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The Behavioral Economics of Altruism, Reciprocity, and Transfers within Families and Rural Communities: Evidence from Sub-Saharan Africa

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The Behavioral Economics of Altruism, Reciprocity, and Transfers within Families and Rural Communities: Evidence from Sub-Saharan Africa

Abstract

Transfers between strangers, neighbors, families, and spouses were examined using Triple Dictator Games (TDG, involving only givings) and Trust Games (TG, involving both givings and reciprocations) among 240 participants from 60 families in 20 villages in rural Malawi. In TDG, more was sent by those who were older, male, in better physical health, financially poorer, or frequent lenders of personal items, but less was sent to neighbors by participants with higher HIV felt stigma. In TG, higher transfers were associated with the expected amount of reciprocation, amount sent in TDG, and prior lending behavior; participants with high HIV stigmatization attitudes gave less, especially to their own families and spouses. Higher reciprocation in TG was associated with better mental health. Those with HIV stigmatization attitudes reciprocated differently, depending on whether their game-partner was the neighbor, family, or spouse. Social distance, physical and mental health, and HIV-stigma were predictors of transfers behavior.

Keywords

Transfers, Triple Dictator Games, Trust Games, Malawi, HIV/AIDS, Game theory, Transfer behavior

Disciplines

Demography, Population, and Ecology | Family, Life Course, and Society | Social and Behavioral Sciences | Sociology

Comments

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The Behavioral Economics of Altruism, Reciprocity, and Transfers within Families and Rural Communities: Evidence from Sub-Saharan Africa

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ABSTRACT

Transfers between strangers, neighbors, families, and spouses were examined using Triple Dictator Games (TDG, involving only givings) and Trust Games (TG, involving both givings and reciprocations) among 240 participants from 60 families in 20 villages in rural Malawi. In TDG, more was sent by those who were older, male, in better physical health, financially poorer, or frequent lenders of personal items, but less was sent to neighbors by participants with higher HIV felt stigma. In TG, higher transfers were associated with the expected amount of reciprocation, amount sent in TDG, and prior lending behavior; participants with high HIV stigmatization attitudes gave less, especially to their own families and spouses. Higher reciprocation in TG was associated with better mental health. Those with HIV stigmatization attitudes reciprocated differently, depending on whether their game-partner was the neighbor, family, or spouse. Social distance, physical and mental health, and HIV-stigma were predictors of transfers behavior.

INTRODUCTION

A characteristic feature of families and rural communities in sub-Saharan Africa and other developing countries is the omnipresence of transfers. Family and community members help in the context of illness or death, in times of economic crisis, or in day-to-day life. In developing countries, such as Malawi, a family and local communities therefore provide a “social safety net,” and an important aspect of how individuals, families, and households cope with income and health shocks is through transfers by family or community members. However, some essential questions related to the motivation for these transfers, the propensity to make transfers to relatives as compared to non-relatives, the relationship between transfers and the giver or recipient’s health or socio-economic characteristics, and the potential strategies individuals may pursue to ensure help or transfers in times of crises are only poorly understood. Nevertheless, investigating and understanding these questions related to the transfers in developing countries is particularly relevant due to the rise of HIV/AIDS as a major health threat affecting families and intergenerational relations in sub-Saharan Africa, and the emerging preliminary evidence that families and local communities are essential to an individual’s and a family’s ability to cope with the consequences of the epidemic.

In this paper we utilize behavioral economic techniques to shed new evidence on the motivations and determinants of transfers within families and rural community members, and for the first time, this paper elucidates the importance of family membership, physical and mental health, HIV status, and expectations about reciprocity for making transfers to family or community members. Behavioral economics uses a set of well-defined “games” involving monetary payoffs (provided by investigators) to mimic real-life decision-making by game participants (Cramerer and Fehr, 2004). The games are played in a controlled environment, wherein only a few variables of interest are varied and the participants’ behaviors are observed. Recent studies using experimental economics techniques have shown that a pre-condition for the occurrence of transfers is the existence of altruism, trust, fairness perceptions, and reciprocity. Several innovations of our study design, which are in contrast to the existing literature, allow us to expand substantially beyond current studies. In particular, our study design includes a *random* sample of families and community members recruited from villages in rural Malawi, an unusually rich combination of survey and experimental data, repeated games for each person

with different partners, and the ability to link the behavior in the behavioral economic games to respondents' own health and perceived HIV status, as well as to actual and perceived measures of co-players' health. Several new findings emerge from this study design. In particular, in addition to the amount of expected reciprocation and prior trusting behavior – findings also documented in others' studies – our study also found that wealthier participants gave less but reciprocated more. Participants in better physical health gave more and those in better mental health reciprocated more. Moreover, HIV and stigma were significant predictors of transfers behavior.

The Behavioral Economics of altruism, reciprocity and transfers

Transfers may be motivated by altruism, expectations of reciprocity, conformance to social norms, or even fear of punishment by others. If givers have expectations of reciprocity, then the amounts given depend on (i) how altruistic they are towards recipients, (ii) how much they “trust” that recipients will return the favor, or (iii) whether they or others in the community are able to punish non-reciprocating parties to deter such behavior. For example, suppose transfers are motivated only by self interest to achieve old age support. In an overlapping three-generation model, the middle (parent) generation makes transfers to the young (e.g., in terms of education) so the offspring will grow up with enough human capital to support herself and to support her parent when the latter becomes the grandparent generation. However, because the offspring receives the transfer first, providing old age support for one's own parent is not incentive compatible; once received, the payoff is always higher for the selfish individual to deviate and not to make the reciprocal transfer. This incentive problem can be overcome with social transfer norms, if *not* transferring to the grandparent generation incurs negative stigma (“undeserving to receive any future transfers”) from kin or social networks.

The HIV/AIDS epidemic makes studies of transfers particularly relevant. On one hand, intergenerational and lateral transfers among family and household members constitute a primary mechanism by which individuals and couples cope with increased HIV-related morbidity and mortality. On the other hand, if HIV-related stigma or if expectations of reciprocity are strong, then persons living with HIV/AIDS (PLWHA) who need extra transfers from kin and friends might receive less than had they not been infected with HIV (or had they not disclosed their serostatus). HIV/AIDS and its associated morbidity and mortality at adult ages provides an opportunity to investigate the motivations for transfers, the evolution and change of transfer rules, and the impact on households of any changes in transfers. For example, it may be that in the context of AIDS, expectations of reciprocity may be relaxed, with siblings providing more lateral transfers than was customary before AIDS and with the elderly, who previously expected only to receive transfers, providing support (perhaps in kind) to an adult child with AIDS. Even though transfers to those with AIDS would not be reciprocated, at least not by individuals with AIDS, it may be that *not* transferring would “enrage” members of the extended household to ostracize and preclude future transfers to the non-contributor.

Two well-known games, described in more detail below, provide the primary tools to identify patterns of altruism and reciprocity in transfers behavior.

Brief Description of Dictator Game (modified from Forsythe et al. 1994): In the Dictator Game (DG), Player A is given an initial endowment (e.g., K100 or 100 Malawian Kwachas), and Player B is given nothing. Both Players know about each other's game-endowments plus the game rules. Player A is given the choice to transfer to B any amount given. Player B gets that

amount given by A and does not make any decision in this game. Basic economic theory assumes that individuals are selfish, and the theoretical prediction for the end result of the DG is that Player A will keep everything, leaving B with nothing. Forsythe et al. (1994) found that with a \$10 endowment for student participants, only about 20% of Player A gave nothing, while the rest gave nontrivial sums to B, with over 20% of A who gave half or more of their initial endowment to B. Studies of the DG in many developed and developing countries among student and non-student populations consistently found that while some Players A transferred nothing, many gave nontrivial sums. The proportion of endowment given by A is interpreted as a measure of pure altruism, desire for fairness, or some other-regarding preferences (as opposed to self-regarding preferences, which would result in zero transfers in the DG).

Brief Description of Triple Dictator Game (e.g., Ashraf et al. 2003): Some experimenters have used the Triple Dictator Game (TDG), where the only difference from the original DG is that whatever amount A decides to give to B, the experimenter will triple that amount before giving it to B. This reduces the “cost” of giving to B and also changes the egalitarian amounts. In the DG, the “fair” amount to give is 50% of initial endowment. In the TDG, the “fair” amount to give is 25%, so that Player A retains K75, and Player B receives K75 (the tripled amount of K25 given by A). The general finding from TDGs (e.g., Ashraf et al. 2003) is that while some Players A give nothing, there is a modal response at 25% and another at 50%, with some players giving 100%. The proportion given is interpreted as altruism, fairness, or other-regarding preferences.

Brief Description of the Trust Game (modified from Berg, Dickhaut, and McCabe 1995): In the Trust Game (TG), Player A is given K100, and B nothing, and both know about each other’s game-endowments plus the game rules. Player A is given the choice to transfer to B any amount given, and any amount A decides to give to B will be tripled by the experimenter. Player B is then given the choice of whether he wishes to transfer any money back to A. For example, if Player A gives B K100, A will have K0 left. B will now have the tripled transfer amount or K300. B then decides to give back K100 to A. B ends up with K200, and A ends with K100. If A gives nothing to B, thinking that B would not give anything back, then A retains her original K100 and B his original K0. If A gives everything to B, incorrectly expecting that B would give some back, but it turns out that B does not give anything back, then A ends up with K0, and B ends with K300.

