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Double-Blind Dictator Games in Africa and the United States: Differential Experimenter Effects

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The experiments reported in this volume consider the dictator game (DG) as a measure of fairness and altruism and attempt to understand cross-cultural variations in these characteristics. Thus, it is important to consider whether results in the dictator game are compromised by design features of the game. In this chapter, we discuss the problem of reactivity in experiments—the idea that experimental subjects' decisions may be affected by the experimental situation. In particular, we consider the possibility of “experimenter effects,” in which subjects' decisions are influenced by their beliefs about the role or reaction of the experimenter. We use double-blind treatments to reduce the potential for experimenter effects by creating anonymity between the players and the experimenters. We compare results in these games to those in our standard, nonblinded DG protocol. Experiments from two African societies (the Orma and the Samburu) and one rural U.S. community are reported.

In the DG, one player is given an opportunity to share a stake of money with a second (anonymous) player. The second player receives whatever the first player gives him or her, and the first player retains whatever is not given to the second player. According to narrowly economically self-interested assumptions, player 1 should offer nothing to player 2, since the game is anonymous and player 2 cannot retaliate against player 1 in any way. In many experiments, however, player 1 consistently offers a positive amount to player 2, often as much as half the stake. Many researchers, including ourselves, have interpreted these offers as evidence that players have a taste or preference for fairness that prompts them to make positive offers even when there is every incentive to keep all the money (Fehr and Schmidt 1999; Ostrom 2000).

A number of researchers have argued that there might be other reasons for positive offers in the DG besides fairness and altruism, and they have designed a diverse array of experiments to try to pinpoint just what accounts for player behavior in this game (Burnham 2003; Carpenter, Liat, and Vickery 2010; Franzen and Pointner 2012; Hoffman et al. 1994; Hoffman, McCabe, and Smith 1996; Johannesson and Persson 2000). These efforts have led to several alternative explanations for player behavior in the DG and drawn attention to the ways in which small changes in how the game is conducted lead to important changes in player behavior.

One explanation for high offers in the DG is that (despite anonymity) players bring expectations of reciprocity into the game. That is, they may believe that if they are generous in the

game, this will be rewarded in some way. Intersubject anonymity (that is, not knowing with whom one is playing) reduces expectations of reciprocity from other players in the experiment, but it does not affect players' expectations of reciprocity from the experimenter. Thus, when the experimenter is able to observe the offers players make, players may believe that the experimenter will respond to generous offers by extending some kind of benefit. For example, they may think that generosity will be rewarded by being invited back to play again, while greedy or selfish behavior might be punished by exclusion from future experiments (Bolton, Katok, and Zwick 1998).

Double-blind versions of the DG have been conducted to test for this kind of experimenter effect. These experiments, like the ones presented in this chapter, are designed in such a way that no one, including the experimenter, knows how much any particular player offers. The double-blind treatment provides both intersubject anonymity and subject-experimenter anonymity. If expectations of reciprocity from the experimenter are influencing players to behave more generously (rather than an intrinsic preference for fairness), then offers in the double-blind dictator (DBDG) should be much lower than in the conventional DG. In principle, the double-blind treatment has the effect of increasing the social distance between the subject and the experimenter, thus reducing the expectation of reciprocal behavior by the experimenter contingent on player behavior (Hoffman et al. 1996). Results from the DBDG to date are not uniform. Some researchers find significantly lower offers and frequencies of positive offers in the DBDG compared to the DG (Burnham 2003; Franzen and Pointner 2012; Hoffman et al. 1994; Hoffman et al. 1996), while others find only slight reductions (Johannesson and Persson 2000), and others find no significant differences (Bolton et al. 1998). A recent meta-analysis finds no significant effects of double-blind treatments on dictator offers in a meta-regression (Engel 2011). These inconsistent results suggest that something other than the double-blind treatment is affecting player behavior in these experiments; later we discuss some alternative explanations for these findings that also help illuminate our own results.

