 1992). [3] Thus an individual may have a normative expectation

regarding fair behavior, but have no personal normative belief about the importance of

being fair. Conversely, a personal normative belief may not be accompanied by a

normative expectation, as when one holds a moral value that may not be shared by

others.[4]

Bicchieri (2006) argues that a condition for a social norm to exist is that individuals

have a *conditional preference* for following the norm, provided empirical and normative

expectations are met. For some individuals, recognizing the legitimacy of others'

expectations might be enough (when combined with empirical expectations) to induce a

preference for conformity (e.g., Cialdini et al., 1990; Schultz, 1998; Wenzel, 2005; Xiao

& Houser, 2008). Other individuals might require further inducements, such as the threat

of sanctions, by those who expect (and want) their conformity (Fehr & Gächter, 2000).

Assuming conditional preferences for following a fairness norm is different from

assuming a fairness preference. A person who has a preference for fairness (see, e.g.,

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[3]The theory of reasoned action (TRA) incorporated subjective norms and demonstrated their importance for decision making (see, e.g., Schwartz and Tessler, 1972; Ajzen & Fishbein, 1980; Sheppard et al., 1988; Hill et al, 1996). Subjective norms in TRA are defined as the perceived normative expectations of "significant others". This view of normative expectations in TRA is similar to but more restrictive than ours. In particular, we do not assume that the "others" involved are either related to or significant to the subject. In our experiment a dictator has normative beliefs about the offers other anonymous dictators think should be made. In addition, the normative expectations we study here are societal while the subjective norms in TRA are not necessarily societal. For example, in TRA, normative beliefs may include a mother's belief that her daughter should exercise everyday. This belief falls outside the domain of social norms.

[4] In some philosophical circles, individuals who have a *personal* normative belief would be expected to engage in behavior that is relatively independent of the information they have about others' beliefs and behavior. That is, a person who believes in the value of equitable sharing would not be easily swayed in her choice by the information that others think behavior should be selfish. If we accept this view, we would thus expect the average response of individuals who hold a personal normative belief about fairness to be less sensitive to information manipulations pointing to selfish beliefs/behavior. Such individuals will have a relatively unconditional preference for following a personal norm of fairness. Yet we believe that it is an empirical question whether personal normative beliefs can or cannot be influenced by information about what other people believe or do (for a discussion, see Bicchieri (2006) p. 20-21)

Camerer & Fehr, 2004) – provided we assume such preference to be stable —should not be influenced by information pointing to other people's beliefs or behavior contrary to one's preference. On the other hand, if we assume other-regarding preferences to be conditional, it remains to be explained what they are conditioned upon.[5] The theory of social norms we adopt takes preferences to be conditional upon the empirical and normative expectations that support a norm. Thus one may be fair on one occasion and selfish in another, depending upon the expectations one entertains. There is thus a major difference between saying one has a preference for fairness and saying one prefers to follow a norm of fairness on condition that certain expectations are met. In the second case, we can predict that information manipulations will have a specific effect on behavior via a change in normative or empirical expectations. In the first case, we are at a loss in predicting (and explaining) inconsistent behavior in a systematic way.

When a norm is largely followed, one's expectation regarding what people will do is often in line with one's expectation regarding what people think one ought to do. In this case, normative and empirical expectations work in the same direction and motivate the same behavior. For example, when most of your neighbors recycle, you form the empirical expectation that people do recycle. At the same time, your normative expectation is also that people think you should recycle. Thus, the presence of both expectations makes it more likely that you will recycle.

On the other hand, when a norm is largely violated we may experience an inconsistency between normative and empirical expectations. An example is corruption. Even in the presence of laws *and* social norms condemning corruption, the widespread

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[5] For a lengthy discussion of the difference between social preferences and norm-based explanations, see Bicchieri (2006) Ch.3.

occurrence of bribery and kickbacks can induce people to form empirical expectations that most people are corrupt, while simultaneously holding the normative expectation that most people disapprove of corruption. In cases such as this, which expectation might have a greater effect on public officers' willingness to accept bribes? The answer to this question is clearly crucial for policy and institution design. If the goal is to enforce pro-social norms, the expectations to which we appeal matter a great deal.

In the past decades, many experiments have shed light on the role of social norms in influencing individuals' decisions. For example, it has been argued that punishment and emotions are two key factors in norm compliance (Fehr & Fischbacher, 2004). In particular, it has been shown that people often incur costs to punish norm violators and in this way enforce norms of cooperation and fairness (Fehr, Fischbacher & Gächter, 2002). Absent formal sanctions, negative emotions such as shame and guilt are also effective enforcers of social norms (Keltner & Haidt, 1999; Elster, 1989, 1999; Rilling et al., 2002). Punishment and emotions have also been closely linked to expectations (Lewis, 1969; Sugden, 2000).[6] Meanwhile, there is substantial experimental literature on the importance of expectations and beliefs in directing decisions.

It is important to point out that previous studies suggest that expectations affect individuals' decisions not only when expectations are payoff-related (Rapoport & Eshed-Levy, 1989; Rapoport & Suleiman, 1993; Offerman et al., 1996; Croson, 2000; Bohnet & Zeckhouser, 2004; Croson & Shang, 2006; Charness & Dufwenberg, 2006) but also when

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[6] For example, Sugden's theory of normative expectations suggests that humans have a desire to conform to the expectations of others (normative expectations) and this desire arises from a fear of disapproval or resentment.

they are payoff-independent (Cason & Mui, 1998; Bardsley & Sausgruber, 2005; Krupka & Weber, 2008).[7]

For example, Krupka and Weber (2008) examined how social norms affect pro-social behavior in one-shot dictator games. They found that dictators were more likely to behave pro-socially when they were asked to think about either what (payoff-independent) others who were in the same situation would do, or what others think one should do. Furthermore, dictators were more likely to give a higher amount when given information about others' generous behavior.