Simple economic theory predicts that the end result of the TG is that Player A keeps everything, leaving B with nothing. This can be seen as follows. During the second stage of the game, Player B, having received the money from A, will keep everything, rather than return anything to A, because this maximizes B’s own earnings. Player A, however, knowing that B will rationally and selfishly keep all the money and not return anything, will decide not to give B anything in the first stage of the game. Empirical evidence from this game being played by real people, however, shows that, contrary to the complete selfish result, Player A typically gives something to B, and B returns something to A – even among players who are strangers, who do not see each other, and who play this game only once. For instance, in Berg, Dickhaut, and McCabe (1995), the average amount sent by A was slightly more than half of the initial endowment, and the amount sent back by B was slightly less than one-third of the tripled amount sent by A.

The percentage of endowment sent by Player A in the TG has been interpreted as the degree of trust A has for B, and the percentage of the tripled amount that B returns to A reflects

B's trustworthiness. Player A gives money to B because A "trusts" that B will return some of the money, and Player B gives money to A because B wants to be "trustworthy" and fulfill A's trust. However, there are other motivations underlying the amount sent and received in the TG. Player A might want to give something to B not because she "trusts" that B will reciprocate, but because she is altruistic towards B and/or she desires to be fair (i.e., A has "other-regarding" preferences). Player B might want to give something back to A, not because he wants to "reciprocate" A's transfers, but because Player B would have wanted to give A something anyway, because of altruism or fairness perceptions. In order to tease apart altruism/fairness from trust, and altruism/fairness from trustworthiness, Cox (2000) ingeniously combined the TG with TDG and DG. Assuming that the portion of endowment sent during the TDG represents altruism/fairness rather than trust (because there is no chance for B to reciprocate), the net difference between the portion sent in the TDG and that in the TG is a pure measure of the part of A's motivation that is motivated by B's ability to reciprocate. Although A's transfers to B in the TG may be higher than that in the TDG (because in the TG, A not only satisfies her other-regarding preferences but also can get reciprocity from B), this needs not be the case; for instance, A may fear that B's actual reciprocity may turn out to be lower than A's expectations, leading A to send less to prevent disappointment.

To tease apart B's motives for reciprocity from other-regarding preferences, we can compare B's return transfers in the TG with a game known as the reverse Dictator Game (rDG). Suppose that in a Trust Game, A is endowed with K100 and B with K0, and that A decides to give K40 to B, leaving A with K60 and B with K120. In the reverse Dictator Game, instead of having A give money to B, the experimenter endows A with K60 and B with K120 and asks B how much he wants to give to A. Player B may decide to send something to A out of altruism or other-regarding preferences, but not reciprocity, since B's endowment was not from A but from the experimenter. The difference in the portion that B sends back during the TG and the portion that B sends to A during a rDG can be interpreted as transfers motivated by desire to reciprocate on B's part.

Existing Studies and Potential Improvement: Most existing studies that examine motives for transfers using experimental economics methods suffer from various problems: (i) the behavior of student players may not be representative of the general population, (ii) the complete anonymity of the players, while providing a strictly controlled environment, may not be reflective of actual decisions and motivations under more realistic life settings, (iii) the behavior of unrelated participants cannot decipher the motivational differences between transfers within families and transfers between unrelated community members, and (iv) health shocks as potential reasons to motivate and to require transfers cannot be inferred from any of the existing studies because health, morbidity, and mortality were not measured.

Recent evidence from the Trust Games administered in various developing countries using student and non-student participants (Cardenas and Carpenter 2005) showed that offers and return-offers in different countries and populations resembled those found in Berg, Dickhaut, and McCabe (1995), but students generally made lower offers than those made by non-students as Player A, and returned much less as Player B as compared with non-students. Because students are more likely to have higher educational level, are younger, and come from higher socioeconomic background than other segments of the population, the results from students may not be representative of the behavior of the population as a whole. It is true that these developing country studies are not entirely comparable, given various differences in culture, country specific

factors, language, endowment amount in terms of purchasing power parity, information revealed about each player, etc. However, even among Trust Games played in a single country like South Africa, the results revealed that the offers made by high school students, college students, and a representative rural population as Player A averaged 33%, 43%, and 53%, respectively, and that the reciprocating offers as Player B averaged 23%, 27%, 38%, respectively (Burns 2003; Ashraf et al. 2003; Carter and Castillo 2002, respectively). Although not entirely conclusive because the numbers came from three separate studies with slightly different protocols, the same patterns were found in a study with students and coffee-mill CEOs in Costa Rica, where students made offers and return-offers of 40% and 32% while CEOs made higher average offers and return-offers of 59% and 44%, respectively (Fehr and List 2004). Another interesting finding from these Trust Game studies was that various questions used in population based surveys to elicit levels of trust (e.g., the General Social Survey questions on whether one could trust strangers) predicted trustworthiness rather than trust, but more specific statements about prior trusting behavior (e.g., lending money to friends) were better predictors of trust (e.g., Glaeser et al. 2000; Fehr et al. 2002; Ashraf et al. 2003). Moreover, a common finding from trust games was that Player A who expected Player B to reciprocate more also made higher offers, indicating that part of the motivation for “trust” was expectations of reciprocity (e.g., Ashraf 2003).

Most existing experimental economics studies have been conducted anonymously. While these games resulted in interesting findings with respect to trust, altruism, and trustworthiness even in one-shot games for which economic theory predicts zero transfers as the subgame perfect equilibrium, the masking of giver and recipient identity from each other also reduced the real-life element in most daily transactions. Some recent studies have relaxed this strict anonymity condition, including studies of discrimination and racism, whereby pictures or brief face-to-face meetings of participants of different gender and races (e.g., Burns 2004; Eckel and Wilson 2003; Buchan et al. 2003; Croson and Buchan 1999), surnames indicative of various Jewish origins (Fershtman and Kneezey 2001), community context (e.g., Barr 2003; Karlan 2004; Carter and Castillo 2003), or written descriptions of race and income levels (e.g., Haile et al 2004) were given as additional information to the participants. These studies showed that the amount of transfers differed significantly depending on the characteristics of the player-pair. Moreover, the Haile study (2004), with black and white college students in South Africa as participants, also compared transfers amounts with and without player-information and found that while transfers did not differ by race or income in the no-information plays, transfers with information showed that low-income whites and low-income blacks gave smaller transfers to high-income blacks and high-income whites, respectively, suggesting the existence of not pure racism, but race-income interactions. Similar studies were done using “beauty” (as judged by an independent panel of judges) and found mixed results, with some studies that showed that people who were judged more beautiful were not more likely to make higher transfers but were more likely to be given higher transfers from others while some other studies found players had higher expectations from more beautiful people (Eckel and Wilson 2004; Kahn et al. 1971; Mulford et al. 1998; Solnick and Schweitzer 1999; Andreoni and Petrie 2004). These studies with relaxed anonymity were conducted almost exclusively using university students.

We have found only one study that actually incorporated family and nonfamily members in experimental economics games (Peters 2004), a study where adult learners in a university were paired with their teenage children, to play a voluntary contributions mechanism (VCM) or public goods game, whereby the individuals could keep their own initial endowment or contribute a portion of it to a common pool which was doubled and equally divided among the

players. The subgame perfect equilibrium predictions for the VCM is that everyone will want to free-ride on each other's contributions, with zero public goods contribution as the final outcome. Most VCM studies with repeated plays among the same participants have found relatively high contributions in earlier rounds of the games but dropping to low or near-zero contributions as the game repetitions come to an end (e.g., Croson 1996; Andreoni and Croson 1998, 2002; Andreoni and Petrie 2004). The Peters study with family members found that parents and children contributed more when the public money was shared within their own family than when shared with strangers, indicative of more altruism and trust for members of one's own family. This result is important for our study, because it highlights the difference in altruism and trust within a family versus between stranger families, suggesting that the transfers given to compensate for income and health shocks within one's own family may be more important than between friends or neighbors or strangers.

One important characteristic that could impact the motivations to give transfers is health of the giver or the recipient. One study that has examined the impact of health on Trust Game transfers (Fehr et al. 2002) showed that people in better health reciprocated more, but did not behave in a more trusting manner. The game was conducted in anonymity, and players did not know each other's health status, eliminating recipient health as a factor in donor decision-making. Thus, recipient health as motivations for transfers could not be studied.

In Summary: Experimental economics techniques have been successfully applied in student and non-student populations in developing countries, but only a few studies in developing countries revealed player characteristics. Moreover, combining survey data with experimental data was rarely implemented on representative populations, and even among the two exceptions (Fehr et al. 2002 and Carter and Castillo 2003) the survey component was limited and did not seek to study real life transfers behavior in comparison with transfers behavior from the experimental games. Health was not a variable that was examined in detail as an underlying determinant of why transfers might be needed, and stigma related to health conditions have never been tested using experimental economics games. This paper provides initial results to shed some light on these various issues.

METHOD

Participants and Procedures.

The main purpose of the study was to examine the patterns of transfers made between spouses, between family members, between neighbors, and between anonymous strangers, based both on surveys and experimental economics games, and to test out various underlying motives for such transfers, including whether the health and wealth of the giver and the recipient were important in determining such transfers. The participants played the Trust Game and the Triple Dictator Game, followed by a survey.