Where there is evidence of an experimenter effect, it has implications for the conduct of economic experiments in two senses. On the one hand, if a significant experimenter effect is suspected, then it is advisable to design games using the double-blind protocol in order to reduce this confounding effect on player behavior. On the other hand, finding an experimenter effect is also instructive in enhancing our understanding of the motivations of players, which is an important goal of experimental research (for explorations of the conditions under which expectations of reciprocity will hold, see, for example, Cherry, Frykblom, and Shogren 2002; Cox and Deck 2005).

In this chapter, we present results from three DBDGs conducted as part of a larger cross-cultural experimental project. The experiments were carried out among two communities of livestock herders in Kenya and in one rural community in the state of Missouri in the United States. The objective of the experiments was to test for experimenter effects in a cross-cultural sample representative of local populations. The vast majority of experiments are conducted with university student subjects, primarily in the United States and Europe. In this study, we wanted to test whether experimenter effects were present in a cross-cultural subsample of small-scale societies. Somewhat counterintuitively, we found evidence for an experimenter effect in the U.S. double-blind field study, but not in the two African double-blind field studies. After presenting the experimental procedures and results, we discuss the factors that may explain our results, particularly in light of other inconsistent results in the DBDG literature. Specifically, we argue that cultural differences in beliefs about anonymity, framing effects, and the social distance between the experimenter and the subjects all may have accounted for player behavior in the DBDG in our experiments.

METHODS

Double-blind dictator games were played in three different communities between 2001 and 2003. Two of these were livestock herding groups in Kenya, the Orma and the Samburu. The Orma live primarily in Tana River District in the northern coastal region of Kenya. Although the Orma are distributed across a gradient from low to high market integration (corresponding in part to nomadic and sedentary lifestyles), this sample was from a more market-oriented society from largely sedentary villages (see also Ensminger 2004). The Samburu live in north-central Kenya and are semi-nomadic, often moving several times a year with their livestock, although the degree of mobility varies among households. Both the Orma and Samburu rely heavily on livestock products and the trading of live animals for their livelihood, but many of them earn income from wage labor and trade as well. The rural U.S. community was located in a small town in central Missouri. Participants were engaged in diverse occupations typical of small towns, including farmer, teacher, electrician, homemaker, unemployed, and factory worker.

The same experimental procedures were used in each community. People were invited to meet at a specified location (a school in Samburu, a school in Orma, and a community center and school in rural Missouri) to participate in the experiment. The particulars of the experiment were not explained before arrival at the game site, but participants were told that they were going to play some "fun games for real money." For the DBDG, thirty-two Samburu, forty-six Orma, and fifty-eight U.S. players were randomly divided into player 1s and player 2s. The game instructions, which had been translated and back-translated in the local languages in Kenya (see appendix to this chapter) were read to each group. The instructions indicated that each player was paired with another player and that they would remain anonymous to each other. After reading the instructions, we showed participants several examples. Research assistants monitored the players while they waited to play to ensure that the game was not discussed among them prior to play. The experimenter gave each pair of players a stake of one day's minimum wage (in local currency in small bills or coins, allowing for division into at least ten units), and player 1 had to decide how to divide the money between him- or herself and player 2. These stakes translated into \$50 games in the United States, \$1.25 games among the Samburu (100 Kenyan shillings), and games of about \$2.50 for the Orma (200 Kenyan shillings). Player 1s could offer any amount between 0 and 100 percent (divisible into ten or twenty units in Kenya and ten units in the United States) and would retain whatever was not given to player 2. Player 1s made their offers by placing the amount they wished to give to the player 2s in an envelope in a separate room so that even the experimenter would not know what they had given to player 2.

In random order, each player 1 was brought one at a time into a room where the experimenter repeated the instructions and asked several test questions to ensure understanding of the game. Each player 1 received a large manila envelope and the stake of money and was instructed to go alone to another room, place the amount he or she chose to give to player 2 in the envelope, keep the remaining money for him- or herself, seal the envelope, put it into a designated box that was well removed from all the remaining players and the experimenter, and then leave the game area. After all player 1s had finished and left the area, each player 2 was given one of the sealed envelopes. The envelope was then opened and the contents recorded.