Effects of a payoff-independent third party's decisions have also been found in public goods environments. For example, Bardsley and Sausgruber (2005) report a positive correlation in contribution levels between two payoff-independent groups in a one-shot public goods game in cases where one group is informed about the contribution decisions of the other group.

In spite of the close connection between social norms and expectations (see also Lewis, 1969; Bicchieri, 2006; Young, forthcoming), we are not aware of any previous empirical study on the relative importance of empirical and normative expectations, in particular when they are in conflict, in decisions about norm compliance. Here we present data from Dictator games in which subjects' empirical and normative expectations are exogenously and independently manipulated in the direction of fairness or selfishness. Our design does not involve deception. Rather, we accomplish this manipulation by providing subjects with different types of (true) information in a way

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[7] Brandts and Fatás (2001) investigate whether subjects' contributions in a public goods game are affected by information about the average giving of others in the same situation. They find that such payoff-independent social information has a rather weak effect on contributions.

that allows us to elicit conflicting normative and empirical expectations.[8] In doing so, we obtain systematic evidence that empirical expectations regarding other dictator's behavior are the primary driving force behind norm conformity. In contrast, we find that normative expectations regarding what other dictators think should be done predict dictators' decisions only when those expectations are positively related to their empirical expectations.

THE STUDY

Experiment Overview

Dictator games have been widely used to study fairness or beneficence motives. In the standard Dictator game, two subjects are paired randomly, one as dictator (divider in the instructions) and the other as receiver (counterpart in the instructions). The dictator decides how much of $10 s/he wants to send to the receiver and the receiver earns that amount. Often people make different decisions and also have different belief regarding what decisions ought to be made in these games (Xiao & Houser, 2008; Bardsley, 2007). The amount sent can be interpreted as a measure of beneficence, because there are no other consequences associated with dictators' decisions. A fairness motive may also be present, but it is usually evidenced in those experiments that *focus* subjects on fair sharing. By providing participants with different types of true information about other

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[8] The role of deception in experiments is much discussed, and different fields adopt different perspectives (see, e.g., Bonetti, 1998; Ortmann & Hertwig, 2002.) Deception occurs when an experimenter intentionally provides false or incorrect information to subjects. Our design clearly does not involve deception because all information given to subjects was truthful and was truthfully described. In particular, subjects were instructed that the statistics they saw were from "one session of a previous experiment." Note that we were very careful not to suggest to subjects that the reported behaviors and choices represented a general pattern.

subjects' choices (fair/selfish) and beliefs (about fairness/selfishness), we exogenously manipulate dictators' expectations, and compare dictators' decisions under different normative and empirical expectations.

METHOD

Expectation manipulation

To manipulate dictators' expectations, we selectively drew data from some sessions of Dictator games reported in Xiao and Houser (2008). We presented each dictator with a message summarizing the majority of the dictators' actual choices (i.e., empirical information) or/ and the majority beliefs about what ought to be done (i.e., normative information) in one previous session. The message content of each treatment is presented in Table 1. We refer to divisions that provide $5 or $4 (i.e. option C or D in the experiment) to receivers as *fair*, and $2 or $1 (i.e. option A or B) as *selfish*.[9] For example, when we provided information about a majority of dictators making a fair choice (FC), we wanted to generate an empirical expectation of fairness in our subjects. Conversely, when we conveyed information about the belief that one "ought to" be fair (FB) on the part of a majority of dictators, we aimed at generating a normative expectation of fairness in our subjects.

We considered six treatments in total: Fair Beliefs treatment (FB); Selfish Beliefs treatment (SB); Fair Choices treatment (FC); Selfish Choices treatment (SC); Fair Beliefs

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[9] In our case a fair offer can be viewed as an offer that achieves an equal or close to equal payoff outcome. Thus, we frame 40% or 50% offers as fair and offers of 20% or 10% as selfish. As we mentioned, the data we presented to the subjects were taken from Xiao & Houser (2008), and we adopt here exactly the same design. In particular, the offer can be any integer amount between $1 and $9 excluding $7 and $3.

but Selfish Choices treatment (FB+SC) and Selfish Beliefs but Fair Choices treatment (SB+FC). In the first four treatments we aimed at manipulating only one of the two types of expectation, in the direction of either fairness or selfishness. In the last two treatments our goal was to manipulate both empirical and normative expectations, but in opposite directions.

In the FB (or FC) treatment, dictators are presented with data from a session where the majority of dictators believed that a fair split should be chosen (or chose a fair split). Thus, we hypothesize that our subjects' normative (empirical) expectations will move toward fairness, and therefore generate more fair offers. Similarly, in the SB (or SC) treatment when subjects are informed that a majority of previous dictators believed that only a small amount should be offered (or offered an unfair split), normative (empirical) expectations will move toward selfishness, leading to an increase in selfish offers. Inferences about the effects of these different expectations can be drawn by examining dictators' decisions when there is a conflict between normative and empirical expectations in the FB+SC and SB+FC treatments: the normative expectation goes in the direction of fairness (selfishness) but the empirical expectation is that other dictators behave selfishly (fairly).

Since we use data from Xiao and Houser (2008), our Dictator game is designed like the game they devised. In particular, dictators can offer receivers any integer amount from $1 to $9, excluding $7 and $3. In our experiment dictators receive information, so one possible complication is that this information might lead to experimenter demand effects (e.g., subjects might try to guess the experimenter's intention and behave accordingly). To mitigate this problem, we used a "double blind" procedure that ensures

subjects understand that neither other subjects nor the experimenter can connect a dictator's decision to a dictator's identity (see the instructions in Appendix A for details). In addition, the message containing the information follows a short note: *In previous experiments, dividers have often wanted to know the views or decisions of other dividers. The information below is given to every divider in this experiment.*[10]

Expectation elicitation

Immediately after each dictator made her decision, we gave her a survey to elicit her expectations about the choices and presumed expectations of other participants in the experiment. Dictators were rewarded based on the accuracy of the expectations they reported. In particular, to elicit empirical expectations, dictators were asked how many dictators they believed split the money approximately equally (i.e., gave the receiver $5 or $4), and were paid $1 if their answer matched the actual number of fair choices.