A sample of 240 individuals from 60 families in 20 villages was recruited from rural Malawi around the Mchinji District. Each family consisted of one adult male between the ages of 18-35, his spouse, and his parents residing in the same village. This is the typical family configuration in this patrilineal part of Malawi. A total of 20 villages were first randomly selected from among 80 villages in this area. Within each selected village, all the families with the typical family configuration (with adult son, his wife, and his parents living in the same

village) were tallied and randomized, and 3 such families from each village were recruited to participate in the study. In order to lessen contamination of game behavior due to communication between game-experienced and game-naïve families, the villages in our sample were purposely selected to be far apart from each other, and all games with families from the same village were conducted on subsequent days.

On each day of the study, 2 families from one village and 1 family from another village were transported by separate vans to our ‘Kayesa Experimental Economics Laboratory’ set up in Mchinji. The participants from 2 families were in one conference room and those from the third family were in another conference room; participants in separate conference rooms could not see each other, but those in the same room could. A total of 8 people were in the large conference room, and 4 people were in the small conference room.

Within each family, the son and his wife drew lots and were randomized into Player A or Player B of the games, and the parents did the same. In the large room, there were 4 A-players and 4 B-players, and the small room had 2 A-players and 2 B-players. The participants played 6 Trust Games followed by 6 Triple Dictator Games. Each Trust Game was played between different player-pairs. Some plays were between members of the same family, some between members of different families from the same room (thus neighbors from the same village), and some between the two rooms (thus between participants from different villages who could not see each other). For plays between members of the same room, the participants knew exactly with whom they were playing the games. For plays between members of different rooms, the participants were told whether they were playing with the father, mother, son, or daughter-in-law in the other room.

Before the start of the games, each participant received 100 Malawian Kwachas (K100 or about US\$ 1) as show-up fee that they were told to keep, and the participants were given detailed verbal instructions with didactic examples using numbers that differed from the numbers in the actual games.

In the Trust Game, Player A was endowed with K100 (with ten K10 bills), Player B was endowed with K0. Player A was given the choice to transfer any amount to Player B, and whatever amount was transferred was tripled before it was given to Player B. Player B was then given the choice to transfer any amount back to Player A. Game endowments and game rules were common knowledge, and there was no deception in any step of the games. Outcomes of the game were not revealed to the participants. The only exception was that Player B knew how much he/she got from Player A during each Trust Game (in order for them to make a decision on the amount to return). The players played 6 rounds of the Trust Game, one round each with a different game-partner, with the sequence of partners randomized by a round-robin method.

After each round of the Trust Game, each Player A was surveyed about the expectations of the amount that the Player B will return, about Player B’s expected wealth relative to the other players and relative to Player A, about Player B’s likelihood of being HIV positive, and about Player B’s general health status. Player B was surveyed about Player A’s expected wealth relative to the other players and relative to Player B, about Player A’s likelihood of being HIV positive, and about Player A’s general health status. In addition, Player B participated in a shortened reverse Dictator Game, whereby Player B was endowed with *hypothetical* amounts of money and was told of the *hypothetical* amounts of money endowed to Player A, and Player B was asked to make transfer decisions in a dictator game construct.

After the 6 Trust Games, the participants played 6 Triple Dictator Games, where Player A was endowed with K100 and Player B with K0, and any amount transferred from A to B was

tripled. Player A remained player A, and B remained player B, but the sequence of partnering was re-randomized in a separate round-robin draw.

To make the game behavior incentive compatible, the players were told that at the end of the day, each player would pick 1 of 6 bottle caps to determine the Trust Game round that will be paid out to that individual, and another bottle cap from a separate set of 6 bottle caps to determine the Triple Dictator Game round that will be paid out. The total earnings for each participant for the day consisted of the K100 show-up fee, the earning from the round picked for the Trust Game, and the earning from the round picked for the Triple Dictator Game. Every participant picked his/her own bottle caps to determine his/her own earnings from the games.

The participants then participated in a post-game survey and a semi-structured interview about various aspects of the game. The participants were paid with real money at the completion of survey, and were transported by our vans back to their respective villages. The participants were admonished not to talk about the games or about the game earnings with other people.

Measures

Demographics. The participants were asked about their demographics (gender, age, education, number of children living, etc.), household assets (radio, bicycle, mattress, paraffin lamp, metal roof, number of cattle, sheep, goat, pig, chickens, etc.), religion, and religiosity.

Prior Transfers Behavior and Expected Obligations within Households and Obligations. For the parents, the survey asked about all their living children, their age, their education, and their general health status. They then ranked the top three children who made transfers to the parents in the last year, the top three children that the parents made transfers to, and obligations about such transfers and expectations of future support in old age. For the son and his wife, the survey asked about the son's siblings, age, education, general health, and the top three ranked siblings in terms of transfers made to the parents, transfers received from the parents, and future obligations in terms of financial support for the parents. (In this paper, we concentrate on the transfers behavior as exhibited in the experimental economics games, rather than prior transfers behavior from the surveys.)

Health Measures. We used the SF12 instrument that consists of 12 questions that assess symptoms, functioning, and quality of life among two dimensions, mental health and physical health (Ware et al., 1996). A mental health and physical health score is obtained by weighting each question according to a formula. This instrument was designed to be easily administered and answered even by individuals that cannot read. Although it was first developed to be used in the United States, its use has been subsequently validated in many developing countries. Examples of questions included in the SF12 are “Do you have any health problems that limit you in carrying out strenuous activities? (For example, pounding maize, working in the field, etc. If so, how much?)” and “How much of the time during the past 4 weeks did you have a lot of energy?”. The SF12 instrument also includes a self-assessed general health question on whether the respondent thought his/her health was Excellent, Very Good, Good, Fair, or Poor. In addition to rating their own health, the participants were asked to rate the health of their paired players in the games, using the same five-category general health question.

HIV and HIV-Stigma. We asked the participants the likelihood of HIV infection (In your opinion, what is the likelihood (chance) that you are infected with HIV/AIDS now? Impossible, Very Unlikely, 50-50, or Very Likely). We also asked the respondents to rate the likelihood of HIV infection among the player that the participant was paired with in the games. We included two questions on HIV-stigma from the DHS about whether the respondent would buy vegetables from a vendor with AIDS and whether a female teacher with HIV but not sick must be disallowed to continue teaching. In addition, we also asked the participants to imagine that they were infected with HIV and we asked about felt-stigma using binary yes-no answers, using questions such as whether some people would act as though it was the participant's fault for having gotten AIDS, whether people would avoid touching the participant, and whether the participant would feel set apart and isolated from the rest of the world.

Trust, Trusting Behavior, and Trustworthiness. We included questions on whether the participants agreed or disagreed to statements such as “You can't trust strangers anymore” and “Do you think most people can be trusted? Yes or No.” In addition, we included questions on the frequency with which the respondents lent personal possessions to friends and strangers.

Data Analysis

In this paper, we concentrate on the transfers and motivations for such transfers from the Trust and the Dictator Games. The main variables of interest are, thus, the amount (or percentage) of endowment transferred from Player A to Player B during the Trust and Dictator Games, as well as the amount (or percentage) of return-transfers from Player B to Player A.

We initially examine the summary statistics of these variables and their potential correlates, then go on to examine bivariate relationships between transfers and various demographic and health variables. We then perform regression analysis to examine the relationship between the amount of the transfers and the giver's and recipient's family-relations, health, wealth, relative health, and relative wealth.

RESULTS

The sampling frame and study design produced a total of 240 participants from 60 families, half of whom were randomly assigned the role of Player A and half the role of Player B. As shown in the Top Panel of Table 1, the mean amount (out of an initial endowment of K100) transferred from Player A to B was about K42 during the Trust Game and K35 during the Triple Dictator Game. Therefore, without reciprocity, Player A was willing to send on average slightly more than a third of the endowment (K35 out of K100), but was willing to send more on average when Player B could reciprocate (K42 out of K100). However, when Player B could reciprocate, Player A on average *expected* B to return about 50% of the amount sent; yet in reality, Player B reciprocated on average only 36% of the amounts given by Player A. Therefore, even though on average Player A was returned slightly more than what he had invested in Player B (33% return would have been a break-even return, but on average the return was 36%), Player A expected far greater percentages from Player B. Also, Player B in a reverse Dictator Game (which did not entail reciprocity from Player A) sent about 31% of the endowed amount, suggesting that the 36% reciprocated in the Trust Game by Player B was not entirely due to motives for reciprocity;

Player B on average was already willing to send 31% of the endowed amount to Player A without Player A having to send money first.

In addition to the amounts transferred, Table 1 also tabulates various Player A and Player B characteristics. More than half of the participants frequently lent personal possessions to others (a proxy for prior trust behavior), and about one-third of the participants felt that other people could be trusted.

The physical and mental health scores from the SF12 health instrument showed that the respondents in Malawi had an average physical health of only 44 and mental health of 47. Given that the mean of the population in other developed countries is around 50 with a standard deviation of 10, the participants in our sample (who are all from rural Malawi) seem to have lower physical health than the average found in other countries. Also, the participants thought that the almost one-third of the other paired player had HIV, while 43% of Players A and 23% of Players B thought they themselves have a 50% or greater chance of being infected with HIV. It is unclear why the players have different views about their own HIV status by Player status, although the player status was assigned randomly.

Over 84% of the participants were Catholics, and about 17% participated in religious activities more than once per week.