RESULTS

It is notable that in all of our samples there appears to have been an aversion to offering nothing, even in the double-blind treatment. One of the differences between these sample populations and those typically used in economic experiments is that these were face-to-face societies where

people lived in small communities. The population of the rural Missouri town where these experiments took place was only 1,800. Arguably, people there had internalized a norm that even in private, giving absolutely nothing under such circumstances is not appropriate. In contrast to earlier double-blind findings by Elizabeth Hoffman and her colleagues (1994), in which about 60 percent of offers were zero, there were no zero offers in Samburu or among the Orma, and only two (7 percent) among the rural U.S. field sample. Figure 5.1 presents histograms of the distribution of offers in the DG and DBDG for the three communities.

There was no significant change in the mean offer between the dictator game and the double-blind dictator game for either of the Kenyan communities. In Samburu, the mean offer in the DG was 32.9 percent, while in the DBDG it was 31.3 percent. The two distributions of offers are not statistically significantly different according to Mann-Whitney and Kolmogorov-Smirnov nonparametric tests (see table 5.1). Among the Orma, the mean DG offer was 42.3 percent and the mean DBDG offer was 40.0 percent. Again, the distributions of offers in the two games were not significantly different. The rural Missouri sample did show a larger (and statistically significant) drop in offers, from 47.3 percent in the DG to 32.8 percent in the DBDG. In Colombia, Juan-Camilo Cardenas (chapter 16, this volume, available at: <http://www.russellsage.org/Ensminger>) ran a modified, sealed-envelope DG that mimicked a double-blind. In his study, the sealed envelope offers also declined.

