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Social Distance and Other-Regarding Behavior in Dictator Games

By ELIZABETH HOFFMAN, KEVIN MCCABE, AND VERNON L. SMITH*

In this paper we ask if instructional and procedural manipulation can be used in a systematic way to understand the social norms that have been said to be the cause of deviations from game theoretic predictions in dictator and other games.[1] We find that such manipulations, intended to affect subjects' degree of social distance from the experimenter and assumed to affect expectations of reciprocity, play a key role in determining and understanding behavior.

Dictator games with and without monetary rewards have been compared by Robert Forsythe, Joel Horowitz, N. E. Savin, and Martin Sefton (1994; hereafter FHSS). In this game a subject and his or her anonymous counterpart in another room "has been provisionally allocated" $10. The subjects' task is to decide how to "divide" the $10; the counterpart has no recourse but must accept the allocation. These phrases appearing in quotation marks constitute the exact language that appears in the instructions to the subjects. As we shall see this language is not entirely benign. It was first used by Daniel Kahneman, Jack Knetsch, and Richard Thaler (1986 pp. 105–6; hereafter KKT); and FHSS desired to stay close to this originating study to examine its replicability and the effect of reward variations in this version of the game.

Dictator games are an interesting vehicle for studying the meaning and interpretation of "fairness." The dictator game controls for strategic behavior in the ultimatum game where the fairness interpretation first emerged prominently. In the ultimatum game player 1 offers any amount of the $10 to player 2. If player 2 accepts, the $10 is divided according to the terms of the offer; if player 2 rejects, each player gets 0. The subgame perfect Nash equilibrium is to offer $1 (or 0), if there are 10 one-dollar bills, and for player 2 to accept. In experimental ultimatum games, however, the modal offer is observed to be half the pie to be divided. This has been attributed to a fairness norm. (See KKT and the references therein.) FHSS show that offers are lower in the dictator game than in the ultimatum game, and argue that this indicates that fairness alone does not account for the generous offers by player 1 in the ultimatum game; strategic concerns also play an important role.

In this paper we explore further our interest, initiated in Hoffman, McCabe, Keith Shachat, and Smith (1994; hereafter HMSS), in the conditions that affect outcomes in the dictator game. In HMSS we found that when a double blind procedure, intended to guarantee the complete social isolation of the individual's decision (no one including the experimenter or any subsequent observer of the data could possibly know any subject's decision), was used, 64 percent of the offers were $0 with

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[1] James S. Coleman (1990, pp. 243, 245–46) defines a norm to be a condition where the right to control a specific action is not held by the actor but by others. Norms can affect self-interested behavior by making individuals aware of potential acts of reciprocity in response to an action. See, also Marilynn B. Brewer and William D. Crano's (1994) textbook statement of the definition of social norms as "... widely held rules of conduct ... Norms generally do not entail legal sanctions, but we feel considerable pressure to abide by them nonetheless" (p. 240). One of the norms of social exchange identified by Brewer and Crano is reciprocity, a key element in our interpretation.

