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Sergio G. Lazzarini

Regina Madalozzo

Rinaldo Artes

José de Oliveira Siqueira

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MEASURING TRUST: AN EXPERIMENT IN BRAZIL*

SERGIO G. LAZZARINI[†]
Ibmec Business School

REGINA MADALOZZO
Ibmec Business School

RINALDO ARTES
Ibmec Business School

JOSÉ DE OLIVEIRA SIQUEIRA
University of São Paulo

Abstract

Attitudinal measures of trust, such as those employed by the World Values Survey (WVS) or the General Social Survey (GSS), have been shown to be correlated with important country-level variables reflecting economic and institutional development. However, Glaeser, Laibson, Scheinkman and Soutter (*Quarterly Journal of Economics*, 2000) have found that those attitudinal measures poorly correlate with behavioral measures of trust obtained from an experimental “trust game” involving monetary incentives. We replicate Glaser’s et al. study using Brazilian subjects and performing the experiment under two conditions: when individuals meet face-to-face prior to their interaction, and when they cannot do so (a condition that was not employed in Glaeser’s et al. study). We find that attitudinal measures of trust (such as the WVS/GSS scale) do not significantly explain trusting behavior in experimental transactions. This result holds even in the treatment where individuals cannot meet face-to-face. However, echoing Glaeser’s et al. results, attitudinal measures of trust do explain trustworthy behavior: individuals who affirm to be more trusting are apparently less inclined to act opportunistically.

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[†] Corresponding author: Ibmec Business School, R. Maestro Cardim 1170 01323-001 São Paulo, SP Brazil. E-mail: SergioGL1@ibmec.br

INTRODUCTION

Trust, commonly defined as a person's subjective probability that his or her transacting party will act in a cooperative manner (e.g. Dasgupta, 1988; Gambetta, 1988), has received increasing attention in the economics literature. In theory, a society with a higher degree of trust can more fully exploit gains from exchange even in the absence of formal means of enforcement, thereby lowering transaction costs and prompting investments (Arrow, 1974; Putnam, 1993). Several empirical studies have been conducted recently to examine this simple hypothesis. Thus, there is evidence that countries with higher level of societal trust tend to exhibit higher economic growth and investment relative to GDP (Knack and Keefer, 1997; Zak and Knack, 2001). Other studies have also found that trust is positively correlated with variables such as governmental efficiency (La Porta, Lopez-de-Silanes, Shleifer and Vishny, 1997) and democracy (Paxton, 2002), thus suggesting that trust may have an indirect economic effect associated with institutional development.

These cross-country studies tend to rely on data from questionnaires using psychometric, attitudinal scales. For instance, the World Values Survey (WVS), which is a collaborative effort among research organizations from several countries, applies the following question: "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?" The same item is also used in the General Social Survey (GSS), which is used to monitor the evolution of trust and other variables within the United States.

Given the increasing use of WVS- and GSS-like measures of trust, a critical question is whether they really measure trust or something else. Using students from Harvard University, Glaeser, Laibson, Scheinkman and Soutter (2000) addressed this question by examining whether attitudinal, questionnaire-based measures of trust are statistically correlated with behavioral ones, obtained from experimental transactions. One of their experiments, a variant of Berg, Dickhaut and McCabe's (1995) "trust game," is basically an interaction between two people. Before their actual interaction, subjects respond to a questionnaire including the WVS/GSS trust item. Then the first person, or "sender," is granted a certain amount of money and has to decide how much to

send to another person, located in another room. The other person, the “recipient,” receives twice the amount sent, and has to decide how much to return to the sender. Assuming that people’s payoffs are solely driven by monetary concerns, the subgame perfect equilibrium of this game is straightforward: the sender will anticipate that the recipient will retain all the amount received, so the sender will refrain from sending even a penny. Thus, any positive amount transferred by the sender is an indication of his or her degree of trust on the recipient, i.e., the subjective probability that the latter will return part of the amount sent.

