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 ought to be done (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., 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 should be done do not have a significant impact on their decisions. Our findings about the crucial influence of empirical expectations are important for those who design institutions or policies aimed at discouraging undesirable behavior.

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I. 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 and Schmidt, 1999; Bolton and 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, K., 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 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. Previous research suggests that people tend to do what they believe others who are similar to them would do in a similar situation (Cialdini, 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, sometimes such expectations will encourage defection. For example, the temptation to free-ride may be high when one expects a sufficient number of others will contribute to a public good. In this case, the free rider is almost justified in her choice to defect: the good will be provided anyway and she gains more when she contributes less. Thus, 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 and 2004; Bicchieri, 2006)

A normative expectation is the belief that others expect one to conform to a given norm[1]. This is not simply a second-degree empirical expectation; 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. For some individuals, recognizing the legitimacy of others' expectations, and thus their disapproval of norm violation, is enough to induce a preference for conformity (Xiao and Houser, 2006).

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[1] The word "normative" has different meanings in different disciplines. Here it means "what *ought to* be" as opposed to "what is". It is also important to distinguish "normative expectations" from one's own belief regarding what ought to be done.

Other individuals need further inducements such as the possibility of monetary sanctions by those who expect (and want) their conformity (Fehr and Gächter, 2000).

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 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 expectation to which we appeal can 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 was discovered that punishment and emotions are two key factors in norm compliance (see, e.g., Fehr and Fischbacher,, 2004 for a good review). In particular, people often incur costs to punish norm violators and in this way enforce norms of cooperation and fairness (Fehr, Fischbacher and Gächter,

2002). Absent formal sanctions, negative emotions such as shame and guilt are also effective enforcers of social norms (Keltner and Haidt, 1999; Elster, 1989, 1999; Rilling J, et al., 2002). Punishment and emotions have also been closely linked to expectations (Lewis, 1969; Sugden, 2000).[2] Meanwhile, there is substantial experimental literature on the importance of expectations and beliefs in directing decisions both when expectations are payoff-related (Rapoport and Eshed-Levy, 1989; Rapoport and Suleiman, 1993; Offerman et al., 1996; Croson, 2000; Charness and Dufwenberg, 2006) and payoff-independent (Cason and Mui, 1998; Bardsley and Sausgruber, 2005; Krupka and Weber, 2006).[3]

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 of the relative importance of empirical and normative expectations in decisions about norm compliance. Here we present a version of the Dictator game in which subjects' empirical and normative expectations are exogenously and independently manipulated in the direction of fairness or selfishness. We accomplish this by providing subjects with different types of information in a way that allows us to elicit conflicting normative and empirical expectations. In doing so, we obtain systematic evidence that empirical expectations regarding other people's behavior are the primary driving force behind norm conformity. In contrast, normative expectations regarding what others think

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[2] 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.

[3] 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.

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should be done can predict individuals' decisions only when these expectations are positively related to one's empirical expectations.

II. Experiment design

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. The amount sent can be interpreted as a measure of fairness, because there are no other consequences associated with dictators' decisions. Often people make different decisions and also have different belief regarding what decisions ought to be made in these games (Xiao and Houser, 2006). By providing our subjects with different types of information about other subjects' choices and beliefs, we exogenously manipulate dictators' expectations, and compare dictators' decisions under different normative and empirical expectations.

II.A. Expectation manipulation

To manipulate dictators' expectations, we selectively drew data from some sessions of Dictator games reported in Xiao and Houser (2006). 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 to receivers as *fair*, and $2 or $1 as *selfish*. 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 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 (2006), 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.*[4]

II. B. 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.

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[4] We expect any possible experimenter effect to be small especially in the FB+SC and SB+FC treatments as we present subjects with conflicting information. As we point out below, these two treatments are key treatments in our experiment.

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; and second, how many 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 positive answers.

This paper focuses on the effect that information about dictators' choices and/or beliefs in previous experiments has on subjects' normative and empirical expectations about other dictators, and the behavioral consequences of such expectations. 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.

II.C. Procedures

Subjects were recruited at the University of Pennsylvania through the "Experiments @ Penn" web-based recruitment system. 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. 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.

III. 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 are convergent evidence that empirical

expectations about other dictators' behaviors, but not normative expectations, are a key

force behind dictators' choices.

III. A. Aggregate analysis of expectations and choices

III. A. 1 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). 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.[5] 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

elicits the normative expectation of fair offers). We calculated $NE_i^k (fair\ offer)$, i.e., for

each treatment k, each dictator i's normative expectation regarding the percentage of

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[5] 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.