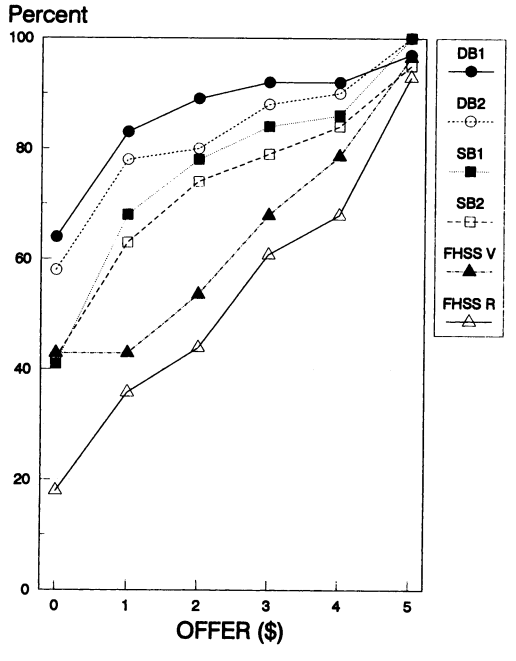

FIGURE 1. CUMULATIVE DISTRIBUTIONS FOR DICTATOR EXPERIMENTS

only 8 percent offering \$4 or more.[2] On the other hand our replication of FHSS (FHSS-R) using the language quoted above, results in only 18 percent offers of \$0, with 32 percent offering \$4 or more. Compare the cumulative distributions for DB1 and FHSS-R in Figure 1. The difference between these two distributions is highly significant with a Wilcoxon statistic $W = 4.02$ ($p < 0.0001$). We also note that there was no significant difference between the results reported by FHSS, and our replication, FHSS-R.

We explore in detail the large observed discrepancy between these two very disparate versions of the dictator game. Our working hypothesis is that the difference is due to the concept of social distance or sense of coupling between the dictator and his or her counterpart, or others who know the dictator's decision.[3] We systematically vary this distance by changing elements of the language and procedures that a priori bear on the degree of the dictator's anonymity, and social isolation, in each of these two polar treatments. The significance of social isolation is in the removal of all suggestion of the quid pro quo of reciprocity. We believe that this experimental exercise is fundamental to understanding the received evidence for other-regarding behavior that is frequently manifest in bargaining game experiments, but in which strategic reciprocity and utilitarian elements are confounded in interpreting observed outcomes.

I. Culture and Sharing, or "Cooperative" Behavior

For perhaps a century or more ethnologists have studied, and compared, cultures in which they have identified an immense range of sharing customs in close-knit tribal and extended family associations. A good example is in the study by Hillard Kaplan and Kim Hill (1985a) of the Ache hunter-gatherers in Paraguay. The products of gathering are stable low risk sources of food and are not commonly shared beyond the immediate family, while the high risk meat products of hunting, with a 40 percent chance that a given hunter will return empty handed, are widely shared throughout the band. Consequently, Ache "culture" has adapted the reach of its cooperative traditions to fit the fine structure of external resource costs. Other-regarding behavior is not a universal but varies with context depending upon opportunity costs. The wide sharing of meat within the band is supported as a repeat interaction game in which every hunter benefits on some days, contributes on other days.[4]

[2] Our double blind procedure does not guarantee ignorance of the identity of who received which treatment, as with a medicine or a placebo in medical experiments. We use the term to refer to ignorance over subject-message identity (as in Rebecca Blank [1991], dealing with author-referee identity in the reviewing process for journals).

[3] Social distance can be defined as the degree of reciprocity that subjects believe exist within a social interaction. By design, economic or material action is unidirectional in the dictator game.

[4] There is something of a problem, however, with the most superior hunters. If they are not treated asymmetrically they might leave the band and join another (interband mobility is high among the Ache). Kaplan and Hill (1985b) address hypotheses dealing with this issue, and find that the better hunters have higher reproductive success than the less

This principle finds extensive application in the contemporary anthropology literature (in particular see Kristen Hawkes [1992, 1993] for an examination of competing hypotheses for the explanation of sharing behaviors which builds upon game theoretic and public good principles). This literature highlights cases in which "reciprocal altruism" is offered as an explanation of sharing traditions in terms of private (direct or opportunity) costs that reinforce reciprocal actions by deterring free-riding behavior. Thus, reciprocal altruists discriminate against, and punish, individuals who do not return favors such as the sharing of meat obtained from hunting.

But how does all this relate to the dictator game, in which, ostensibly, reprisal by the dictator's counterpart is not possible? Our a priori hypothesis is simply stated. In laboratory experiments we cannot assume that subjects behave as if the world is completely defined by the experimenter. Past experience is important in so far as beliefs are based on experience. The future is important in so far as people are accustomed to operate in an environment in which there is ongoing social interaction, and in so far as subjects may be concerned about the extent to which their decisions have post-experimental consequences, or that others may judge them by their decisions. In short, subjects bring their ongoing repeated game experience and reputations from the world into the laboratory, and the instructional language, especially in single-play sensitive experiments like the dictator game, can subtly suggest more or less isolation from that interactive experience. It is well documented in the experimental literature that the "framing" of a decision can influence expectations by associating a subject's decision with past experience.[5] But the nature and interpretation of such framing is not well understood. Nor has it been explored in dictator games.