//Table 1 about here//

We tested whether demographics, health, wealth, and other expectations variables were related to amounts transferred during the games, and these results are shown in Tables 2a and 2b. We tested for the significance of these relationships by either the Kruskal-Wallis Test for dichotomous variables or by the Spearman Rank Correlation for continuous variables. The Columns show the various amounts transferred during the Triple Dictator Game (Column 1), the Trust Game (Column 2), and the percentage returned in the Trust Game (Column 3).

In terms of amounts given by Player A during the Triple Dictator Game (Column 1), participants who were from the parent generation gave more than participants from the younger generation, suggesting that older generation people are more altruistic (or have more other regarding preferences). In terms of social distance, strangers and neighbors gave less than family members or spouses, which is expected, since altruism level should be higher among kin than among neighbors or strangers. Males gave more than females. Interestingly, participants who were financially worse off in the village gave more during the Triple Dictator Game, suggesting that altruism levels were higher among the poor than among the rich. Those who lent things often gave more, but those who had more theft in community also gave more. One reason could be that the high-theft communities were also the ones that relied on more informal policing (rather than formal law enforcement), which depended on a willingness among villagers to volunteer for such effort. Another reason could be that higher levels of theft also meant that villagers were in greater need to lend and borrow, since their personal possessions might have been more frequently lost due to theft. Nevertheless, this is an interesting finding that deserves further research. People who thought that others could be trusted actually gave less. Finally, participants in good physical health gave more. However, those who thought they had AIDS and thought that people in their community treated others with AIDS poorly (felt-stigma) gave less during the Triple Dictator Game.

The amounts given by Player A during the Trust Games paralleled those from the Triple Dictator Game (Column 2). Generational difference and social distance were not significant

bivariate predictors of transfers made in the Trust Games. Males gave more, as did those more educated. The financially less well-off gave more than those who thought their financial situation was better or much better than average. Again, participants who lent things to others frequently were more likely to make higher transfers. Interestingly, participants residing in areas with higher levels of theft were also more likely to give, perhaps as an indication of the social norm in such areas where helping is also more common. Participants in good physical health gave more as well.

In terms of the percent reciprocated by Player B during the Trust Game (Column 3), participants who were more educated, were less religious, or thought they themselves were wealthier than their peers reciprocated more. Interestingly, participants who scored higher on the mental health portion of the SF12 reciprocated more.

//Tables 2a and 2b about here//

We ran regressions using ordinary least squares to examine whether the various factors (identified in Table 2 that were associated with amounts transferred) would remain significant after having controlled for the factors simultaneously and having controlled for the effect from multiple rounds of the games. Because a small proportion of the dependent variable is censored (since one cannot send less than K0 or more than K100), we also ran two-sided tobit regressions, with results almost identical to those from ordinary least squares. Also, because each individual made multiple decisions in the games and the observations may be correlated, the results presented in Table 3 are from robust ordinary least squares regressions, having adjusted for correlations between observations.

//Table 3a about here//

The robust regression results for the determinants of amount sent in the Triple Dictator Game are presented in Table 3a. Because we are also interested in how transfers behavior differs by social distance between game players (stranger, neighbor, family, versus spouse), we also present separate regression results for these subsamples. For the full sample, the results show that participants from older generations, from the same family or married to each other, were male, financially less well-off, who often lent to others, lived in communities with higher theft, thought people could not be trusted, and in better physical health made more transfers.

Many of the same variables that are significant predictors of Triple Dictator Game transfers are also found to be significant when the sample is divided by social distance. One particularly interesting finding is that Players A who thought they had AIDS and high felt stigma (who felt that others in their community did not or would not treat those with AIDS well) actually gave less to their neighbors in the Triple Dictator Game.

In the traditional experimental economics language, the transfers made during the Triple Dictator Game are often considered to be motivated by pure altruism, other regarding preferences, and other factors beyond the amount that the participants expected to get back. However, in the Trust Game, the amount transferred are considered to be motivated by both the ‘trust’ that some of the investments will be returned (expectations of reciprocity) and by elements of altruism and other regarding preferences independent of having the option for getting reciprocated.

//Table 3b around here//

Table 3b presents the results of the robust regressions on the determinants of transfers sent from Player A to Player B in the Trust Game, first without controlling for reciprocity expectations or altruism (Column (1)), then subsequently controlling for each and then both of these variables. Social distance remains a significant predictor; relative to strangers or neighbors, spouses and family members transferred more, with the latter reaching statistical significance. Physical health, which was a significant predictor of altruism or transfers in Triple Dictator Games, again, was also a significant predictor of Trust Game transfers.

Column (2) of Table 3b adds ‘expectations of reciprocity’ into the regression. Both the R-square and the F-statistics show that this is an important predictor of amounts transferred in the Trust Game. Those who often lend to others and those in better physical health continue to transfer more – on top of the effect from expectations of reciprocity.

Column (3) of Table 3b adds ‘altruism’ or the amount transferred during a Triple Dictator Game. Again, both the R-square and the F-statistics suggest that this is also an important predictor of transfers (compared to Column (1)). Here, physical health became insignificant, suggesting that the effect from physical health to Trust Game transfers was from altruism rather than expectations of reciprocity or other preferences.

Finally, Column (4) presents robust regressions where both ‘expectations of reciprocity’ and ‘altruism’ are controlled. The R-square and the F-statistics suggest that both variables are jointly significant predictors of transfers in Trust Games. When the sender is from the older generation and the recipient is from a younger generation, the amount transferred was still higher, suggesting some kind of social norm regulating transfers from old to young even having controlled for reciprocity and altruism motives. Again, those who lend often to others also transferred more.

We next examined how these determinants of transfers in the Trust Game differed when the games were played between strangers, between neighbors, between family members, or between spouses, and these subsample regression results are presented in Table 3c.

//Table 3c around here//

The first column (‘full sample’) is a repeat of the last column in table 3b, to aid comparison. It is interesting to note that expectations of reciprocity and altruism were both significant predictors for all of the subsample regression. In games played between strangers (who are in different rooms and who do not see each other), expectations of reciprocity and altruism were both significant. Moreover, older people gave more to younger people, as did those who lent frequently to others. Therefore, in addition to reciprocity and altruism motives, those who lent frequently to others seem to possess additional social norm or social preferences that are associated with higher transfers to strangers.

Among neighbors, it is interesting to note that those who are of the catholic religion gave more. This is probably because most of the participants were catholic, and they may have come from the same congregation (although this fact was not measured in our surveys). Amongst neighbors, those who were less well-off financially actually gave more – in addition to the amount given that was motivated by reciprocity and altruism.

Finally, between family members and between spouses, reciprocity and altruism still played prominent roles. However, participants who thought the paired-player (whether family

member or spouse) had HIV and who held stigmatizing attitudes against those with HIV made far less transfers. It is interesting to note that this effect was not found between strangers or neighbors. Therefore, having controlled for reciprocity expectations and altruism, family members and spouses who hold HIV stigmatizing attitudes against their game-partners also were less willing to make transfers to their game-partners; in essence, they ‘trusted’ their own family members or spouses less.

//Table 3d about here//

We next examine the determinants of the percent reciprocated by Player B in the Trust Game, and these results are presented in Table 3d. Because Player B may have wanted to give Player A something anyway without having received anything from Player A first (i.e., Player B has ‘altruism’ towards Player A), these regressions also control for the amount that Player B would send in a reverse Dictator Game.

The most notable finding is that Players B with better mental health actually reciprocated more, both in the full sample regressions and in the subsample regressions for games between families and spouses. This is in contrast to the findings by Kirchsteiger et al. (2000), who found that participants induced to have a sad mood with a movie reciprocated greater amounts in their version of the trust game. It is worth noting, however, that the mental health score in the SF12 is not the same as “mood” but represent a multidimensional construct of mental health; a sad mood induced from a movie also does not equate to lower mental health score on the SF12, which is not influenced by daily fluctuations of mood, as it measures the level of pain, depression, anxiety, and energy and other daily activity levels over the last four weeks.

A very interesting but somewhat puzzling finding is that participants who held stigmatizing attitudes against people with HIV and who suspected that their neighbor or family-member game-partners were HIV infected actually reciprocated more (12.2% and 15.8% more than those without such attitudes, respectively). This could be because they were somewhat surprised by the transfers made from these people that they had stigmatized against, and in return made higher reciprocations. However, the opposite is found between spouses: those who held stigmatizing attitudes against HIV and who thought their spouse had HIV actually reciprocated 27% less – perhaps suggesting that they thought they deserved to receive everything from such a spouse.

Another interesting and perplexing finding is from participants who thought they had HIV and who also had high levels of felt-stigma; they reciprocated far less when they played the games with their neighbors. This could reflect the history of stigmatization from the neighbors, and hence the participants would reciprocate less regardless of the amount transferred (which was controlled for in the regressions). However, between spouses, those who thought they had HIV and had high felt stigma actually reciprocated more to their spouses – perhaps as a sign that they were extra grateful to their own spouse for having given them something during the Trust Game.