It is reasonable to suppose that this experimental approach to measuring trust is more precise than questionnaires, which lack a concrete exchange setting and monetary incentives to provide accurate responses. Thus, we can validate the WVS/GSS trust measure by examining its correlation with the behavior of subjects in the lab. Following this idea, we replicated the Glaeser et al. experiment using Brazilian subjects, namely students from the University of São Paulo. We obtained the exact protocols from the authors and tried to match their experiment as close as possible. Our study, however, provides two distinct contributions. First, we run the same experiment in a country that has exhibited the *lowest* level of trust according to WVS data (Figure 1). This allows for an experimental cross-country examination, comparing our results with data from the WVS and the Glaeser et al. experiment, henceforth called the “Harvard” study. Second, differently from the Harvard study, we run the “trust game” within two conditions. In the Harvard study, subjects knew or, at least, could see with whom they were interacting. In our study, we also examine interactions where individuals do not see their partners—which was the approach originally used by Berg et al. (1995). Presumably, this should reduce error in the validation of WVS/GSS measure because it avoid signals (verbal or physical) that individuals receive when they see each other prior to their interaction.

<Figure 1 around here>

Despite these differences, and the fact that Brazilian subjects report lower levels of trust according to the WVS/GSS scale, our experimental results are strikingly similar to the Harvard study. We find that the amount that senders transfer to recipients is not statistically correlated

with the degree of trust they express in the WVS/GSS scale as well as other alternative scales intended to measure trust. Thus, we confirm that attitudinal measures of trust are poor indicators of the actual trusting behavior of subjects. Surprisingly, this result holds even in the treatment where senders and recipients do not know each other. Still in line with the results of the Harvard Study, we find that responses to the WVS/GSS scale are statistically correlated with the amount that *recipients* return to senders. Thus, attitudinal measures of trust may indicate *trustworthiness*, instead of trusting behavior. However, the WVS/GSS measure contributes to only 9% of the variability of the amount of money that recipients return to senders. Overall, the pattern of results in our experiment is not significantly different from the Harvard study, thus suggesting that WVS/GSS indicators may be, to a large extent, measuring something other than trust or trustworthiness.

This paper proceeds as follows. We begin by describing the experiments used to gather behavioral measures of trust. We then proceed by analyzing our data and performing cross-country comparisons using the results of the Harvard study. Concluding remarks follow.

THE EXPERIMENTS

Pre-Experimental Phase

Our subjects were students from the University of São Paulo recruited through e-mail messages and class announcements. Most students were economics or business majors, though we tried to avoid advanced students with training in game theory.¹ In our research—henceforth called the “USP” (University of São Paulo) study—152 students agreed to participate, but only 138 participated in the actual experiments. By comparison, 258 students agreed to participate in the Harvard study, although only 189 yielded experimental data.

When subjects signed up for the experiment, they were handed a questionnaire including demographic, social, and academic questions, besides several trust-related items. This

¹ Knowing equilibrium concepts can bias the results towards the less cooperative outcome where no amount will be transferred from senders to recipients (Frank, Gilovich and Regan, 1993).

questionnaire, as well as all the other experimental materials, are translations into Portuguese (jointly performed by the authors) of the materials used in the Harvard study. To facilitate comparison, the translation of the WVS/GSS trust variable was taken from the survey used by the research organization in Brazil who has collected data for the World Values Survey. Table 1 includes a description of the key trust-related attitudinal variables used in our analyses. The experiment was conducted one week after the sign up phase (around May-June of 2003).

<Table 1 around here>

The Trust Game

In the “trust game”,² a person (sender) is given a certain amount of money, which can be totally or partially transferred to another person (recipient), located in a different room. In the Harvard study, senders received US\$ 15. Given the extreme volatility of the Brazilian currency (real, R\$) by the time of our experiment, it was difficult to define an exchange rate, adjusted for purchasing power, that would enable cross-country comparison of results (e.g. Roth, Prasnikar, Okuno-Fujiwara and Zamir, 1991). We decided to choose an exchange rate of 2 because it roughly guaranteed that the amount of money received by senders could buy similar goods valued by students. Thus, US\$ 15 and R\$ 30 could equally buy one music CD in the USA and Brazil respectively by the time each experiment was carried out.