Normative expectations refer to a dictator's beliefs regarding what others think one ought to do. To elicit these expectations, subjects were asked, first, whether they thought dictators should split the money approximately equally;[11] and second, how many

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[10] We expect experimenter demand effects to be small especially in the FB+SC and SB+FC treatments, as in these cases we presented subjects with conflicting information. As discussed below, these are the two main treatments of our experiment.

[11] The answer to this question reveals one's personal normative belief. An alternative way is to ask "Do you think you should make a fair offer?". In our experiment, the answers to the original and the alternative question should be the same, as our dictators have no reason to believe that they are in a different situation than any other dictator.

dictators they believed answered "yes" to the first question. A dictator was paid $1 if her answer to the second question matched the actual number of "yes" answers.[12]

This paper focuses on the role of dictators' normative and empirical expectations about other dictators on their decisions. Dictators are aware that messages are provided only to other dictators in the experiment. Still, it might be possible that messages somehow influence dictators' empirical expectations regarding their receivers' beliefs about what the dictator would or should do. This "receiver expectation" effect might itself influence a dictator's decision. To control for this influence, in the survey we asked dictators what they thought their receivers believed they would and should choose. A dictator was paid $1 if his/her answer matched the receiver's answer. Copies of the dictator and the receiver surveys are provided in Appendix B.

Participants

Two hundred and fifty four students (113 male and 141 female) at the University of Pennsylvania participated in the study. There were no significant gender differences on any measure. Each subject received a $5 show up bonus in addition to the money earned in the game and the survey ($6 on average). Subjects were in the lab about 30 minutes.

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[12] The two questions distinguish personal normative beliefs from normative expectations. In particular, our data reveal that the large majority (80%) of the dictators who stated they should make fair offers (i.e., held a personal normative belief in fairness) did not also expect all dictators to believe dictators should make fair offers (that is, the answer to the second question is less than 100%). In particular, among the dictators who revealed personal normative beliefs in fairness, about 15% of them expected that less than 50% of dictators would view a fair offer as the right thing to do.

Procedures

Each subject was randomly assigned the role of dictator or receiver. Dictators and receivers were separated and they could not see each other or communicate throughout the experiment. Each subject was randomly assigned a letter as his or her ID for the duration of the experiment. A receiver and a dictator were paired if they held the same letter. All subjects received an instruction sheet explaining the rules of the game. In addition to the instructions, each dictator also received a separate sheet with one of the messages listed in Table 1 and the short note mentioned in section II. A. A dictator's decision card was attached to the message sheet. The game started after every subject finished the instructions.

Each subject played the game exactly once. Our procedures ensured it was clear to dictators that no one, including the experimenters, knew their decisions. Dictators indicated their chosen split on a decision sheet, wrote down their ID on the back of the decision card and then put the card into a blank envelope. After all dictators had finished, the experimenter collected all the envelopes and then gave each receiver his or her dictator's envelope according to the ID. At the end of the experiment, subjects' earnings were put in envelopes marked with ID letters. Each subject picked up her earnings envelope privately.

RESULTS

We obtained observations on 254 subjects: 21 pairs in the FB treatment; 19 pairs in the SB treatment; 21 in FC treatment; 24 in SC treatment; 20 in FB+SC treatment and 22 in

SB+FC treatment. We begin with an aggregative analysis that compares dictators' expectations among treatments and reveals the relationship between mean expectations and mean decisions. We then report an individual-level analysis connecting subjects' expectations to their behaviors. Our results provide evidence that empirical expectations about other dictators' behaviors, but not normative expectations, are a key force behind dictators' choices.

Aggregate analysis of expectations and choices

Dictator's expectations by treatment

Every dictator (except one in the SC treatment) answered the question "How many dividers in this room do you think split the money approximately equally (chose either C or D)" (this is their empirical expectation of fair offers, henceforth, EE(fairness)). From this we were able to calculate the percentage of fair offers each dictator i in each treatment k expected ($EE_i^{\,k}(fair\ offer)$). We then obtained the overall mean percentage of fair offers expected by dictators for each treatment ($EE^k(fair\ offer)$).

$$EE^k(fair\ offer) = \frac{\sum_{i=1}^{n_k} EE_i^{\,k}(fair\ offer)}{n_k} \; ; \text{ where } n_k \text{ is the total number of dictators in each}$$

treatment k.[13] Figure 1 plots this average by treatment.

Each dictator also reported her expectation regarding the number of dictators in the experiment who believe that dictators should split the money approximately equally (this

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[13] As we mentioned above, every dictator answered the question except one in SC treatment. Therefore, n_{SC} =24-1=23. In other treatments, n_{SB} =19; n_{FC} =21; n_{FB+SC} =20 and n_{SB+FC} =22.

is the normative expectation of fair offers, henceforth, NE(fairness)). We

calculated $NE_i^k(fair\ offer)$, i.e., for each treatment k, each dictator i's normative

expectation regarding the percentage of dictators who believe fair offers should be made.

Similarly to the calculation of $EE^k(fair\ offer)$, we calculated the average of

$NE_i^k(fair\ offer)$ in each treatment, $NE^k(fair\ offer)$. This average by treatment is also

plotted in Figure 1.

First, as expected, EE(fair offer) and NE(fair offer) in FB and FC treatments are

significantly higher than those in SB and SC treatments (p<0.001 in all the four pairwise

Mann-Whitney tests). It is important to note that when only one message (either about

other dictators' beliefs or choices) is presented, both empirical and normative

expectations are affected. For example, in the fair choice (FC) treatment where dictators

were only informed that the majority of dictators in another session made a fair offer,

dictators expected 64% of dictators to make fair offers and also expected 68% of dictators

to believe that fair offers ought to be made. In contrast, in the selfish choice (SC)

treatment, when dictators only knew that a majority of dictators in a previous session

made a selfish offer (i.e., gave $2 or $1), dictators expected that only 37% of dictators

would make a fair offer and that just 41% of dictators believed fair offers ought to be

made as well. Similarly, EE (fairness) and NE(fairness) are 18% and 25% in the selfish

beliefs (SB) treatment, and both expectations are much higher in the fair beliefs (FB)

treatment (60% and 67%, respectively).