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 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, when dictators only knew that a

majority of dictators in a previous session made a selfish offer (i.e., gave \$2 or \$1) in the

SC treatment, 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. Similar results

hold for the SB and FB treatments.

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

direction when only one message is presented makes clear that dictators' decisions in the

SB, SC, FB and FC treatments cannot distinguish the relative behavioral importance of

empirical and normative expectations. However, this is not the case in the FB+SC and

SB+FC treatments.

For one, the change of normative expectations from the FB+SC treatment to the

SB+FC treatment goes in a different direction than the change we observe in empirical

expectations. As shown in Figure 1, compared with the FB+SC treatment, EE(fair offer)

in the SB+FC treatment are higher (43% and 48%, respectively); however, NE(fair offer)

are lower in the SB+FC treatment (57% and 52%, respectively). Second, NE(fair offer) in

the FB+SC treatment are significantly higher than EE(fair offer) (Wilcoxon matched-

pairs signed-ranks test, p=0.01). These results suggest that the manipulation in these two

treatments allows us to separate the effects of normative and empirical expectations on

choice. This is a crucial step in providing evidence about the relative importance of the

two expectations for predicting decisions. By examining which expectation is more

consistent with actual decisions, especially between the FB+SC and SB+FC treatments

we just discussed, we demonstrate next that empirical expectation seem to be a better

predictor of decisions than normative expectation.

III.A.2   Expectations and fair choices

Figure 2 plots the percentage of dictators who made 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 not significantly different from the percentage of fair offers in the SB

treatment (33% vs. 21%, Mann-Whitney test, p=0.38). However, in comparison to the SB

treatment, significantly more dictators make fair offers in the FB and FC treatments (48%

vs. 21%, Mann-Whitney one-tail test, p= 0.04; and 52% vs. 21%, Mann-Whitney one-tail

test, p=0.02; respectively). These results indicate that manipulating expectations about

other dividers' choices or beliefs can have a significant effect on dictators' own choices.

However, as we already noted, the dictators' behavior in these four treatments cannot

tease apart the separate influence of normative and empirical expectations on fair choices.

To explore this issue, we now turn to the dictators' behavior in the FB+SC and SB+FC treatments, where they face inconsistent information about other players' previous choices and beliefs.

As shown in Figure 2, the percentage of fair offers in the SB+FC treatment is quite close to what we observe in the FC treatment, and very different from the results of the SB treatment. In particular, the percentage of fair offers in the SB+FC treatment is not significantly lower than in the FC treatment (45% vs. 52%, Mann-Whitney one-tail test, p=0.32) but is significantly higher than in the SB treatment (45% vs. 21%, Mann-Whitney one-tail test, p=0.05). Meanwhile, 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 (35% vs. 33% and 35% vs. 48% respectively), although neither of the two comparisons yields a statistically significant difference. These comparisons provide preliminary evidence that empirical expectations play a greater role than normative expectations in choosing to make a fair offer.

Figure 3 offers further evidence that empirical, but not normative, expectations predict dictators' decisions both in magnitude and direction. In particular, there are more fair offers in the SB+FC than in the FB+SC treatment. This is consistent with the increase in dictators' empirical expectations of fair offers, but inconsistent with the decrease in normative expectations of fair offers. In addition, while empirical expectations about the percentage of fair choices are insignificantly different from the actual percentage of fair offers in each treatment, normative expectations are significantly higher than the actual fair choices in the FB+SC treatments (57% vs. 35%, Mann-Whitney one-tail test, p=0.05).

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. We have some evidence about this possibility. 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[6]. Furthermore, for each treatment, we obtain data on whether dictator i thinks 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). We calculated the proportion of dictators who believed receivers expected fair offers ($EE^k(receiver's\ EE)$), and compared this to the actual proportion of fair choices. As shown in Figure 4, it is clear that this expectation does not predict dictators' choices.

III.B. 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 an analysis at the individual level.

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[6] Most dictators believe that receivers expect a fair offer ought to be made. Thus, dictators do not report their beliefs about receivers' expectations in a way that defends their decisions. Also, this stated belief is inconsistent with dictators forming expectations based on their decisions.

Our approach is to run a probit regression. Our binary dependent variable is whether dictator i made a fair offer. We assume the probit model's error term is independent across subjects in different sessions but allow it to be correlated among subjects within the same session. With respect to our independent variables, we began by considering both linear and non-linear terms connecting dictators' expectations to their decisions. In particular, our independent variables included $EE_i^k(fair\ offer)$, $[EE_i^k(fair\ offer)]^2$, $NE_i^k(fair\ offer)$, $[NE_i^k(fair\ offer)]^2$ and $EE_i^k(receiver's\ EE)$.[7] However, in our analysis of this probit model we found that all of the non-linear expectations terms are both economically and jointly statistically insignificant. Therefore, we report below the results of a probit regression that includes the following independent variables:

$EE_i^k(fair\ offer)$, $NE_i^k(fair\ offer)$ and $EE_i^k(receiver's\ EE)$.