Figure 2 depicts the trust game in extensive form.³ The sender is given R\$ 30 and chooses to send to the recipient an amount $x \in [0, \$30]$. The amount sent x is doubled; thus, the recipient gets $2x$, and chooses an amount $y \in [0, 2x]$ to return to the sender. The sender’s and recipient’s monetary payoffs are, therefore, $\$30 - x + y$ and $2x - y$ respectively. Supposing that it is common knowledge that subjects’ payoffs are driven only by monetary considerations, the subgame perfect equilibrium of this game is simple. Since the recipient’s payoff is monotonically decreasing with y (the amount that is returned to the sender), the recipient will choose $y = 0$. Anticipating this, the sender will choose $x = 0$ as well. Therefore, any amount $x >$

² As in the Harvard study, the trust game is referred to as “the transfer game” in the instructions for participants.

³ Although monetary values are discrete, we represent choices in Figure 2 as continuous for simplicity.

0 that the sender decides to transfer to the recipient is a (behavioral) measure of the sender's trust, and any amount $y > 0$ that the recipient decides to return to the sender is a measure of the recipient's trustworthiness.

Following the Harvard study, we implement a "blind" procedure where experimenters are not allowed to know the decisions of subjects. Namely, in each step of the game subjects write their decisions on a record sheet, placing it in an envelope with an anonymous code that they had previously chosen. Experimenters do not know the mapping of codes onto subjects' actual names. However, the Harvard study was conducted in such a way that senders knew the identity of recipients and vice-versa—a condition we refer to as *single-blind*, because only experimenters were unaware of the identity of participants. Before playing the trust game, Harvard subjects who were paired with one another had an opportunity to interact face-to-face. Namely, they were handed a "social connection" questionnaire asking, among other things, the number of personal acquaintances they had in common. Then subjects were separated into two different rooms: one with subjects playing the role of senders, and the other with subjects playing the role of recipients.

We randomly assigned half the subjects to these exact experimental conditions, and half the subjects to another condition involving a *double-blind* procedure, which was originally adopted by Berg, Dickhaut and McCabe (1995). The double-blind procedure guarantees that experimenters *and* participants do not know the actual identity of each other. Thus, subjects were randomly assigned to the role of sender or recipient as they arrived for the experiment and were sent to separate rooms, without ever seeing their partners.⁴ In our view, this procedure is more appropriate to validate attitudinal, questionnaire-based measures of trust using behavioral data. This is because, upon seeing each other, individuals receive signals that likely influence their subsequent decisions in the experiment. For instance, senders may judge recipients'

⁴ In the Berg-Dickhaut-McCabe experiment, any amount transferred from senders to recipients was *tripled* rather than doubled. Glaeser et al. (2000) justify their choice of doubling the money as a way to compensate for subjects' higher incentives to cooperate given that they knew each other. However, this reduces the propensity of senders to transfer money because they will not have much to gain from it. Although we would have preferred to triple the amount sent, we chose to double the amount to carry out direct comparisons to the Harvard study.

trustworthiness based on “cheap talk” or physical characteristics (Frank, 1988) in a way that is not controlled by the experimental procedure. Also, subjects may make use of informal retaliation strategies that are unobserved by the experiments: for instance, recipients may be more reluctant to defect if they perceive that senders will apply personal sanctions after the experiment is concluded. As a consequence, senders that declare themselves as trusting in the WVS/GSS scale may behave differently after interacting face-to-face with recipients. Our study, which encompasses both single-blind and double-blind conditions, potentially controls for this effect.

Another feature of the Harvard study, which is also present in our study, is that half the recipients were given an opportunity to send a *promise* to the sender, as follows. Prior to the decisions in the trust game, randomly chosen recipients received a sheet where they could choose between two options: (a) making a promise to repay the sender at least as much as what the sender transferred, or (b) making no promise. Recipients were told that the promise was non-binding, and that no other additional message would be allowed. Then senders proceeded with their decisions.

Envelope Drop

After the end of the trust game, subjects had the option to volunteer for an additional experiment, the “envelop drop.” Subjects had to answer individually a series of questions asking whether they would an envelope with their address and containing R\$ 20, which should be dropped by experimenters in a public place within certain pre-specified conditions, or a lower amount of money for sure, in cash.