The fact that both normative and empirical expectations change in the same direction

in response to information about other dictators' choices or beliefs could imply that

subjects do not make a sharp distinction between the two expectations, at least when only

one piece of information is given. We want to suggest that, in the presence of a single message, subjects *have no reason* to distinguish normative from empirical expectations. In the absence of any other relevant information, the simplest assumption to make is that behavior and the beliefs that support it are correlated. When dictators are told other dictators behaved selfishly, they might assume those dictators also considered selfish behavior appropriate in the circumstance. Conversely, when they are told other dictators consider selfish behavior appropriate, they would expect consistent behavior to follow.

An interesting feature of our data is that information regarding selfish beliefs alone (our SB treatment) has a greater effect on empirical and normative expectations of fairness than information regarding selfish choices alone (our SC treatment). One possible reason is that information about approval of behavior that is usually considered inappropriate or wrong has a strong effect on people who may overreact to it. Usually we do not expect people to express strong beliefs in selfishness, especially in a situation where a fair division is possible.

Be that as it may, what matters to us in this study is not the effects of normative and empirical information on expectations. Here we want to assess the *relative* importance of empirical and normative *expectations* on choice. The fact that dictators change both empirical and normative expectations in the same direction when only one message is presented implies that dictators' decisions in the SB, SC, FB and FC treatments cannot distinguish the roles played in decision-making by empirical and normative expectations, respectively. However, this is not the case in the fair belief + selfish choice (FB+SC) and selfish belief + fair choice (SB+FC) treatments.

For one, NE(fairness) and EE (fairness) move in the opposite direction from the

FB+SC treatment to the SB+FC treatment (see Figure 1). In addition, the normative

expectations of fair offers in the FB+SC treatment are significantly higher than the

empirical expectations of fair offers (Wilcoxon matched-pairs signed-ranks test, p=0.01).

These results are consistent with our hypothesis that confronting subjects with conflicting

information can differentiate normative and empirical expectations. By analyzing

decisions in the FB+SC and SB+FC treatments, along with other treatments, we next

show that empirical expectations predict decisions significantly better than normative

expectations.

Expectations and fair choices

Figure 2 plots the percentage of dictators making fair offers in each treatment. First, as

expected, the percentage of fair offers is lower in the SB and SC treatments and much

higher in the FC and FB treatments. In particular, the percentage of fair offers in the SC

treatment is the same as the percentage of fair offers in the SB treatment (33% vs. 21%,

Z-test, p=0.37). However, in comparison to the SB treatment, significantly more dictators

make fair offers in the FB and FC treatments (48% vs. 21%, Z-test, one-tail p= 0.04; and

52% vs. 21%, Z-test, one-tail p=0.02; respectively). Furthermore, the percentage of fair

offers in the SB+FC treatment is significantly higher than in the SB treatment (45% vs.

21%, Z-test, one tail p=0.05) but not significantly lower than in the FC treatment (45% vs.

52%, Z-test, one-tail p=0.32). The percentage of fair offers in the FB+SC treatment is

closer to what we observe in the SC rather than in the FB treatment although neither of

the two comparisons yields a statistically significant difference (35% vs. 33%, Z-test, p=0.91 and 35% vs. 48%, Z-test, p=0.42, respectively),

Figure 3 offers comparisons between empirical/normative expectations and decisions. While empirical expectations about the percentage of fair choices are insignificantly different from the actual percentage of fair offers in each treatment (t<1.6; p>0.10 in all comparisons), normative expectations are significantly higher than actual fair choices in the FB+SC treatments (57% vs. 35%, t=1.72, one tail p=0.05).

Individual level analysis of expectations and choices

The results derived by aggregating our data suggest that mean empirical expectations are better predictors of mean decisions than mean normative expectations. Of course, aggregate data do not give us much information about the effect of expectations on decisions at the individual level. To investigate how the two types of expectations affect subjects' specific decisions we pursue next such an analysis.

Our approach centers on a Probit regression. Our binary dependent variable is whether dictator i made a fair offer[14]. We assume the probit model's error term is independent among subjects in different sessions but allow it to be correlated among

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[14] In the message given to the dictators, offering 50% or 40% to the receiver is described as a fair offer while 10% or 20% is described as a selfish offer. Moreover, as discussed above, expectations are also elicited according to these two categories. Thus, we classify decisions using these same categories. There are of course many other ways one might form categories. For example, an alternative categorization is to define a dependent variable Y so that Y=4 if the offer 50% or more; Y=3 if the offer is 40%; Y=2 if the offer is 20% and Y=1 if the offer is10%). A multivariate analysis using this more finely categorized dependent variable yields results consistent with the probit regression model we reported here. Our data as well as these alternative analyses are available from the authors on request.

subjects within the same session. Our independent variables included $EE_i^k (fair\ offer)$

and $NE_i^k (fair\ offer)$.

In addition, it is possible that dictators' expectations about receivers' beliefs are affected by the information they receive in each treatment, and if so this could also influence dictators' decisions. For each treatment we obtained data on whether dictator i believes her receiver would expect her to make a fair offer ($EE_i^k (receiver's\ EE)=1$ if the dictator believes her receiver expects she will offer 40% or 50%; and equals zero otherwise).[15] We included this expectation as a third independent variable.

In our experiment expectations were exogenously manipulated. Nevertheless, it is in principle possible that our regression analysis suffers from an endogeneity bias due to the inclusion of elicited expectations as independent variables. In particular, if subjects' declared expectations depend on their decisions, then elicited expectations would be endogenous in our analysis. To address this potential endogeneity problem we conducted a two-stage IV probit regression analysis using our information treatments as instruments for expectations.[16] Because the treatments are exogenous to the subjects, the treatment variables should be uncorrelated with the error term in the probit regression model.