DISCUSSION

In this study, we set out to examine whether social distance, family relationship, health, wealth, relative health, and relative wealth status were associated with transfers behavior as exhibited in the Trust and Triple Dictator Games. Our main findings were that people from the same family

gave more during the games. Of particular interest is that physical health was found to be a highly significant predictor of amounts transferred from A to B during both the Trust Game and the Dictator Game, and that mental health was found to be a highly significant predictor of the percentage reciprocated from B to A during the Trust Game. Health of the paired player was mostly not significant in these relationships. Moreover, participants who thought they had AIDS and that others stigmatized them gave less during the Triple Dictator Game. This is likely to be because the participants were used to being mistreated and decided to treat others less well than participants who did not experience such felt-stigma. Interestingly, participants who thought they had AIDS and that others in their community stigmatized them reciprocated more to their spouses but less towards neighbors during the Trust Game. Those who thought their game-partners were HIV infected and who also stigmatized against people with HIV generally made less transfers during the Trust Game. However, they reciprocated more when they received transfers from neighbors or family members, but still less when then received transfers from spouses.

Fehr et al. have found that (general) health was related to amount reciprocated. Our study used a much more robust measure of health with the SF12 instrument, which is known to be less subject to daily mood fluctuations and short-term health fluctuations. Our finding that good physical health increases transfers is a new finding in the experimental economics literature. Why would someone in good health give higher transfers in the Triple Dictator Game, suggesting that they are more altruistic? One potential explanation is that those in good health did not require extra savings to self-insure against costs of illness (medical care cost or living expenses while unable to work) and thus were more generous. Our finding that good mental health was conducive to higher levels of reciprocation is also new. Moreover, our findings of the complex relationship between HIV and stigma and transfers between different people of varying social distance are also interesting. All of these issues and findings deserve further research on a larger sample and in different locations.

What is the policy implication of this? To the extent that social fabric and social cohesion may be enhanced by transfers given, whether motivated by trust or altruism or reciprocation, and that health seems to be an important variable in this relationship, policy could be implemented to enhance the health of the population, which not only will result in better health – both physical and mental – but perhaps also better social cohesion and higher levels of social capital.

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Table 1: Summary Statistics of Transfers in Trust and Dictator Games, and Characteristics of Players A and B

Variables	Mean	SD	Minimum	Maximum
Game Behaviors:				
Amount A Sent to B in Triple Dictator Game (out of 100 kwachas)	34.82	24.27	0	100
Amount A Sent to B in Trust Game (out of 100 kwachas)	42.24	25.84	0	100
Amount A Expects B to Return	58.68	52.01	0	300
Amount A Expects B to Return (%)	0.50	0.30	0	1
Amount B Returned in Trust Game	46.49	39.19	0	270
Amount B Returned in Trust Game (%)	0.36	0.20	0	1
Amount B willing to send in Reverse Dictator Game	42.47	35.79	0	200
Amount B willing to send in Reverse Dictator Game (%)	0.31	0.18	0	1
Player A Characteristics:				
Age (years)	38.10	16.44	18	77
Male (%)	0.47	0.50	0	1
Education (years)	4.80	3.63	0	12
Catholic religion (yes, no)	0.84	0.37	0	1
Religious (attends services > once per week)	0.18	0.38	0	1
Asset index	0.94	0.69	0	3
My wealth relative to others in community (1-5; 5=poor)	3.59	0.91	2	5
Frequency in lending stuff to others (1-5; 5=nevers)	2.40	1.14	1	5
Theft occurrences in community in last 30 days (days)	2.44	0.94	1	4
People can be trusted in general (yes, no)	0.34	0.47	0	1
The paired player's wealth relative to my wealth (1-5; 5=poor)	2.85	1.03	1	5
The paired player's health (1-5; 5=poor)	2.03	1.12	1	5
Physical SF12 Score	44.54	8.95	19	64
Mental SF12 Score	46.75	11.32	21	71
I think the other player has a 50% or greater chance of having AIDS	0.34	0.47	0	1
I think I have a 50% or greater chance of having AIDS	0.43	0.49	0	1
Stigmatization: I stigmatize against others with AIDS	0.16	0.37	0	1
Felt Stigma: I feel others in community treat those with AIDS poorly	0.52	0.50	0	1
Player B Characteristics:				
Age (years)	38.90	16.81	18	89
Male (%)	0.53	0.50	0	1
Education (years)	5.12	3.81	0	16
Catholic religion (yes, no)	0.88	0.32	0	1
Religious (attends services > once per week)	0.16	0.37	0	1
Asset index	0.95	0.73	0	3
My wealth relative to others in community (1-5; 5=poor)	3.69	0.96	2	5
Frequency in lending stuff to others (1-5; 5=nevers)	2.53	1.31	1	5
Theft occurrences in community in last 30 days (days)	2.63	1.07	1	4
People can be trusted in general (yes, no)	0.22	0.41	0	1
The paired player's wealth relative to my wealth (1-5; 5=poor)	2.78	1.05	1	5
The paired player's health (1-5; 5=poor)	2.04	1.09	1	5
Physical SF12 Score	43.38	8.86	22	63
Mental SF12 Score	47.35	11.22	19	65
I think the other player has a 50% or greater chance of having AIDS	0.26	0.44	0	1
I think I have a 50% or greater chance of having AIDS	0.23	0.42	0	1
Stigmatization: I stigmatize against others with AIDS	0.15	0.36	0	1
Felt Stigma: I feel others in community treat those with AIDS poorly	0.60	0.49	0	1

Table 2a: Mean Amounts or Percent Transferred and Tests of Significance

	(1)	(2)	(3)
	Triple Dictator A to B	Trust Game A to B	Trust Game B to A Percent
Age (correlation)	0.14 ***	0.06	-0.02
Generational Relationship between A & B			
A = Old; B = Old	39.50 ***	42.56	0.34
A = Old; B = Young	36.61 *	44.67	0.39
A = Young; B = Old	30.44	39.06	0.35
A = Young; B = Young	32.72	42.67	0.37
Social Distance between A & B			
Strangers	32.63 ***	40.88	0.35
Neighbours	34.94 *	40.69	0.36
Family but not spouse	35.42	45.08	0.38
Spouse	39.92	45.08	0.38
Gender of Player A			
Male	39.40 ***	45.98 ***	0.36
Female	30.81	38.96	0.36
Gender of Player B			
Male	34.06	43.26	0.37
Female	35.68	41.07	0.36
Education (correlation)	0.02	0.09 **	0.12 ***
Catholic			
Yes	34.46	42.64	0.36
No	36.75	40.09	0.35
Religiosity			
Yes	35.08	41.03	0.33 **
No	34.76	42.49	0.37
Asset Index (correlation)	0.10 ***	0.03	0.05

Mean by Dichotomous Variables; Spearman Rank Correlation for Continuous Variables

***p<.01, **p<.05, *p<.10; by Kruskal-Wallis Test for Dichotomous Variables and by Spearman Rank Correlation for Continuous Variables
(reference category for Kruskal-Wallis test is the last category in the variable)

Table 2b: Mean Amounts or Percent Transferred and Tests of Significance

	(1)	(2)	(3)
	Triple Dictator A to B	Trust Game A to B	Trust Game B to A Percent
Player wealth relative to others in village			
Much worse off than other households	29.64	37.14	0.34 ***
Worse off than other households	36.20 ***	43.33 **	0.37 *
Among the average of other households	41.67 ***	46.59 **	0.33 **
Much better off or better off than other households	27.22	37.94	0.40
Frequency of lending personal possessions to others			
Very often	40.81 ***	46.86 ***	0.37
Often	35.71 **	46.00 ***	0.30
Sometimes	35.00 **	40.30 **	0.34
Rarely	20.33	41.67 *	0.35
Never	13.33	26.67	0.29
Number of thefts in village in last 30 days (correlation)	0.16 **	0.13 *	-0.03
People can be trusted in general			
Yes	29.55 ***	40.57	0.38 *
No	37.55	43.10	0.36
Compared to yourself, how well off is the other player?			
Much wealthier than me	33.52	39.63	0.41
Wealthier than me	32.85	40.54	0.35
In similar financial situation as me	36.86	44.16	0.35
Poorer than me	35.31	42.78	0.37
Much poorer than me	34.87	42.82	0.37
In general, how would you say is the health of the other player?			
Excellent	34.97	43.39	0.41
Very good	33.90	41.08	0.35
Good	36.55	42.41	0.35
Fair	32.55	41.70	0.37
Poor	37.06	40.29	0.37
Physical Health (PCS12) (correlation)	0.08 **	0.10 ***	0.05
Mental Health (MCS12) (correlation)	-0.03	-0.05	0.16 ***
I have 50% or greater chance of being HIV infected			
Yes	33.693	42.418	0.348
No	35.652	42.101	0.366
The other player has 50% or greater chance of being HIV infected			
Yes	34.553	41.382	0.354
No	34.958	42.679	0.365
The other player has AIDS & I stigmatize against people with AIDS			
Yes	37.750	42.250	0.329
No	34.647	42.235	0.363
I have AIDS and others stigmatize against people with AIDS			
Yes	30.690 **	41.897	0.370
No	36.136	42.344	0.361

Mean by Dichotomous Variables; Spearman Rank Correlation for Continuous Variables

***p<.01, **p<.05, *p<.10; by Kruskal-Wallis Test for Dichotomous Variables and by Spearman Rank Correlation for Continuous Variables (reference category for Kruskal-Wallis test is the last category in the variable)