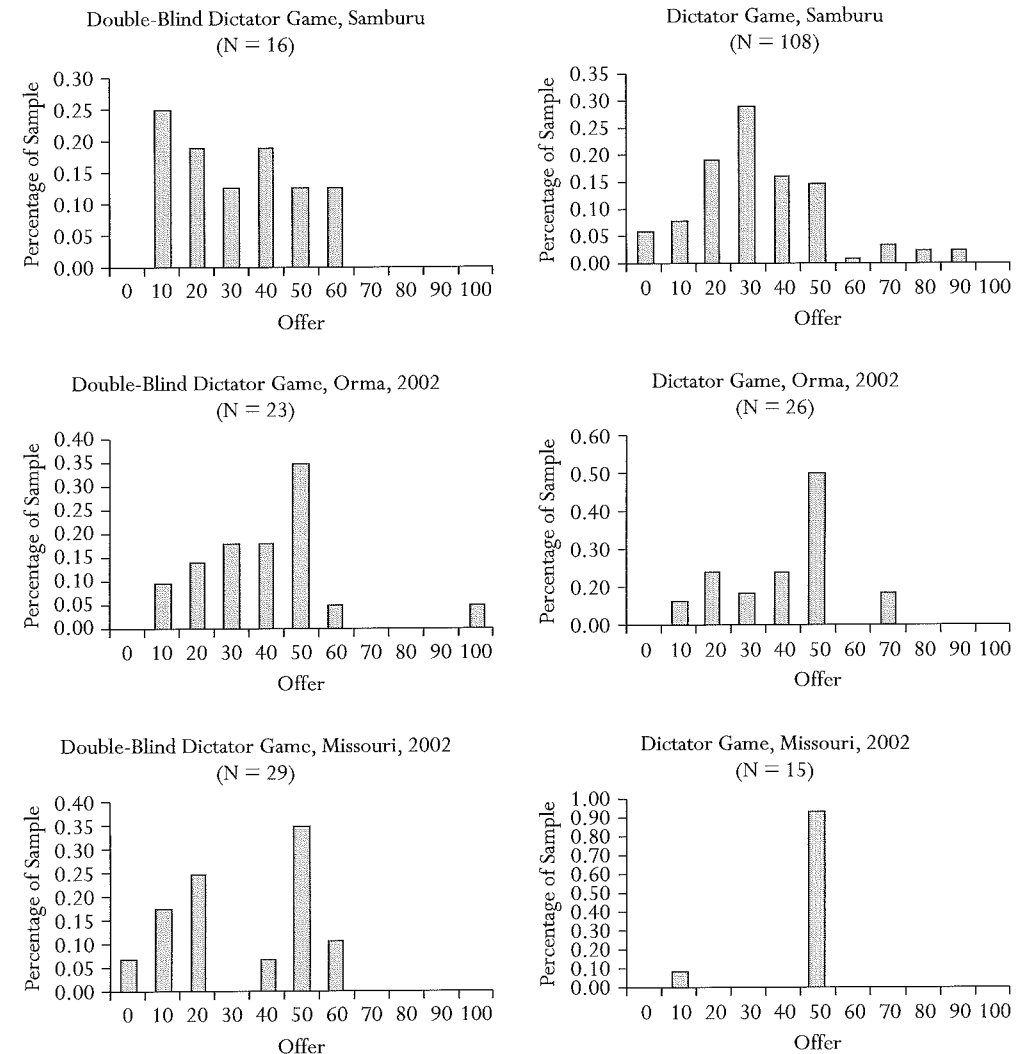
DISCUSSION

These results show that players in the dictator game continue to make positive offers to their counterparts even when anonymity is assured not only between subjects but also between the subject and the experimenter through the double-blind protocol. Interestingly, we did not find evidence of experimenter effects in our two East African societies, but we did in our rural U.S. community, though even there the drop-off in offers was less than might be expected based on U.S. laboratory studies. For example, in double-blind dictator games using U.S. university student samples, mean offers have varied between 9 and 15 percent of the stake, with between 53 and 64 percent of players offering 0 percent (Burnham 2003; Eckel and Grossman 1996; Hoffman et al. 1994), while in our Missouri sample mean offers in the DBDG were 32.8 percent and only 7 percent of players offered 0 percent. Thus, even though offers were significantly lower in the DBDG than in the DG in Missouri, they were much more generous than those in U.S. university samples.

Whether or not players' offers are known to the researcher does not appear to have a significant effect on the size or frequency of offers in some communities, but this may not be the case in societies where the researchers are perceived to be members of the same society. This is also consistent with Cardenas's findings from Colombia (chapter 16, this volume, available at: <http://www.russellsage.org/Ensminger>): with a Colombian national running a regular DG and a modified "sealed-envelope" DG, there was a decline in offers. We must still ask why this was the case and how these results fit with other similar experiments, especially those that find a large drop in offers in the DBDG (Cherry et al. 2002; Cox and Deck 2005; Franzen and Pointner 2012; Hoffman et al. 1994; Hoffman et al. 1996).

A number of explanations are plausible. One explanation is that cultural differences account for these results. Specifically, it may be the case that true anonymity is rare and not highly valued in small-scale communities. Among the Samburu and the Orma, for example, most transactions take place face to face, people in the community know each other well, in many cases having lived together their entire lives, and there is a low level of personal privacy. The very notion of anonymity is relatively unfamiliar to many individuals, since there are few occasions when

FIGURE 5.1 Dictator Game and Double-Blind Dictator Game Offers in Each Site



Source: Authors' compilation based on author data.

TABLE 5.1 *Statistical Tests of Null Hypothesis Comparing Offers for the Double-Blind Dictator Game and the Dictator Game for Each Site*

Site	Dictator Game Mean	Double-Blind Dictator Game Mean	Mann-Whitney Test z Score	Kolmogorov-Smirnov Test z Score
Orma	42.3 (<i>n</i> = 26)	40.0 (<i>n</i> = 23)	-0.82	0.50
Samburu	32.9 (<i>n</i> = 108)	31.3 (<i>n</i> = 16)	-0.27	0.42
Missouri	47.3 (<i>n</i> = 15)	32.8 (<i>n</i> = 29)	-2.20*	1.52**

Source: Authors' compilation based on author data.