The results of our IV probit regression are detailed in Table 2. As it is difficult to interpret the coefficients of a probit model, we also report the marginal effects in the fourth column, evaluated at mean values for the independent variables. Just as in our aggregate analysis above, we find that the dictators' empirical expectations

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[15] In all sessions, at least 80% of dictators expect receivers to believe that dividers should make a fair offer. The absence of variation along this dimension among treatments suggests that this expectation has no significant effect on dictators' decisions.
[16] We thank one anonymous referee for the suggestion.

$EE_i^k(\textit{fair offer})$ have a statistically significant and positive effect on the probability that

a dictator will make a fair offer. In particular, the marginal effect of $EE_i^k(\textit{fair offer})$ is

0.012. For example, this implies that, ceteris paribus and evaluated at mean values for the

independent variables, the probability that a dictator makes a fair offer increases by about

six percentage points if her $EE_i^k(\textit{fair offer})$ increases from 45% to 50%.

In contrast to the substantial effect of empirical expectations, the coefficient of

normative expectations $NE_i^k(\textit{fair offer})$ is statistically insignificant, and its marginal

effect on the probability of fair choices is economically insignificant in magnitude.

In summary, both our aggregative and individual-level analyses together provide

convergent evidence that empirical expectations about other dictators' behaviors, but not

normative expectations, are significant predictors of dictators' decisions.

DISCUSSION

Previous experimental and theoretical research has demonstrated that payoff-relevant

information about other people's actions or beliefs has a significant impact on one's own

pro-social behavior (see, e.g., Samuelson, 2005 or Fehr and Schmidt, 2002 for excellent

reviews). In line with many other previous studies (e.g., Cason & Mui, 1998; Krupka &

Weber, 2008; Bardsley & Sausgruber, 2005), we provide experimental evidence that

information about payoff-independent behaviors or beliefs of other subjects can also

affect norm obedience via changing individuals' empirical/normative beliefs.

Our paper presents, to our knowledge, the first systematic study of the relative

influence of empirical and normative expectations on norm-abiding behavior. Our data

provide compelling evidence that empirical expectations regarding other people's behaviors well-predict one's own decisions. Expectations regarding what other people think one ought to do can also predict decisions, but our results suggest this is true only to the extent that such expectations are in line with the choices one believes others would actually make. When normative and empirical expectations are inconsistent, our data indicate that people do what they think others would do in that same situation, even when they believe doing so would not be met with approval.

The weight of empirical expectations in decision-making has important implications for the external validity of experimental results in dictator games (List, 2007). Whether lab results are consistent with behavior we observe in a natural environment is a subject we cannot even start to tackle here. Results from cognitive psychology suggest that, whenever we encounter a new situation, we immediately categorize it as relevantly similar to a class of situations we know, and in so doing we prime scripts that tell us how to interpret it, what to believe and expect, and how to act (Shank & Abelson, 1977). If norms are part of scripts (Bicchieri, 2006), then whether a specific norm will become salient depends upon the way we categorize a given situation.

Henrich et al. (2001) show that the same game played in different small societies engenders very different behaviors, and this variability seems to be due to the way different societies categorize the game they are playing. For example, why do we see dictators give away money in experiments but lottery winners usually do not give away some of their earnings to strangers? As argued in Bicchieri (2006) and Houser (forthcoming), behaviors in naturally occurring and experimental environments are reconciled if dictators and lottery winners make different decisions due to different

beliefs regarding what other people would do in their specific situation. Such beliefs, in turn, depend upon the way we categorize these situations and the scripts we follow. [17]

In a Dictator game, our manipulation focuses subjects upon selfish/fair behavior, and induces beliefs that support selfish/fair choices. The fact that, in the presence of conflicting information, empirical expectations have greater weight in influencing choices has important implication for the policy makers whose goal is to stipulate regulations to mitigate undesirable behavior, especially when violations are common. Our findings suggest that, for a policy to be effective, it is not enough to emphasize only the illegitimacy or the negative consequences of the undesirable behavior. It is even more important to stress that many people do follow the relevant norms. When monitoring and punishing transgressions is costly, it may pay to disseminate information about the (presumably large) number of norm-followers.

Our findings leave unexplained why people tend to follow empirical instead of normative expectations when these two are inconsistent. One possible reason is that, in naturally occurring environments, punishment is often imposed on those whose behavior differs from the majority. On the other hand, even when it is not formally approved, misconduct might be only weakly punished – or perhaps not punished at all – when the behavior is common. For example, in a society with high rates of corruption people are not likely to expect corrupt acts to be punished, even in those cases where there exist laws explicitly prohibiting corruption. To foster our understanding of how norms, expectations and decisions interact we are conducting further research on punishment decisions and their connection to normative and empirical expectations.

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[17] Camerer (2003) discusses several examples of framing effects in experimental games.

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Table 1. Messages by treatment

Treatment	Message
FB: Fair Belief	60% of the dividers who participated in a session of this experiment last year said that dividers should share the amount approximately equally (i.e., choose option C or D (their counterpart gets 40% or more)).
SB: Selfish Belief	60% of the dividers who participated in a session of this experiment last year said that dividers should approximately maximize their own earnings (i.e., choose option A or B (their counterpart gets 20% or less)).
FC: Fair Choice	60% of the dividers who participated in a session of this experiment last year shared the amount approximately equally (i.e., chose option C or D (their counterpart got 40% or more)).
SC: Selfish Choice	60% of the dividers who participated in a session of this experiment last year approximately maximized their own earnings (i.e., chose option A or B (their counterpart got 20% or less)).
FB+SC: Fair Belief but Selfish Choice	60% of the dividers who participated in a session of this experiment last year said that dividers should share the amount approximately equally (i.e., choose option C or D (their counterpart gets 40% or more)). On the other hand, in a different session of this experiment last year, 60% of the dividers approximately maximized their own earnings (i.e., chose option A or B (their counterpart got 20% or less)).
SB+FC: Selfish Belief but Fair Choice	60% of the dividers who participated in a session of this experiment last year said that dividers should approximately maximize their own earnings (i.e., choose option A or B (their counterpart gets 20% or less)). On the other hand, in a different session of this experiment last year, 60% of the dividers shared the amount approximately equally (i.e., chose option C or D (their counterpart got 40% or more)).