Table 3a: Regression of the Amounts Sent in Triple Dictator Games

	Full Sample		Strangers		Neighbours		Family		Spouse	
	beta	<i>S.E.</i>	beta	<i>S.E.</i>	beta	<i>S.E.</i>	beta	<i>S.E.</i>	beta	<i>S.E.</i>
Intercept	-1.520	<i>14.83</i>	-6.907	<i>17.93</i>	-9.347	<i>25.08</i>	-28.117	<i>34.15</i>	12.664	<i>23.54</i>
A & B's generation (reference: A is young; B is young)										
A is old; B is old	11.040	<i>3.88 ***</i>	13.413	<i>5.03 ***</i>	6.488	<i>5.24</i>			10.622	<i>5.75 *</i>
A is old; B is young	9.441	<i>4.26 **</i>	13.499	<i>5.45 **</i>	3.982	<i>5.28</i>	8.786	<i>5.96</i>		
A is young; B is old	-1.582	<i>1.79</i>	-4.030	<i>2.79</i>	3.982	<i>3.05</i>				
A & B's social distance (reference: A & B are strangers)										
A & B are neighbors	1.799	<i>2.07</i>								
A & B are families	3.339	<i>1.90 *</i>								
A & B are spouses	6.163	<i>2.26 ***</i>								
A is male (reference: A is female)	7.387	<i>3.78 *</i>	5.343	<i>4.66</i>	16.128	<i>5.34 ***</i>	5.499	<i>5.28</i>	8.727	<i>5.85</i>
B is male (reference: B is female)	-1.174	<i>1.62</i>	-5.260	<i>2.57 **</i>	6.344	<i>3.57 *</i>	-0.192	<i>4.86</i>		
A's education	0.905	<i>0.65</i>	0.964	<i>0.71</i>	0.332	<i>0.84</i>	0.995	<i>0.88</i>	1.138	<i>0.75</i>
A is catholic (reference: B is not catholic)	-3.805	<i>4.79</i>	-3.335	<i>5.62</i>	-2.246	<i>7.51</i>	-5.196	<i>6.70</i>	1.098	<i>6.55</i>
A is religious (reference: B is not religious)	2.882	<i>3.68</i>	6.238	<i>4.25</i>	5.050	<i>6.86</i>	-5.015	<i>5.53</i>	-0.090	<i>6.57</i>
A's asset index	-0.596	<i>2.92</i>	-0.511	<i>3.43</i>	1.834	<i>4.80</i>	6.670	<i>4.43</i>	-6.325	<i>4.22</i>
A's relative financial wealth in village (reference: A is much better off or better off)										
A is among the average	12.923	<i>5.76 **</i>	12.390	<i>6.62 *</i>	9.430	<i>9.08</i>	20.709	<i>8.17 **</i>	13.777	<i>7.42 *</i>
A is worse off	10.386	<i>5.21 **</i>	10.041	<i>5.84 *</i>	10.968	<i>8.44</i>	24.200	<i>8.43 ***</i>	9.043	<i>6.50</i>
A is much worse off	4.389	<i>9.13</i>	2.158	<i>8.80</i>	9.826	<i>13.74</i>	15.298	<i>12.30</i>	-2.424	<i>8.92</i>
frequency of lending possessions (reference: A never lends)										
A very often lends	14.771	<i>4.87 ***</i>	22.336	<i>5.41 ***</i>	23.456	<i>11.08 **</i>	7.997	<i>13.10</i>	-6.222	<i>11.86</i>
A often lends	18.039	<i>6.16 ***</i>	27.203	<i>6.18 ***</i>	13.060	<i>12.98</i>	22.471	<i>13.02 *</i>	-0.072	<i>12.94</i>
A sometimes lends	13.480	<i>5.07 ***</i>	21.219	<i>5.79 ***</i>	14.914	<i>10.97</i>	17.692	<i>12.62</i>	-5.430	<i>11.40</i>
A rarely lends	4.897	<i>6.05</i>	13.362	<i>6.85 *</i>	-2.091	<i>12.29</i>	14.371	<i>13.70</i>	-20.151	<i>10.90 *</i>
number of thefts last month	3.205	<i>1.72 *</i>	2.660	<i>1.87</i>	-0.469	<i>2.80</i>	4.336	<i>2.50 *</i>	8.456	<i>2.65 ***</i>
people can be trusted (reference: can't be trusted)	-6.523	<i>3.42 *</i>	-3.105	<i>3.95</i>	-3.968	<i>5.60</i>	-14.499	<i>4.89 ***</i>	-9.859	<i>5.05 *</i>
B's wealth relative to A's (reference: B is much poorer than A)										
B is much wealthier than A	0.064	<i>4.10</i>	2.280	<i>5.97</i>	0.033	<i>8.97</i>	-8.989	<i>14.32</i>	12.593	<i>10.96</i>
B is wealthier than A	0.061	<i>3.44</i>	2.688	<i>5.42</i>	-3.815	<i>8.29</i>	-1.237	<i>9.81</i>	14.970	<i>10.95</i>
B is same wealth as A	-0.117	<i>3.05</i>	0.932	<i>5.56</i>	-6.588	<i>7.79</i>	8.722	<i>11.19</i>	19.135	<i>10.58 *</i>
B is poorer than A	-1.108	<i>3.48</i>	1.102	<i>5.62</i>	-10.387	<i>8.61</i>	-2.036	<i>10.48</i>	10.525	<i>9.90</i>
B's health (reference: poor health)										
excellent	-6.465	<i>4.66</i>	-3.371	<i>8.33</i>	-0.750	<i>9.82</i>	1.438	<i>16.17</i>	-22.327	<i>10.23 **</i>
very good	-6.618	<i>4.69</i>	-4.314	<i>8.08</i>	-4.541	<i>9.61</i>	9.673	<i>16.13</i>	-22.144	<i>10.51 **</i>
good	-3.526	<i>4.35</i>	-0.386	<i>8.50</i>	3.991	<i>11.64</i>	2.816	<i>16.79</i>	-24.931	<i>11.24 **</i>
fair	-6.872	<i>5.26</i>	-3.879	<i>10.38</i>	-8.079	<i>11.18</i>	6.502	<i>17.37</i>	-29.203	<i>14.92 *</i>
A's physical health score	0.315	<i>0.18 *</i>	0.238	<i>0.21</i>	0.681	<i>0.28 **</i>	-0.039	<i>0.27</i>	0.372	<i>0.27</i>
A's mental health score	-0.195	<i>0.14</i>	-0.210	<i>0.16</i>	-0.269	<i>0.22</i>	0.076	<i>0.23</i>	-0.191	<i>0.19</i>
B has AIDS & A stigmatizes	3.963	<i>5.06</i>	5.815	<i>6.48</i>	-5.979	<i>7.47</i>	1.846	<i>9.75</i>	22.832	<i>11.60 *</i>
A has AIDS & A has felt stigma	-3.181	<i>3.49</i>	-3.514	<i>4.00</i>	-17.371	<i>6.94 **</i>	6.442	<i>4.80</i>	1.026	<i>5.24</i>
round dummies (reference: round 1)										
round 2	-0.159	<i>1.99</i>	-1.584	<i>3.02</i>	-4.500	<i>5.47</i>	-6.397	<i>6.85</i>	-0.007	<i>8.30</i>
round 3	-0.646	<i>1.99</i>	-3.209	<i>3.89</i>	0.053	<i>4.62</i>	3.994	<i>10.16</i>	-7.629	<i>7.94</i>
round 4	3.249	<i>2.16</i>	1.228	<i>3.93</i>	5.393	<i>5.88</i>	19.367	<i>9.39 **</i>	-6.008	<i>7.71</i>
round 5	-0.311	<i>2.18</i>	-1.159	<i>3.50</i>	-3.086	<i>4.77</i>	-0.468	<i>7.80</i>	-10.168	<i>11.44</i>
round 6	-0.613	<i>2.37</i>	-4.717	<i>3.79</i>	2.645	<i>5.13</i>	-0.749	<i>8.11</i>	-0.545	<i>7.55</i>
R-square	0.21		0.21		0.39		0.36		0.41	
Adjusted R-square	0.17		0.11		0.22		0.11		0.19	
F Statistics	3.44		2.92		4.14		2.34		2.95	
df	38		35		35		33		32	
p	<0.0001		<0.0001		<0.0001		0.0004		<0.0001	
number of observations	720		320		160		120		120	
number of clusters	120		120		80		120		120	

*p<0.01; **p<0.05; *p<0.10; robust standard errors in italics

Table 3b: Regression of the Amounts Sent from A to B in Trust Games, Controlling for Expected Return & Pure Altruism