*significant at 0.03 level

**significant at 0.02 level

anonymity would be called for in people's daily lives or would be possible if desired. A lack of confidence in or value for anonymity would account for the low variance between the DG and DBDG treatments, since the additional guarantee of anonymity may not affect player behavior if the concept is not meaningful to them. In recent experiments, Axel Franzen and Sonja Pointner (2012) used a randomized response technique that they argue provides a higher degree of certainty of anonymity than normal double-blind procedures, and they did find lower offers using this approach compared to a protocol similar to that used by Elizabeth Hoffman, Kevin McCabe, and Vernon Smith (1996). Such experiments may help to further reduce reactivity in experiments and are worth testing in societies such as the Samburu and Orma, where the concept of anonymity itself may not be salient.

If anonymity is not assured, in the minds of the players at least, then they are likely to play the game as if they were in public; then their concerns for their reputation become salient. While anonymity may not be highly valued in these communities, reputation is. For example, in both Orma and Samburu culture, generosity is very highly valued and serves as a means to compel wealthier herders to share their wealth with poorer ones. This type of redistribution (and the associated value placed on a reputation for generosity) is highly functional, particularly in a society where the centralized state is a recent phenomenon and remains relatively remote, so that mutual assurance depends heavily on internal modes of sharing and redistribution. A reputation for generosity is an important attribute of a worthy individual, and offers in the experiment may reflect this deeply internalized cultural norm. If many players perceive the situation this way, it may help explain the rather generous offers made by many communities in the DG and other similar bargaining games when compared to university samples in the United States.

The fact that there was more evidence of an experimenter effect in the Missouri sample is consistent with this explanation. Although the Missouri sample shared some characteristics of a small-scale society with the Kenyan samples, people in the United States, even in rural areas, are often involved in anonymous exchanges (for example, over the Internet) and have more expectation of personal privacy than people in Kenya. Accordingly, they may respond more when anonymity guarantees are extended, and this is consistent with declining offers in the DBDG.

Another explanation of these results, especially salient in comparisons with other DBDGs, is the effect of framing. A number of studies have shown that differences in the wording of the instructions or in the context of the game affect offers. For example, Hoffman and her colleagues (1994) have demonstrated that offers in the DG fall when player 1 has to earn the right to the stake by winning a contest. This result has been replicated in other studies (Cherry et al.

2002; Carpenter et al. 2010) and suggests that when player 1's right to or ownership of the stake is more firmly established, offers to player 2 tend to be less generous.

Different game contexts have also resulted in different patterns of offers. In the same study just cited, Hoffman and her colleagues (1994) found that offers were lower when the DG was described as a market exchange compared to abstract instructions. Catherine Eckel and Philip Grossman (1996) found a similar contextual effect in a DBDG: players offered more when the recipient was a well-known and worthy charity, the American Red Cross, than when it was an anonymous other player. Carolyn Lesorogol (2007) found that when the DG was contextualized to resemble a well-known local norm for meat-sharing among the Samburu, offers were consistent with that norm and far less variable than in the abstract version of the DG.

In our game instructions, the stake was clearly allocated to the pair of players, not just to player 1. In contrast, in the DBDG conducted by Hoffman and her colleagues (1994) and some subsequent replications (Burnham 2003; Johannesson and Persson 2000), the instructions did not stipulate that the stake was allocated to the pair. Instead, the stake was given to player 1, who was then given the chance to give some to player 2. By allocating the stake to the pair, our instructions implied that player 2 also had rights in the stake and therefore might have triggered offers that approached an even split, which constitutes a fair division of a shared resource. Robert Forsythe and his colleagues (1994) used instructions like ours, allocating the stake to the pair, and the distribution of offers in the DG in their experiments was similar to ours. (They did not do the DBDG.) Hoffman and her colleagues (1994) replicated the DG results of Forsythe and his colleagues (1994), but their instructions in the DBDG were different—shifting from allocating the stake to the pair to giving it to player 1. Subsequent replications of the DBDG have used the same directions used by Hoffman and her colleagues (1994), not Forsythe's directions, and this difference in property rights to the stake may have contributed to the differences in play observed in the DBDG.