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, perhaps because they wish to defend such decisions, then elicited expectations would be endogenous in our analysis. However, we have no evidence supporting this possibility. Indeed, the dependence of reported expectations on decisions is inconsistent with the fact that most dictators expect receivers to believe that the division ought to be fair. In addition, there is substantial variation between elicited expectations, even among dictators who make the same choice. Thus,

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[7] We didn't include the square term of $EE_i^k(receiver's\ EE)$ because it is a dummy variable.

we are comfortable in proceeding under the standard assumption that our regression analysis is appropriately specified[8].

The results of our analysis are detailed in Table 2. The estimated coefficients of the independent variables are listed in the second column. As it is difficult to interpret the coefficients of a probit model, we also report the marginal effects in the fourth column, which are evaluated at mean values for the independent variables. Just as in our aggregate analysis above, we find that the dictators' empirical expectations $EE_i^k(fair\ offer)$ have a statistically significant and positive effect on the probability that a dictator will make a fair offer. In particular, the marginal effect of $EE_i^k(fair\ offer)$ is 0.019. 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 10 percentage points if her $EE_i^k(fair\ offer)$ increases from 45% to 50%.

In contrast to the substantial effect of empirical expectations, the coefficient of normative expectations $NE_i^k(fair\ offer)$ is statistically insignificant, and its marginal effect on the probability of fair choices is economically insignificant in magnitude.

In summary, our aggregate analysis and individual-level analysis together provide compelling and convergent evidence that empirical expectations about other dictators' behaviors, but not normative expectations, are a critical factor in dictators' decisions.

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[8] In principle we could provide formal evidence against endogeneity using a Hausman specification test. However, our data do not include the individual-level instrumental variables necessary to implement this test.

IV. Discussion

This paper presents the first systematic study of the relative influence of empirical and normative expectations on norm-abiding behavior. Our results provide evidence that empirical expectations regarding other people's behavior are a driving force behind subjects' decisions. Expectations regarding what other people think one ought to do can predict decisions, but 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 suggest that individuals follow what they think others would do in the same situation, even when they believe doing so would not be met with approval.

The importance of empirical expectations in decision-making has crucial implications for the external validity of experimental results in dictator games. 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 Houser (forthcoming) and Bicchieri (2006), 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.

Our results have important implication for the policy makers whose goal is to stipulate regulations to mitigate undesirable behavior, especially when violations are widespread. 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. This is consistent with the notion of a "zero tolerance policy". That is, to reduce crime it could

be quite important to sanction even small offenses such as graffiti. The reason is that evidence that most society members follow norms will likely promote other members' spontaneous norm compliance.

Our findings leave unexplained why people 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 how punishment decisions correlate with normative and empirical expectations.

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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: Probit regression result of expectation effect

	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*)	0.054 (0.012)	<0.001	0.019 (0.004)	45.337
NE_i^k (*fair offer*)	0.003 (0.007)	0.638	0.001 (0.002)	52.090
EE_i^k (*receiver's EE*)	-0.394 (0.280)	0.160	-0.138 (0.095)	0.362
Constant	-2.900 (0.564)	<0.001		
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.

Figure 1: Dictators' normative and empirical expectations of the percentage of fair offers (i.e., offer $5 or $4 to the receivers)
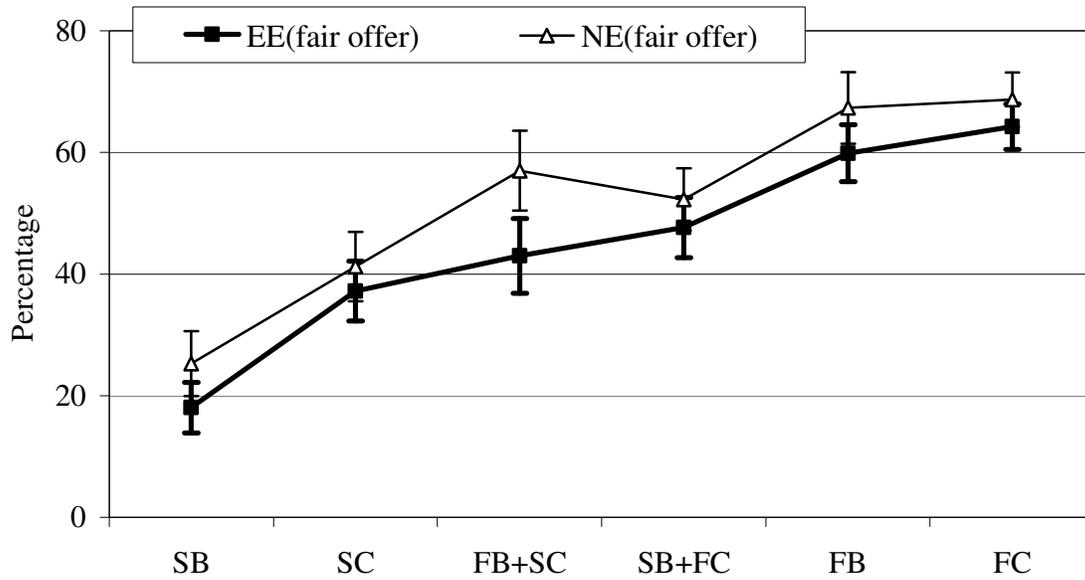