	(1)		(2)		(3)		(4)	
	beta	S.E.	beta	S.E.	beta	S.E.	beta	S.E.
Intercept	3.187	17.69	-20.687	13.81	3.544	15.47	-19.104	11.26 *
amount A expects to get back from B			0.293	0.02 ***			0.277	0.02 ***
amount sent from A to B in triple dictator game					0.393	0.07 ***	0.322	0.06 ***
A & B's generation								
(reference: A is young; B is young)								
A is old; B is old	5.322	4.14	6.822	3.15 **	0.978	3.66	3.188	2.72
A is old; B is young	7.247	4.07 *	9.524	3.19 ***	3.513	3.40	6.346	2.62 **
A is young; B is old	-3.085	2.29	-1.895	1.65	-2.459	2.48	-1.447	1.85
A & B's social distance								
(reference: A & B are strangers)								
A & B are neighbors	0.415	2.26	0.269	1.96	-0.352	2.11	-0.350	1.86
A & B are families	4.473	2.20 **	1.514	1.79	3.130	2.26	0.575	1.87
A & B are spouses	3.576	2.55	4.245	1.95 **	1.074	2.64	2.162	1.97
A is male (reference: A is female)	4.108	3.82	5.259	3.11 *	1.200	3.13	2.818	2.43
B is male (reference: B is female)	2.301	1.61	0.794	1.31	2.772	1.65 *	1.260	1.34
A's education	1.045	0.62 *	0.747	0.41 *	0.688	0.46	0.471	0.29
A is catholic (reference: B is not catholic)	2.487	3.99	1.040	3.02	3.982	3.43	2.342	2.47
A is religious (reference: B is not religious)	1.093	4.16	1.922	3.61	-0.057	3.35	0.937	2.91
A's asset index	-3.889	3.50	-1.972	2.72	-3.654	2.84	-1.884	2.18
A's relative financial wealth in village								
(reference: A is much better off or better off)								
A is among the average	8.761	6.88	9.651	5.05 *	3.683	5.43	5.448	3.98
A is worse off	6.219	5.14	5.965	4.07	2.140	4.01	2.642	3.23
A is much worse off	2.211	9.17	6.557	7.01	0.501	6.37	4.923	5.04
frequency of lending possessions								
(reference: A never lends)								
A very often lends	13.652	10.38	19.674	5.47 ***	7.852	9.64	14.603	4.84 ***
A often lends	13.871	11.05	21.921	6.83 ***	6.794	9.94	15.696	5.85 ***
A sometimes lends	6.409	10.52	15.298	5.57 ***	1.124	9.74	10.493	4.96 **
A rarely lends	4.661	10.70	9.254	5.93	2.741	9.77	7.435	5.24
number of thefts last month	2.754	1.75	1.108	1.39	1.495	1.39	0.168	1.06
people can be trusted (reference: can't be trusted)	-3.316	3.55	-0.321	2.61	-0.748	2.89	1.618	2.04
B's wealth relative to A's								
(reference: B is much poorer than A)								
B is much wealthier than A	0.244	4.96	-0.249	4.19	-0.051	4.41	-0.464	3.75
B is wealthier than A	1.414	4.23	1.625	3.34	1.244	4.04	1.474	3.14
B is same wealth as A	2.166	3.67	-1.054	2.98	2.107	3.43	-0.928	2.78
B is poorer than A	1.181	3.63	2.857	2.77	1.532	3.47	3.054	2.68
B's health								
(reference: poor health)								
excellent	-0.207	6.80	-2.227	5.79	2.363	6.24	-0.016	5.29
very good	-2.731	6.67	-2.548	5.71	-0.182	6.09	-0.472	5.17
good	-0.953	6.79	0.400	5.68	0.402	6.32	1.435	5.33
fair	-0.404	6.50	-1.640	5.39	2.363	5.66	0.691	4.67
A's physical health score	0.339	0.20 *	0.292	0.15 *	0.215	0.17	0.192	0.12
A's mental health score	-0.170	0.14	-0.042	0.13	-0.094	0.11	0.013	0.10
B has AIDS & A stigmatizes	2.797	5.95	-4.545	4.54	1.172	5.10	-5.478	4.07
A has AIDS & A has felt stigma	0.437	4.35	-0.639	2.96	1.692	3.66	0.446	2.38
round dummies (reference: round 1)								
round 2	3.892	2.37	3.057	2.12	4.518	2.57 *	3.614	2.30
round 3	0.880	2.87	1.438	2.39	1.120	3.06	1.605	2.50
round 4	-1.290	2.89	0.081	2.31	-0.999	3.06	0.245	2.41
round 5	0.205	3.05	0.350	2.25	0.200	3.15	0.338	2.34
round 6	-2.713	2.95	-1.404	2.39	-1.808	3.05	-0.734	2.42
R-square	0.13		0.44		0.23		0.51	
Adjusted R-square	0.08		0.41		0.19		0.48	
F Statistics	2.71		16.32		5.32		23.40	
df	38		39		39		40	
p	<0.0001		<0.0001		<0.0001		<0.0001	
number of observations	720		720		720		720	
number of clusters	120		120		120		120	

*p<0.01; **p<0.05; *p<0.10; robust standard errors in italics

Table 3c: Regression of the Amounts Sent from A to B in Trust Games

	Full Sample		Strangers		Neighbours		Family		Spouse	
	beta	S.E.	beta	S.E.	beta	S.E.	beta	S.E.	beta	S.E.
Intercept	-19.104	11.26 *	-9.135	13.79	-45.625	19.28 **	-28.291	19.66	-24.273	24.86
amount A expects to get back from B	0.277	0.02 ***	0.270	0.02 ***	0.282	0.04 ***	0.263	0.03 ***	0.300	0.04 ***
amount sent from A to B in triple dictator game	0.322	0.06 ***	0.237	0.08 ***	0.513	0.09 ***	0.396	0.08 ***	0.375	0.11 ***
A & B's generation (reference: A is young; B is young)										
A is old; B is old	3.188	2.72	4.673	4.30	2.542	4.69			1.926	4.79
A is old; B is young	6.346	2.62 **	6.464	3.82 *	6.223	4.53	8.528	5.02 *		
A is young; B is old	-1.447	1.85	-2.362	2.87	0.483	3.41				
A & B's social distance (reference: A & B are strangers)										
A & B are neighbors	-0.350	1.86								
A & B are families	0.575	1.87								
A & B are spouses	2.162	1.97								
A is male (reference: A is female)	2.818	2.43	4.448	3.08	-0.659	4.54	1.948	4.63	3.574	4.83
B is male (reference: B is female)	1.260	1.34	0.979	2.33	0.463	2.78	4.918	3.47		
A's education	0.471	0.29	0.620	0.41	0.546	0.49	-0.014	0.66	0.478	0.65
A is catholic (reference: B is not catholic)	2.342	2.47	-5.475	3.74	11.322	4.48 **	4.169	5.06	8.196	5.81
A is religious (reference: B is not religious)	0.937	2.91	-1.438	3.45	2.671	5.10	-0.073	4.76	2.490	4.76
A's asset index	-1.884	2.18	-2.292	2.51	-1.484	3.15	-7.836	4.22 *	3.018	4.63
A's relative financial wealth in village (reference: A is much better off or better off)										
A is among the average	5.448	3.98	4.814	4.28	13.036	5.81 **	5.629	7.76	1.874	7.84
A is worse off	2.642	3.23	4.005	3.79	8.727	5.15 *	-5.563	5.91	2.216	7.88
A is much worse off	4.923	5.04	0.070	5.40	18.215	7.85 **	2.032	7.86	10.108	9.76
frequency of lending possessions (reference: A never lends)										
A very often lends	14.603	4.84 ***	11.484	5.61 **	8.879	9.75	23.543	7.68 ***	23.664	14.62
A often lends	15.696	5.85 ***	11.340	6.13 *	14.259	11.93	26.284	7.99 ***	25.211	15.48
A sometimes lends	10.493	4.96 **	8.946	5.15 *	6.653	10.21	17.473	6.88 **	17.907	14.77
A rarely lends	7.435	5.24	4.636	5.60	10.544	11.05	12.836	7.84	20.251	15.85
number of thefts last month	0.168	1.06	0.096	1.37	1.921	2.12	-1.294	2.09	-1.730	2.76
people can be trusted (reference: can't be trusted)	1.618	2.04	2.454	2.61	-4.024	4.00	2.923	3.69	8.639	5.09 *
B's wealth relative to A's (reference: B is much poorer than A)										
B is much wealthier than A	-0.464	3.75	1.632	5.20	6.235	7.57	-2.534	8.26	-24.954	14.30 *
B is wealthier than A	1.474	3.14	5.781	5.19	0.347	5.16	-7.617	6.48	3.728	8.52
B is same wealth as A	-0.928	2.78	5.356	5.05	-1.123	4.55	-13.199	6.59 **	-0.602	8.72
B is poorer than A	3.054	2.68	7.127	4.98	6.165	5.52	-5.555	6.81	2.151	9.08
B's health (reference: poor health)										
excellent	-0.016	5.29	-2.195	7.35	-5.145	8.11	13.324	9.92	-0.257	11.05
very good	-0.472	5.17	-2.541	7.03	-6.363	8.44	11.551	7.98	-1.658	11.28
good	1.435	5.33	-0.281	7.66	-6.313	8.68	11.887	8.13	11.223	13.77
fair	0.691	4.67	-4.674	7.01	-12.818	8.75	20.673	11.88 *	17.111	17.85
A's physical health score	0.192	0.12	0.171	0.14	0.264	0.23	0.388	0.23 *	-0.087	0.23
A's mental health score	0.013	0.10	0.016	0.11	0.135	0.16	0.055	0.17	0.032	0.21
B has AIDS & A stigmatizes	-5.478	4.07	-6.193	5.07	7.679	8.24	-15.211	7.60 **	-16.396	9.32 *
A has AIDS & A has felt stigma	0.446	2.38	-2.135	2.72	6.225	6.97	6.414	4.51	0.968	4.92
round dummies (reference: round 1)										
round 2	3.614	2.30	4.815	3.94	3.580	5.40	2.007	7.34	-0.289	8.60
round 3	1.605	2.50	5.104	4.42	1.080	4.61	-5.289	7.20	1.346	7.30
round 4	0.245	2.41	1.930	3.78	2.395	4.90	-5.898	7.28	8.403	10.46
round 5	0.338	2.34	-0.385	3.31	5.286	4.14	-1.932	7.53	-2.435	8.87
round 6	-0.734	2.42	0.840	3.73	-2.676	4.56	-4.190	6.48	-1.644	8.80
R-square	0.51		0.52		0.65		0.62		0.57	
Adjusted R-square	0.48		0.46		0.54		0.46		0.40	
F Statistics	23.40		13.67		15.38		10.17		5.21	
df	40		37		37		35		34	
p	<0.0001		<0.0001		<0.0001		<0.0001		<0.0001	
number of observations	720		320		160		120		120	
number of clusters	120		120		80		120		120	