Thus, dictator instructions stating that the subject and his or her counterpart "has been provisionally allocated $10," and suggesting that the task is to "divide" the $10 may imply that the objective is to share the money with someone, who, though anonymous, is socially relatively near to the decision maker. At the other pole, defining the greatest social distance, is our Double Blind procedure, which goes to some pains to guarantee the decision maker absolute privacy, and isolation from any social consequence or association with the person's decision.[6]

Based on this reasoning we relax a few elements at a time in the instructional language in each of the two extreme treatments. We predict a priori that these treatments will both narrow the perceived social distance between the dictator and others, and increase offers. We thus manipulate instructional language with the objective of showing how it can influence decision making by associating the subject's task with his or her prelaboratory reciprocity experience in ordinary day-to-day social intercourse. The less remote the conditions of the experiment from that experience the more other-regarding the decision.

II. Instructions and Procedures: Defining Variations on Perceived Social Distance

Double Blind 1 (DB1).—In our original double blind dictator experiments 15 subjects are recruited to room A and 14 subjects are recruited to room B. Subjects are met by an experimenter, paid a $5 show up fee, given a set of instructions, and asked to sit at assigned seats which are positioned so as to keep subjects as separate as possible. Subjects are also reminded that there should be no talking or

skilled hunters. This is due to both increased survival of their children, and increased access to extramarital affairs that yield illegitimate offspring. Consequently, there is a private good modification of the public good sharing tradition when applied to the superior hunters.

[5] For example it is reported by HMSS that the distribution of offers in the ultimatum game is shifted to a significantly lower level when the game is formulated as an exchange between a buyer and a seller, and the right to be the first-mover seller, whose offer is a selling price, is earned by scoring highest in a pregame general knowledge quiz.

[6] Our manipulations to vary social distance are similar to those used by social psychologists to vary group pressure in studying individual conformity to a group opinion. See Vernon Allen (1965 pp. 133–75) for a review of this literature. Of particular interest is the use of envelopes by Argyle (cited and discussed in Allen, p. 146) to guarantee privacy, similar to our double blind treatment. Allen reports that increases in privacy reduce conformity.

other attempts to communicate during the experiment. The instructions are reproduced in the Appendix of HMSS under "Dictator, Divide $10, Double Blind 1."

In the following description, sentences labeled (i)–(iv) represent conditions that are altered in subsequent instructional treatments. (i) One subject from room A is chosen to be the monitor and will be paid $10. The experimenter than reads aloud the instructions. By reading the instructions aloud the subjects can verify that they all have the same instructions. After the instructions are read, the decision making part of the experiment begins. (ii) The instructions inform the subjects that there are 14 envelopes. Twelve envelopes contain 10 one dollar bills and 10 blank slips of paper, and 2 envelopes contain 20 blank slips of paper. Subjects in room A are called one at a time and are asked to bring personal belongings with them. This insures a clean exit. Once called, a subject is handed an unmarked opaque envelope chosen at random from the box of 14 envelopes. The subject takes the envelope to the back of the room, and sits behind a large cardboard box which maintains his or her privacy. (iii) The subject opens the envelope, and decides how many one dollar bills to keep and how many bills to leave for a person in room B; all bills taken are replaced by blank sheets of paper, so that the envelopes are all the same thickness. (iv) After a subject has made a decision, he or she is asked to seal the envelope and return it to a box near the exit door. The subject then leaves the experiment. This is repeated until all subjects have left room *A*. The experimenter next takes the box of envelopes to room *B*.

Upon arriving at room B, the monitor (and experimenter) sits outside the room, and the subjects are called one at a time. In the subject's presence, an envelope is chosen, opened, and the envelope's contents are recorded by the monitor on plain paper containing no names. The subject is then given the envelope's contents, and he or she leaves the experiment. This is repeated until all subjects have left room B. At this point the monitor is paid and the experiment is over.