Note: The order of the two messages in FB+SC treatment and SB+FC treatment is randomized. It turns out there is not order effect.

Table 2: Two Stage IV Probit Analysis of Expectation Effects (Sample size = 126)

	Dictator i's offer (=1, if gave \$5 or \$4; =0, o.w)			Mean of the independent variable
	Coefficients	P value	Marginal Effects	
EE_i^k (*fair offer*)	0.033 (0.011)	0.002	0.012 (0.005)	45.337
NE_i^k (*fair offer*)	-0.017 ((0.011)	0.132	-0.006 (0.005)	52.090
EE_i^k (*receiver's EE*)	0.352 (0.439)	0.422	0.135 (0.12)	0.362
Constant	-1.030 (0.354)	0.004		

Instrumented: EE_i^k (*fair offer*), NE_i^k (*fair offer*), EE_i^k (*receiver's EE*)
Instruments: FB, FC, FB+SC, FC+SB, SC

Wald test of exogeneity: chi2(3) =35.84   Prob > chi2 = 0.000

* Pseudo R^2 : 0.430

Note: the numbers in parenthesis are robust standard errors. The marginal effects are evaluated at the mean of the independent variables.
* The Pseudo R^2 is calculated using an equivalent probit model but without instrumental variables.

Figure 1: Dictators' normative and empirical expectations of the percentage of fair offers (i.e., offer $5 or $4 to the receivers)
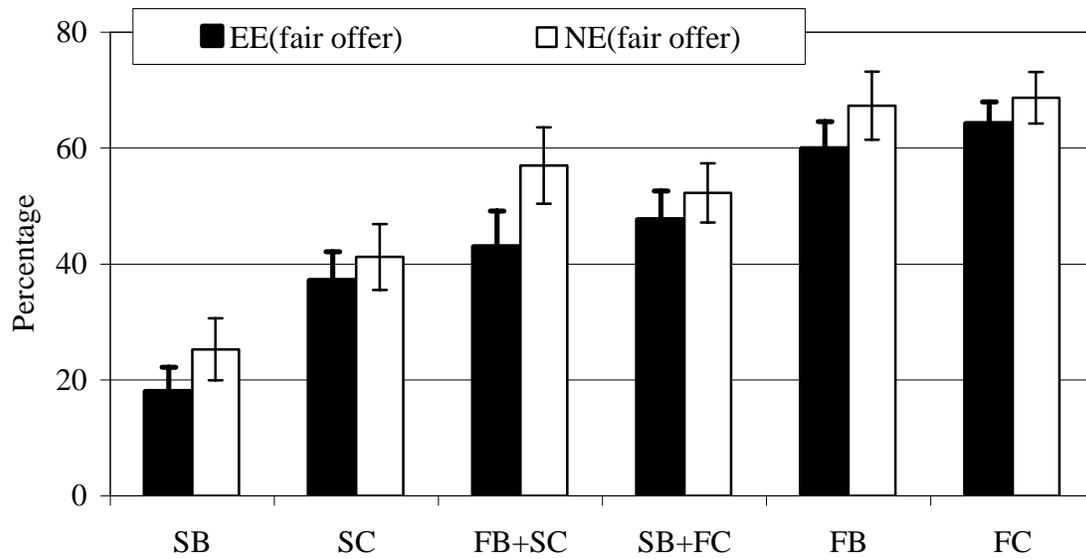
Note: The vertical lines represent standard errors (this is also the case for all figures below.)