*p<0.01; **p<0.05; *p<0.10; robust standard errors in italics

Table 3d: Regression of the Percent Returned from B to A in Trust Game

	Full Sample		Strangers		Neighbours		Family		Spouse	
	beta	<i>S.E.</i>	beta	<i>S.E.</i>	beta	<i>S.E.</i>	beta	<i>S.E.</i>	beta	<i>S.E.</i>
Intercept	0.293	<i>0.14</i> **	0.386	<i>0.20</i> *	0.037	<i>0.18</i>	0.332	<i>0.22</i>	0.476	<i>0.25</i> *
triple amount sent by A	0.000	<i>0.00</i> ***	0.000	<i>0.00</i> ***	0.000	<i>0.00</i>	-0.001	<i>0.00</i> **	0.000	<i>0.00</i>
reverse dictator game amount	0.367	<i>0.06</i> ***	0.196	<i>0.09</i> **	0.563	<i>0.08</i> ***	0.492	<i>0.10</i> ***	0.524	<i>0.11</i> ***
A & B's generation (reference: A is young; B is young)										
A is old; B is old	-0.017	<i>0.03</i>	-0.031	<i>0.04</i>	0.035	<i>0.05</i>			-0.053	<i>0.05</i>
A is old; B is young	0.011	<i>0.02</i>	0.013	<i>0.03</i>	0.050	<i>0.04</i>	0.005	<i>0.05</i>		
A is young; B is old	-0.015	<i>0.03</i>	-0.043	<i>0.05</i>	0.034	<i>0.05</i>				
A & B's social distance (reference: A & B are strangers)										
A & B are neighbors	-0.002	<i>0.02</i>								
A & B are families	0.025	<i>0.02</i>								
A & B are spouses	0.035	<i>0.02</i> *								
A is male (reference: A is female)	0.010	<i>0.02</i>	0.008	<i>0.03</i>	0.008	<i>0.02</i>	0.052	<i>0.04</i>	0.031	<i>0.05</i>
B is male (reference: B is female)	0.000	<i>0.02</i>	0.025	<i>0.03</i>	-0.001	<i>0.03</i>	0.023	<i>0.04</i>		
B's education	0.005	<i>0.00</i>	0.000	<i>0.01</i>	0.013	<i>0.00</i> ***	0.013	<i>0.01</i> **	-0.006	<i>0.01</i>
B is catholic (reference: B is not catholic)	0.016	<i>0.03</i>	0.019	<i>0.04</i>	0.049	<i>0.05</i>	0.056	<i>0.05</i>	0.012	<i>0.07</i>
B is religious (reference: B is not religious)	-0.003	<i>0.04</i>	-0.014	<i>0.04</i>	0.023	<i>0.04</i>	0.079	<i>0.06</i>	0.009	<i>0.08</i>
B's asset index	-0.004	<i>0.02</i>	0.026	<i>0.03</i>	-0.032	<i>0.02</i>	-0.036	<i>0.03</i>	-0.003	<i>0.03</i>
B's relative financial wealth in village (reference: B is much better off or better off)										
B is among the average	-0.080	<i>0.04</i> *	-0.116	<i>0.05</i> **	-0.029	<i>0.05</i>	-0.003	<i>0.08</i>	-0.062	<i>0.08</i>
B is worse off	-0.051	<i>0.04</i>	-0.067	<i>0.05</i>	0.009	<i>0.04</i>	-0.064	<i>0.06</i>	-0.020	<i>0.06</i>
B is much worse off	-0.040	<i>0.05</i>	-0.055	<i>0.06</i>	0.035	<i>0.05</i>	0.021	<i>0.07</i>	0.016	<i>0.08</i>
frequency of lending possessions (reference: B never lends)										
B very often lends	-0.041	<i>0.06</i>	-0.026	<i>0.06</i>	-0.058	<i>0.07</i>	-0.037	<i>0.08</i>	-0.082	<i>0.12</i>
B often lends	-0.003	<i>0.06</i>	-0.004	<i>0.06</i>	0.013	<i>0.06</i>	0.071	<i>0.09</i>	-0.123	<i>0.11</i>
B sometimes lends	0.011	<i>0.06</i>	-0.003	<i>0.07</i>	0.024	<i>0.07</i>	0.024	<i>0.10</i>	-0.024	<i>0.12</i>
B rarely lends	-0.039	<i>0.06</i>	-0.029	<i>0.06</i>	-0.077	<i>0.06</i>	-0.002	<i>0.09</i>	-0.114	<i>0.11</i>
number of thefts last month	-0.004	<i>0.01</i>	-0.008	<i>0.01</i>	0.011	<i>0.01</i>	-0.003	<i>0.02</i>	-0.010	<i>0.02</i>
people can be trusted (reference: can't be trusted)	0.007	<i>0.03</i>	0.016	<i>0.04</i>	0.002	<i>0.05</i>	-0.042	<i>0.04</i>	0.023	<i>0.05</i>
A's wealth relative to B's (reference: A is much poorer than B)										
A is much wealthier than B	0.026	<i>0.04</i>	-0.002	<i>0.07</i>	0.140	<i>0.09</i>	0.061	<i>0.12</i>	-0.026	<i>0.13</i>
A is wealthier than B	-0.024	<i>0.04</i>	-0.031	<i>0.06</i>	0.072	<i>0.08</i>	-0.104	<i>0.07</i>	-0.066	<i>0.07</i>
A is same wealth as B	-0.040	<i>0.04</i>	-0.068	<i>0.07</i>	0.115	<i>0.08</i>	-0.161	<i>0.08</i> *	-0.087	<i>0.07</i>
A is poorer than B	-0.025	<i>0.04</i>	-0.028	<i>0.06</i>	0.083	<i>0.08</i>	-0.166	<i>0.07</i> **	-0.100	<i>0.09</i>
A's health (reference: poor health)										
excellent	0.002	<i>0.04</i>	0.029	<i>0.05</i>	-0.085	<i>0.06</i>	-0.148	<i>0.10</i>	0.060	<i>0.06</i>
very good	-0.001	<i>0.04</i>	0.044	<i>0.05</i>	-0.097	<i>0.06</i>	-0.114	<i>0.10</i>	0.043	<i>0.07</i>
good	-0.003	<i>0.04</i>	0.041	<i>0.05</i>	-0.134	<i>0.06</i> **	-0.113	<i>0.11</i>	-0.030	<i>0.06</i>
fair	0.058	<i>0.05</i>	0.169	<i>0.08</i> **	-0.157	<i>0.07</i> **	-0.046	<i>0.11</i>	-0.028	<i>0.10</i>
B's physical health score	0.000	<i>0.00</i>	0.000	<i>0.00</i>	0.001	<i>0.00</i>	-0.001	<i>0.00</i>	-0.003	<i>0.00</i>
B's mental health score	0.002	<i>0.00</i> *	0.001	<i>0.00</i>	0.000	<i>0.00</i>	0.004	<i>0.00</i> **	0.004	<i>0.00</i> **
A has AIDS & B stigmatizes	0.033	<i>0.04</i>	0.034	<i>0.05</i>	0.122	<i>0.07</i> *	0.158	<i>0.08</i> *	-0.274	<i>0.11</i> **
B has AIDS & B has felt stigma	0.020	<i>0.04</i>	0.038	<i>0.05</i>	-0.087	<i>0.04</i> **	-0.012	<i>0.05</i>	0.181	<i>0.06</i> ***
round dummies (reference: round 1)										
round 2	-0.033	<i>0.02</i>	-0.067	<i>0.03</i> **	0.006	<i>0.04</i>	-0.001	<i>0.08</i>	-0.087	<i>0.08</i>
round 3	-0.040	<i>0.02</i>	-0.046	<i>0.04</i>	-0.010	<i>0.04</i>	-0.082	<i>0.08</i>	-0.132	<i>0.08</i> *
round 4	-0.067	<i>0.02</i> ***	-0.041	<i>0.04</i>	-0.003	<i>0.04</i>	-0.162	<i>0.08</i> **	-0.226	<i>0.08</i> ***
round 5	-0.034	<i>0.02</i>	-0.038	<i>0.04</i>	0.006	<i>0.03</i>	-0.012	<i>0.07</i>	-0.179	<i>0.08</i> **
round 6	-0.046	<i>0.02</i> **	-0.048	<i>0.04</i>	0.013	<i>0.04</i>	-0.163	<i>0.08</i> **	-0.031	<i>0.08</i>
R-square	0.20		0.18		0.50		0.48		0.41	
Adjusted R-square	0.15		0.07		0.35		0.26		0.16	
F Statistics	3.57		2.23		8.09		2.53		3.62	
df	40		37		37		35		34	
p	<0.0001		0.0006		<0.0001		0.0001		<0.0001	
number of observations	695		306		155		119		115	
number of clusters	120		120		80		119		115	

*p<0.01; **p<0.05; *p<0.10; robust standard errors in italics