Allocating the stake to both players may influence player 1 to give to player 2, even under conditions of anonymity, because it elicits a fairness norm. Although all societies arguably value fair-minded behavior to some extent, for the Orma and Samburu norms of fairness and sharing take on great significance given their heavy reliance on other community members for their own survival. Living in difficult environmental conditions characterized by frequent droughts and other risks (such as epidemics among both people and animals, or insecurity due to cattle raiding), people in these communities are highly interdependent and, as noted earlier, have well-developed systems of mutual reciprocity and local leveling institutions that reinforce sharing and redistribution of resources. Thus, offers may remain relatively generous, even under the double-blind treatment, if the game instructions trigger norms regarding generosity and sharing and people are playing as if in public.

A third explanation hinges on the identity of the experimenter—specifically, whether or not the experimenter is a member of the players' society, and the perceived social distance between the experimenter and players. In our case, as Americans, we are non-native researchers in Kenya, but native researchers in the United States. If the experimenter is perceived as outside the social orbit, players may perceive less need to ingratiate themselves with the experimenter, or less benefit from doing so. Second, it may be the case that players in rural Missouri were more concerned about how their behavior would be judged by the experimenter, for whatever reason. In Kenya, however, players may be less concerned about how their offers are viewed by non-native experimenters who are not members of their society and culture, and that may also explain why they are relatively unaffected by guarantees of subject-experimenter anonymity. The behavior of subjects also appeared consistent with this notion, as many subjects appeared decidedly unconcerned about how their behavior might be viewed by the experimenter. This

argument is mitigated, however, by the fact that each researcher has long-standing ties to one of these Kenyan communities and is not a complete stranger; both are regular visitors who spend considerable time in these sites. Even so, there is probably some difference in the expectations that players have of native and non-native researchers, and this question may merit further exploration.

CONCLUSIONS

Experimental results in the double-blind dictator game played in three communities provide little evidence of experimenter effects on player behavior in the Kenyan samples, but more in a U.S. rural sample. Mean offers and frequency of positive offers do not change significantly between the DG and DBDG in the Kenyan sites, while there is a significant drop in offers in the U.S. site. Cultural differences in the experience of anonymity (between the United States and Kenya) and the differences in social distance between the experimenter and the players are two possible explanations for these differences. If players do not value anonymity, or if they lack confidence that true anonymity is achieved by game procedures, then they play the game as if in public, and concern for their reputation may influence their offers. The cultural identity of the experimenter, whether native or non-native, may affect the degree to which players have expectations of reciprocity or fear social judgment. Concomitantly, the game instructions allocating the stake to the pair of players frames the game as the division of a shared resource and may trigger a norm of fairness and sharing that influences offers in a generous direction regardless of experimenter observation. We note that even though offers did drop in the U.S. DBDG, they did not drop nearly as much as has been observed in other versions of the game with different framing effects. Further work is required in these communities to tease out the differential effects of these alternative explanations. Replicating the DBDG with the directions given by Hoffman and her colleagues (1994) allocating property rights over the stake clearly to player 1 would be a test of the strength of this framing effect. Experimenting with changes in the ethnic pairing of the experimenter with the subjects would assist in determining the impact of this variable. Further exploration of how communities view anonymity would help clarify their reaction to protocols that attempt to manipulate this parameter.

APPENDIX: GAME INSTRUCTIONS TO PLAYER 1S

The following instructions are to be back-translated:

This game is played by two individuals—player 1 and player 2. No one knows with whom they are playing, and they never will know. Each of you in this room is a player 1; each of the people in the other room is a player 2. [Researcher's name] will provide \$10 [this is converted to one day's minimum wage in the local currency] to each pair. As a player 1, you will decide how to divide the money with player 2. You must offer between \$0 and \$10 to player 2. You will take home whatever you do not offer to player 2, and player 2 will take home whatever you have offered him or her from the \$10. You will be sent to a private room with \$10 and an empty envelope. You will decide how much of the \$10 you wish to keep for yourself and put that away in a pocket or private place. Put the amount you wish to send to player 2 inside the envelope. When you return, place the envelope in this large box and leave the game area immediately; you have finished the game. No one will know which is your envelope. After all of the player 1s in this room have finished making their offers, [researcher's name] will mix up the envelopes and take the box into the other room. Each player 2 will receive one envelope and keep the money that is inside.

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