In our DB1 experiments we guarantee complete anonymity by including the two envelopes containing 20 blank slips (ii). Without this precaution, if everyone in room A takes all $10, then each person's decision is clearly known by the experimenter, and perhaps others. However, with the existence of two dummy envelopes the experimenter and the receivers in Room B cannot know whether any one person in room A has left no money or merely received a dummy envelope. The blank envelopes (ii) are expected to magnify the dictator's sense of isolation, and the existence of a monitor (i) removes the experimenter as an executor of the procedure, (although as noted in HMSS, paying the monitor $10 may help the subjects to justify keeping the money).

Double Blind 2 (DB2).—We examine these hypotheses in a second treatment that omits (i) the paid monitor and (ii) the two blank envelopes (DB2). Complete anonymity is now no longer guaranteed, but is highly likely as long as someone leaves money. Offers in DB2 are expected to increase, since we have weakened the sense of social isolation. It was in conducting DB2 that we first observed aspects of subject behavior that sensitized us to the subtle features of anonymity and social distance (HMSS, footnote 9). Not all of the subjects in room A sealed their envelopes as instructed, and both of the experimenters (in this case McCabe and Smith) noted that, most revealingly, there was a pronounced tendency for those leaving no money to seal their envelope, and for those leaving positive amounts of money to not seal their envelopes. We had not had the opportunity to observe this in DB1 because of the use of a subject monitor. This experience brought home to us the features of detectability made possible by the presence of an experimenter, but which, from the perspective of the subject, reduces privacy.

Single Blind 1 (SB1).—In our next treatment, SB1, everything is the same as in DB2, except that we modify (iv) so that the experimenter now learns each decision maker's decision. The appendix (available upon request from the authors) contains the instructions for SB1. This is done by (a) having the subject return to the experimenter after deciding what to leave in the envelope, and (b) having his or her unsealed envelope opened behind a large cardboard box at the experimenter's desk. This

insures isolation with respect to other subjects but not the experimenter. (c) The amount he or she has offered is then recorded, (d) the envelope is then sealed, and (e) the subject drops it in the return box and leaves. We predict that allowing the experimenter to know the subjects' decisions reduces their social isolation, and increases offers; except for the use of envelopes containing the money, we have moved closer to the procedures used by FHSS and others.

Single Blind 2 (SB2).—Our last condition, SB2, is identical to SB1 except we now modify (iii). The envelope now contains a decision form for making the decision, instead of money, and we use the following procedure. (a) A subject fills out the form in the back of the room behind a cardboard box. (b) The subject returns to the experimenter at the front of the room, where (c) his or her envelope is opened behind a cardboard box and, (d) the subject is paid the amount he or she has decided to keep. This is recorded opposite the person's name on a data sheet. (e) If the decision gives money to a subject in room B, the money is placed in the envelope and the envelope is sealed, and (f) the subject drops it in the return box as he or she leave the room. The actual instructions are in the appendix available on request. This treatment corresponds to the standard way that subjects are paid in experiments, but the use of an intermediate form further socializes the transaction. We ask whether it makes a difference that the envelope contains a credit (or IOU), to be exchanged for money with the experimenter, instead of the actual money to be divided. Since SB2 creates a direct transaction between the subject and the experimenter (in order to get paid), social distance is narrowed, and we predict that offers will increase relative to SB1.

FHSS Replication and Variation (FHSS-R and FHSS-V)

Having relaxed in three steps (DB2, SB1, SB2) components of DB1 that impact the dictator's hypothesized degree of social isolation or distance from others (subjects and experimenter), we turn next to the other treatment pole—our replication of FHSS—and weaken the dictator's sense of community with his or her counterpart. We do this with only one change: we drop the phrases suggesting that the dictator and his or her anonymous counterpart "has been provisionally allocated" \$10, and that the task is to "divide" the \$10. The appendix (available on request) contains the full instructions that we used for our replication, FHSS R, and for the indicated variation, FHSS V. We predict that this change in the KKT/FHSS instructions will cause a reduction in offers.