Figure 2: Percentage of Dictators who made fair offers in each treatment
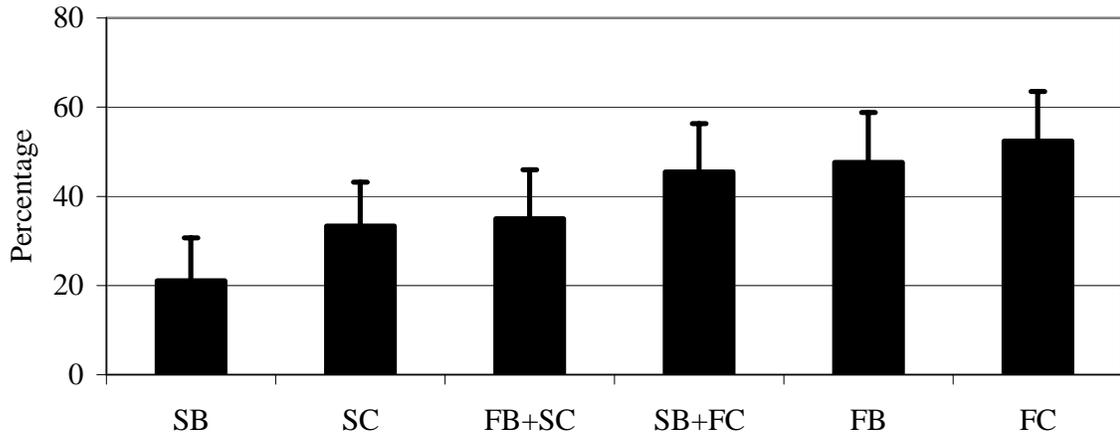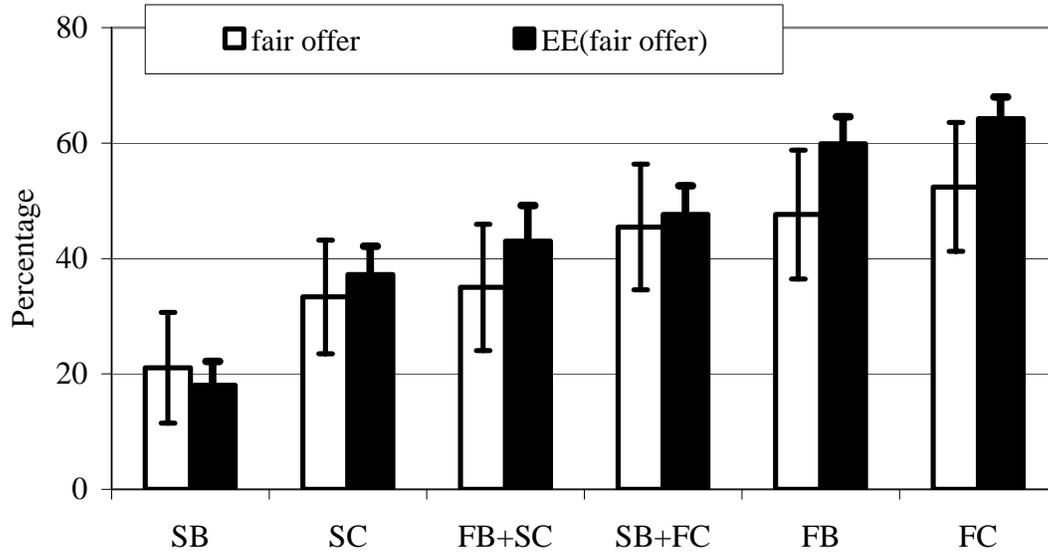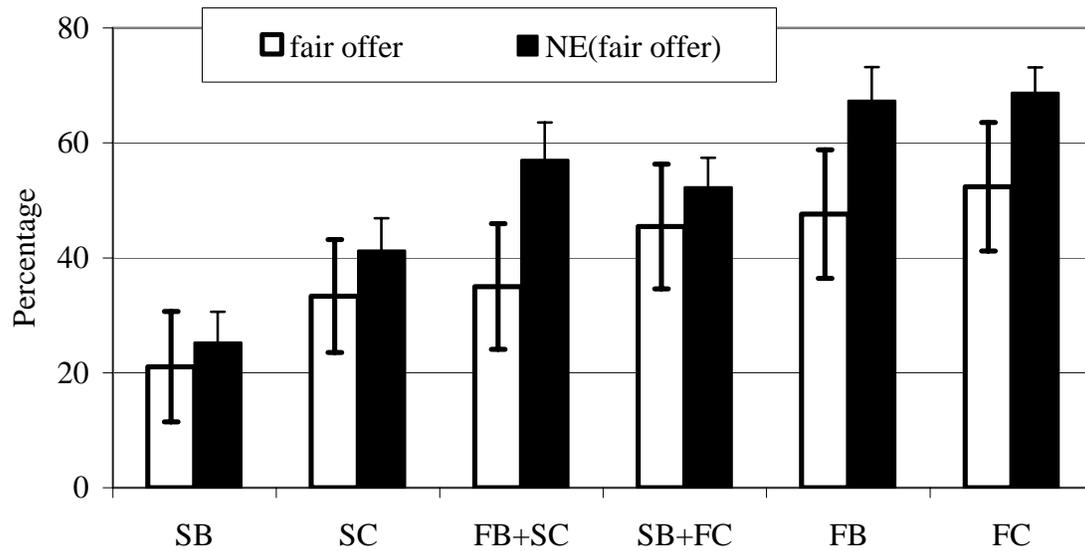
Figure 3: Expectations and fair offers

(A) Empirical Expectations and fair offers

(B) Normative Expectations and fair offers

Appendix A.
I. Divider Instructions

Thank you for coming! You've earned $5 for showing up on time. Whatever you earn in the rest of the session will be in addition to this $5. The instructions explain how you can make decisions. Please read these instructions carefully! There is no talking at any time during this experiment. If you have a question please raise your hand, and an experimenter will assist you.

You will be randomly and anonymously paired with another person in this room. You will never be informed of the identity of this person, either during or after the experiment. Similarly, your matched participant will never be informed about your identity. You are in the role of **Divider** and your matched participant will be referred to as your **Counterpart**. You and your Counterpart will participate only once in this decision problem. All the decisions will be anonymous.

This is how the experiment works.

Your task is to divide $10 between the two of you. How much money you end up with at the end of the experiment depends on the decisions you make.

Divider (You)
You will choose a Dividing Option (described in detail below). A Dividing Option determines how much of $10 will go to the Divider (you) and how much will go to your Counterpart.

Dividing Option
The possible divisions appear in the table below. You must choose only one of them.

Possible Dividing Options	The option is
A	Divider gets **$9** and Counterpart gets **$1**
B	Divider gets **$8** and Counterpart gets **$2**
C	Divider gets **$6** and Counterpart gets **$4**
D	Divider gets **$5** and Counterpart gets **$5**
E	Divider gets **$4** and Counterpart gets **$6**
F	Divider gets **$2** and Counterpart gets **$8**
G	Divider gets **$1** and Counterpart gets **$9**

Experiment Procedure:

Step 1: Random and anonymous assignment of counterparts
Each of you has randomly chosen an envelope. In each envelope there is a tag marked with a letter. This letter is your ID for this experiment. Persons in this room who get tags marked with the same letter will be paired. Please do not show anyone your ID letter.

Step 2: Divider chooses the option

The Divider will be given a card where s/he can write down her/his decision. Below is a sample decision card:

<div style="border:1px solid black; padding:10px;">

Divider: (Dividing option)
  I choose dividing option_____. That is,

           Divider gets $_____   Counterpart gets $____

</div>

After making the decision, the Divider will also write the letter ID on the back of the decision card, and then put it into his/her envelope.

Step 3: The Counterpart receives the Divider's decision.
After every Divider has finished, the experimenter will give each Divider's envelope to his/her Counterpart according to the ID on the card. The Counterpart will see the decision made by the divider and then put the decision card back into the envelope. After each Counterpart has finished an experimenter will collect all the envelopes.