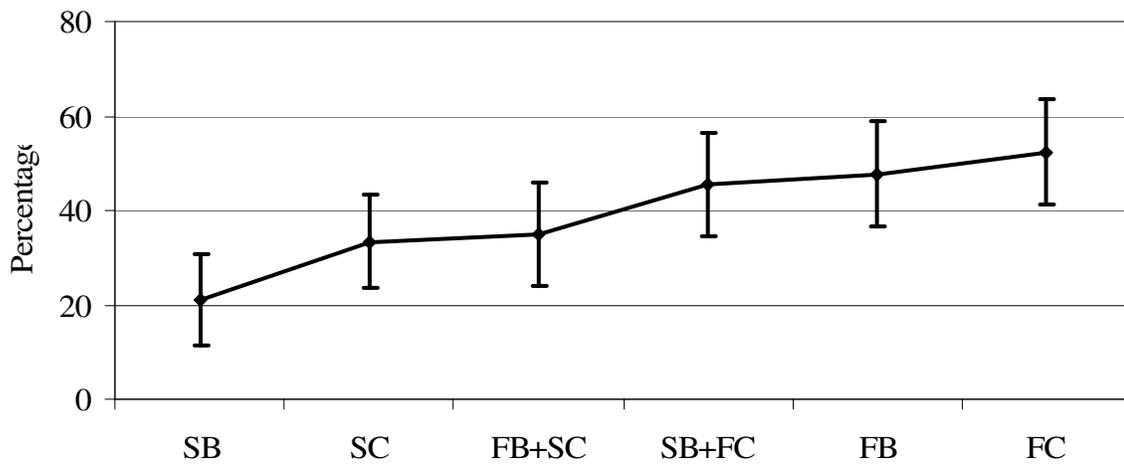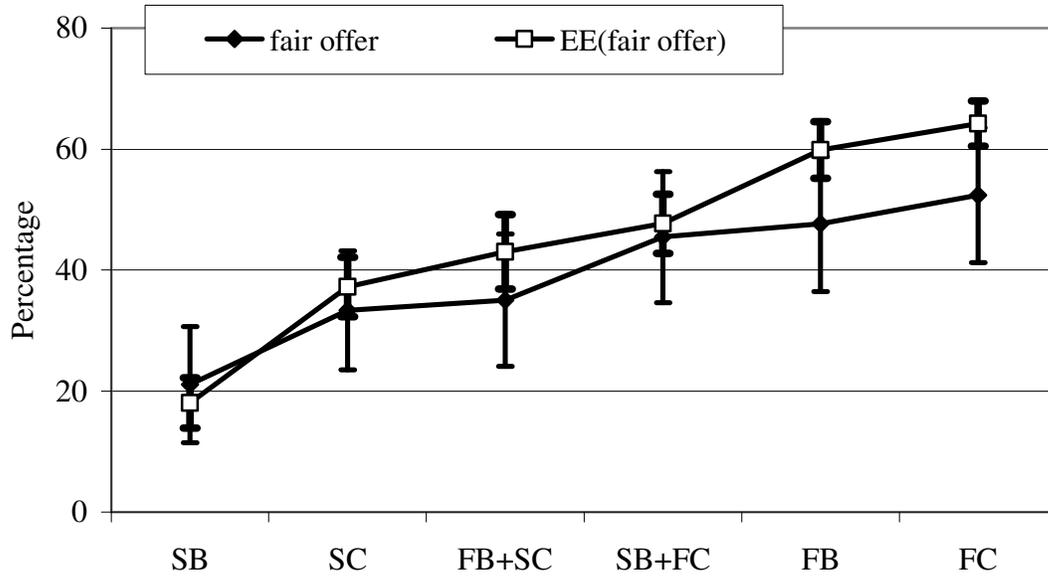**Figure 2:** Percentage of Dictators who made fair offers in each treatment