Finally, we note that there remain several differences between our SB2 instructions and FHSS-V.[7] The most important we suggest is that in SB2 (in common with SB1, DB1 and DB2) all subjects in room A act out, and observe others acting out, the privacy conditions articulated in the instructions: the decision form is in an envelope, the subject chooses an envelope and carries it to the privacy of a large box, and returns it to the experimenter, and so on. Consequently, we expect offers to be less generous in SB2 than in FHSS-V.

III. Experimental Design and Research Hypothesis

Our experimental design is summarized in Table 1. If we let $F(\cdot)$ be the population distribution of offers for each of the six treatments identified above, DB1, DB2, SB1, SB2, FHSS-V, and FHSS-R, our research hypothesis is

$$H_R: \quad F(\text{DB1}) > F(\text{DB2}) > F(\text{SB1}) > F(\text{SB2}) > F(\text{FHSS-V}) > F(\text{FHSS-R})$$

[7] For example, we used illustrations and the privacy of a box. We also shortened the instructional description. In HMSS our original DB1 treatment constituted a large step-out experiment from FHSS, designed to include everything we thought might be important in creating the greatest social isolation for subject dictators. In order that the resulting instructions would not become too lengthy we shortened or eliminated elements of the FHSS instructions which we thought were inessential to our objectives. We carried these changes through to SB2. Despite these changes, our FHSS-R experiments *do* replicate FHSS.

TABLE 1—EXPERIMENTAL DESIGN

	Experiment	Number of observations	Anonymity condition	Decision type
1	DB1	36	Double blind and blanks[a]	Dollars
2	DB2	41	Double blind	Dollars
3	SB1	37	Single blind	Dollars
4	SB2	43	Single blind	Form
5	FHSS-V	28	Single blind	No sharing language
6	FHSS-R	28	Single	Sharing language

[a] Includes two envelopes with 20 blank slips and a monitor paid $10.

which will be tested against the null hypothesis that the distributions are identical.

IV. Results

A descriptive summary of the data for all 6 treatments is displayed in the cumulative distributions of offers shown in Figure 1. As we weaken the anonymity or social isolation conditions (from treatment DB1 to FHSS-R) we observe that the offer distributions decrease as predicted. With the Jonchkeere nonparametric order test statistic equal to 3.77 ($p < 0.0001$) we reject the null hypothesis that the distributions of offers are the same across treatments in favor of our predicted ordered alternative. The individual pair-wise treatments are not generally significantly different, but this was not our claim. Rather our prior prediction was that the nested series of treatments would be ordered as indicated.

V. Discussion and Conclusions

Anomalous results in ultimatum games have been interpreted as due to a fairness utilitarian ethic. In FHSS this interpretation was tested by comparison with the dictator game, which controls for the first mover's expectations of rejection by the second mover. The resulting decrease in offers showed that fairness alone could not account for the anomalous behavior in ultimatum games. But 62 percent of the dictators still gave $2 or more to their counterparts. We hypothesize that the latter arises from subject expectations of reciprocity—a social norm emerging from experience with repeat interaction outside the laboratory. We explore this hypothesis using the dictator game, by varying the distance between dictator and experimenter, and, presumably, the degree of potential reciprocity in the dictator/experimenter relationship. Our data supports the hypothesis that as social isolation increases there is a further shift toward lower offers.

We interpret the data as generally supportive of the economic assumption of self-interested behavior but we place three caveats in this assumption. First, in DB1 a few subjects still send their corresponding player 2's a considerable amount of money. This may reflect true utilitarian "other-regarding" preferences. Alternatively, these subjects may be suspicious of our procedures to guarantee anonymity. Second, our experiments are conducted among relative peers, that is, college undergraduates, with relatively low stakes involved (but see Hoffman et al. [1995b] where the stakes are increased to $100). Third, our double blind procedure may not result in more self-interested offer distributions in ultimatum games. This would occur if first players' expectations that offers will be rejected dominate any and all effects caused by complete anonymity.