Step 4: **Receive cash payment privately**
The experimenter will calculate the earnings of each Divider and each Counterpart. To keep everyone's decision and earnings anonymous, the experimenter will put each participant's earnings in an envelope marked with her/his ID letter. All Dividers' envelopes will be placed on one desk, and all Counterparts' envelopes will be placed on a different desk. Then, Dividers will be called one by one. When called, each Divider will pick up the envelope labeled with her/his letter ID. Then the Divider will exit the lab and drop all other supplies into the box outside the lab door. Every Counterpart will be paid in the same way after all the Dividers have been paid and have left the lab.

Divider and Counterpart will remain anonymously matched at all times during the experiment. Even the experimenter will not know your decisions.

End of Instructions

Please raise your hand to indicate that you are finished reading these instructions.

II. Counterpart Instructions

Thank you for coming! You've earned $5 for showing up on time. Whatever you earn in the rest of the session will be in addition to this $5. The instructions explain how you can make decisions. Please read these instructions carefully! There is no talking at any time during this experiment. If you have a question please raise your hand, and an experimenter will assist you.

You will be <u>randomly</u> and <u>anonymously</u> paired with another person in this room. You will never be informed of the identity of this person, either during or after the experiment. Similarly, your matched participant will never be informed about your identity. Your matched participant is in the role of **Divider** and you will be referred to as Divider's **Counterpart**. You and your Divider will participate only once in this decision problem. All the decisions will be anonymous.

This is how the experiment works.

The task is to divide $10 between the two of you. How much money you end up with at the end of the experiment depends on the decision your Divider makes.

<u>Divider</u>
The Divider will choose a Dividing Option (described in detail below). A Dividing Option determines how much of $10 will go to the Divider and how much will go to you.

Dividing Option
The possible divisions appear in the table below. The Divider must choose only one of them.

Possible Dividing Options	The option is
A	Divider gets **$9** and Counterpart gets **$1**
B	Divider gets **$8** and Counterpart gets **$2**
C	Divider gets **$6** and Counterpart gets **$4**
D	Divider gets **$5** and Counterpart gets **$5**
E	Divider gets **$4** and Counterpart gets **$6**
F	Divider gets **$2** and Counterpart gets **$8**
G	Divider gets **$1** and Counterpart gets **$9**

<u>Experiment Procedure:</u>

Step 1: Random and anonymous assignment of counterparts
Each of you has randomly chosen an envelope. In each envelope there is a tag marked with a letter. This letter is your ID for this experiment. Persons in this room who get tags marked with the same letter will be paired. Please do not show anyone your ID letter.

Step 2: Divider chooses the option
The Divider will be given a card where s/he can write down her/his decision. Below is a sample decision card:

> **Divider: (Dividing option)**
> I choose dividing option_____. That is,
>
>   Divider gets $_____   Counterpart gets $____

After making the decision, the Divider will also write the letter ID on the back of the decision card, and then put it into his/her envelope.

Step 3: The Counterpart receives the Divider's decision.

After every Divider has finished, the experimenter will give each Divider's envelope to his/her Counterpart according to the ID on the card. The Counterpart will see the decision made by the divider and then put the decision card back into the envelope. After each Counterpart has finished an experimenter will collect all the envelopes.

Step 4: **Receive cash payment privately**

The experimenter will calculate the earnings of each Divider and each Counterpart. To keep everyone's decision and earnings anonymous, the experimenter will put each participant's earnings in an envelope marked with her/his ID letter. All Dividers' envelopes will be placed on one desk, and all Counterparts' envelopes will be placed on a different desk. Then, Dividers will be called one by one. When called, each Divider will pick up the envelope labeled with her/his letter ID. Then the Divider will exit the lab and drop all other supplies into the box outside the lab door. Every Counterpart will be paid in the same way after all the Dividers have been paid and have left the lab.

Divider and Counterpart will remain anonymously matched at all times during the experiment. Even the experimenter will not know your decisions.

End of Instructions

Please raise your hand to indicate that you are finished reading these instructions.

Appendix B.

I. Divider survey

Please write down your ID_____   Gender_____ (Divider)

Please answer the following questions. You can earn extra money depending on your answers.

Please Note: To answer some of the questions below you need to know that there are ….. dividers in this room.

a) How did you make your decision? (Write on the back of the paper if you need more space)

b) How many dividers in this room do you think split the money approximately equally (chose either C or D)?

(If your answer is the same as the actual number, you will earn an additional $1)

c) How many dividers in this room do you think approximately maximized their payoff (choose A or B)?

(If your answer is the same as the actual number, you will earn an additional $1)

d)   Do you think that dividers should split the money approximately equally (choose C or D)?

e) Do you think that dividers should approximately maximize their payoff (choose A or B)?

f) How many dividers in this room do you think answered "Yes" to question d)?

(If your answer is the same as the actual number, you will receive an additional $1).

g) How many dividers in this room do you think answered "Yes" to question e)?

(If your answer is the same as the actual number, you will receive an additional $1).

h)   Which option do you think your counterpart believed you WOULD choose?

(If your answer is the same as what your counterpart wrote on his/her survey before he/she knew your final decision, you will earn an additional $1).

i.)   Which option do you think your counterpart believed you SHOULD choose?

(If your answer is the same as what your counterpart wrote on his/her survey before he/she knew your final decision, you will earn an additional $1).

II. Receiver survey[18]

Please write down your ID_____   Gender_____ (Counterpart)

Please answer the following question. You can earn extra money depending on your answer.

a)   Which option do you think your divider WOULD choose? Why?

(If your answer matches your divider's actual decision, you will earn an additional $2).

b)   Which option do you think your divider SHOULD choose? Why?

c)   Suppose that 60% of the dividers who participated in a session of this experiment last year said that dividers should share the amount approximately equally (i.e., choose option C or D (their counterpart gets 40% or more)). If your divider knew this, which option do you think your divider WOULD choose? Why?

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[18] Receiver's survey questions are the same in each treatment except question c). As we told dictators that only dividers were given information about the result of a previous session, to avoid deception, the scenario in question c) is different from the message dictators received in each treatment. In particular, the survey sample shown here comes from the SC treatment data.