Figure 3: Expectations and fair offers

(A) Empirical Expectations and fair offers
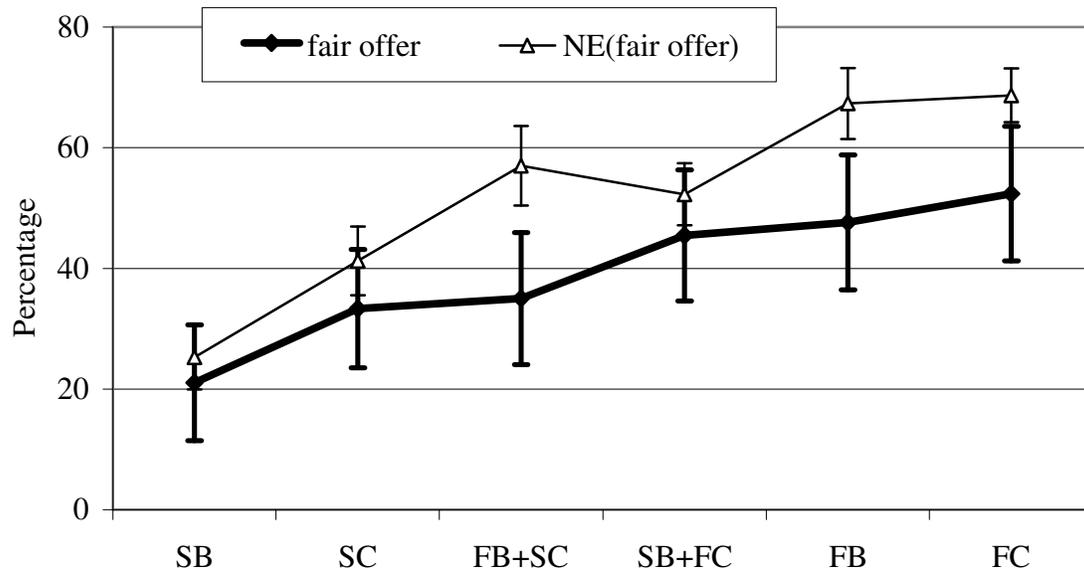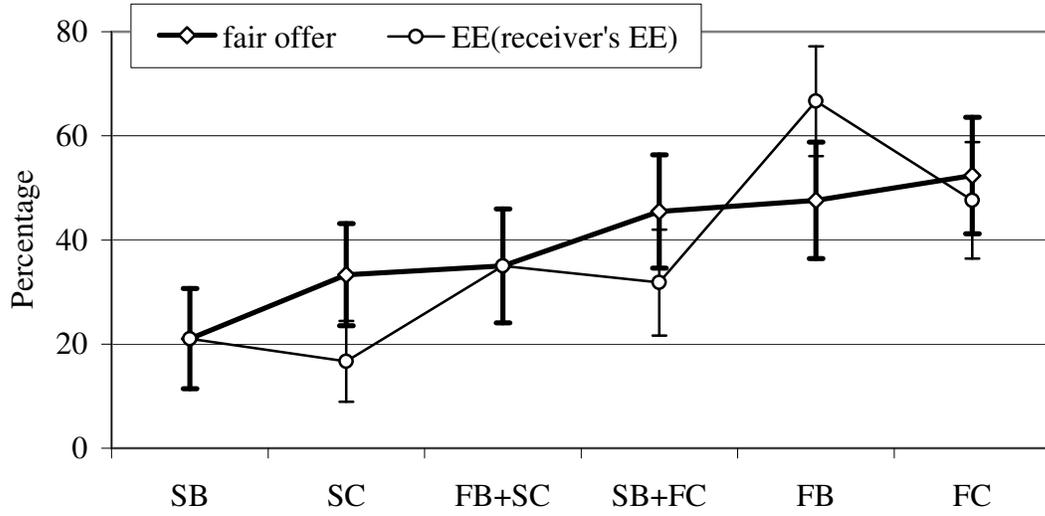

(B) Normative Expectations and fair offers

Figure 4: Dictators' beliefs about Receivers' expectation of fair offers (receiver's EE) and Dictators' percentage of 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 <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. 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:

```
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.

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.

Divider
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**

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:

```
┌─────────────────────────────────────────────────────────────────────────────┐
│  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[9]

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?

---

[9] 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.