Independent replication by other researchers provides additional evidence for the importance of social distance. Philip Grossman and Catherine C. Eckel (1994) have replicated our double blind 1 procedures with their subjects. They then compare the results with parallel experiments in which the dictator makes an offer not to another person like himself or herself, but to a charity—the American Red Cross. They show a significant increase in the distribution of offers using the charity treatment.

But the American Red Cross has a long history of providing benefits, thus inviting reciprocity. The Grossman-Eckel results suggest that history matters, and we think their results help to corroborate our reciprocity interpretation.

Our experiments raise important questions about the nature of expectations in the occurrence of other regarding outcomes. Similar questions are involved when economists ask: why is fiat (paper) money valuable? In answering this question economists do not conclude that people accept money out of a desire to be fair to the holder of paper money. Instead, the value of money is better understood as derived from the more basic desire to consume goods and resources through the normal process of reciprocity in ongoing exchange. People accept paper money, which is intrinsically valueless, because other people are expected to accept it for goods and services; as a by-product, this results in socially more efficient trade. For example, McCabe (1989) reports fiat money experiments in which, as the end-game approaches, people refuse to accept ultimately worthless paper money in exchange for goods. As the cycle is repeated this refusal occurs earlier and earlier. In the limit no one accepts fiat money because no one expects others to accept it. In this process, we think of people bringing their repeated game exchange experience into the laboratory with them. They begin by accepting fiat money in trade; but learn over successive cycles that the conditions of the experiment do not support their unconscious expectation that the money will be accepted by others. Over time their expectations adapt to the unfamiliar conditions in the laboratory experiment.

Similarly, we can ask, what is it that is being consumed when someone rejects an offer in an ultimatum game, or when someone gives money away in either the ultimatum or the dictator experiments. From the perspective of this experiment the answer, which we will call reputation (or image), is largely explained as self-regarding, that is, people act as if they are other regarding because they are better off with the resulting reputation. Only under conditions of social isolation are these reputational concerns of little force. As with fiat money it seems unreasonable to believe that people directly consume their reputations in isolation, but instead value their reputations because of the long-term personal benefits that result. In addition, people value social interactions with others and a good reputation increases the chance of continued social interaction.[8]

Evidence consistent with this interpretation also comes from evolutionary psychology. This approach to social cognition has been succinctly conveyed by Leda Cosmides and John Tooby (1992): "... the mind should contain organized systems of inference that are specialized for solving various families of problems, such as social exchange, threat, coalitional relations and mate choice. Advocates of evolutionary views do not deny that humans learn, reason, develop, or acquire a culture; however, they do argue that these functions are accomplished at least in part through the operation of cognitive mechanisms that are content-specialized ..." (p. 166). Continuing, this contrasts with the standard model of economics and other social sciences in which "... the faculty of reasoning consists of a small number of processes that are designed to solve the most inclusive and general class of reasoning problems possible ..." Cosmides and Tooby then summarize a research program which they interpret as showing that the cognitive processes that involve reasoning about social exchange contain design features that you would expect if they are adaptations shaped by evolutionary selection pressures (pp. 179–221).

As we interpret this literature in relation to our "social distance" manipulation in the dictator game, people have unconscious, preprogrammed rules of social exchange behavior that suit them well in the repeated game of life's interaction with other people. These patterns are imported into the laboratory. There, when they encounter a dictator game for the "division" of $10 "provisionally allocated" to them and an anonymous counterpart, not many act in their strict self-interest because the situation seems similar to the day-to-day

[8] Thus, individuals who value social interaction, and recognize they will be ostracized for loss of reputation, might commit suicide rather than reveal information that would cost them their reputations.

sharing characterizing repeat play interaction. As these cues are modified by lengthening the distance between the individual and others, and finally imposing "complete isolation" in the double blind treatment, we trigger less and less of these automatic responses, and allow reasoning processes that recognize more prominently strictly self-interested actions. Future research will explore the link between reciprocity in the laboratory and work by evolutionary psychologists. See Hoffman et al. (1995a) for an extended discussion of these issues.

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