Subjects filled out 15 tables with 9 lines each. Lines varied the amount of money for sure that subjects could possibly receive (from R\$ 2 to R\$ 18). Presumably, subjects with a lower degree of trust (in the experimenters, in the pedestrians who might make an effort to return the envelope, and in the mail service) should choose lower levels of money for sure instead of the R\$ 20 envelope. Thus, the lowest amount of money that subjects agree to trade for the envelope drop, referred to as their *reservation value*, is an additional indication of their level of trust. Tables, in turn, varied drop conditions: location where the envelope will be dropped, period (day

or night), whether the envelope will be sealed and stamped, etc. We tried to match the locations chosen in the Harvard study as close as possible, according to their key characteristics.⁵ As in the Harvard study, we averaged subjects' reservation values across the 15 tables.

To create incentives for truthful responses, for each individual we randomly drew a number from 1 to 9 and another number from 1 to 15, corresponding to a particular line and table of the questionnaire respectively. Depending on the student's choice in that table and line, we ended up either dropping the envelope a couple of weeks later (according to the conditions specified in the table) or providing the student with the corresponding cash.

RESULTS AND DISCUSSION

Overview

Table 2 provides a summary of comparative results including both our study and the experiment at Harvard. Only 21,7% of the Brazilian students affirm to trust other people, which is significantly lower ($p < 0.01$) than the level reported in the Harvard experiment (42,6%). This difference is consistent with the results from the WVS applied to a larger sample of individuals from both countries (Figure 1), though our Brazilian students apparently show a higher level of self-reported trust than the larger Brazilian sample used in the WVS.

<Table 2 around here>

Perhaps not surprising, the amount sent by students in the USP study is significantly higher ($p < 0.01$) in the single-blind treatment (\$25.71 on average), where subjects knew their partners, than in the double-blind procedure where no such information was available (\$16.88 on average). (We report throughout our results in Brazilian currency, doubling the dollar values from the Harvard study, according to our chosen exchange rate.) Through face-to-face interactions, senders can apparently get signals that might increase their trust in particular "types"

⁵ For instance, a possible location for the envelope drop in the Harvard study was Harvard Square, which is a central place at Harvard University with an intense traffic of people. At the University of São Paulo, a similarly central location with heavy traffic is the place where banks and ATM machines are clustered.

of recipients, or implicitly make use of informal enforcement mechanisms (e.g., some personal retaliation against a recipient who defected, when they meet again after the experiment). Results presented in the table also indicates that the single- and double-blind treatments do not significantly differ in terms of the trust-related variables WVS/GSS and MRV, thus suggesting that possible differences in observed behavior across these treatments are not merely a result of differences in subjects' intrinsic propensity to trust. Also, the amount returned by recipients is significantly lower in the double-blind treatment ($p < 0.01$), thus suggesting that some recipients in the single-blind condition may refrain from acting opportunistically fearing that senders will apply some form of personal retaliation when they meet again after the experiment ends.

Since the Harvard study was carried out in a single-blind fashion, it is more appropriate to compare their results with our results from the single-blind treatment. Although Brazilian subjects significantly self-report lower levels of trust than students from Harvard, the average amount sent is roughly 80% of the amount initially received by the participants, which is not significantly different from the amount sent by participants in the Harvard study. Likewise, the percentage of participants who sent the maximum amount allowed by the game at the initial decision node (\$30) is about the same for the two distinct experiments (71% for the Harvard study and 77% for our study). The average amount returned by Brazilian students in the single-blind condition (\$25.83) is also very close to the amount returned by Harvard subjects (\$24.60). Thus, we do not have evidence that the Harvard and USP students who participated in the experiments differ in terms of their behavioral propensity to trust or be trustworthy, although they do differ in their attitudinal responses to the WVS/GSS scale.

Determinants of the Amount Sent

We next consider the effect of alternative measures of trust on the amount sent (Table 3). All regressions include several controls, some of which were also used in the Harvard study: the day when the experiment was conducted (a dummy variable coded 1 if the experiment was conducted in the second day, since sessions were conducted on two different days); the type of treatment (single-blind or double-blind); the gender composition of the pair (a dummy variable

coded 1 if partners are of the same sex); an indicator for cases where senders made a promise to recipients when they were allowed to do so; an indicator for cases where senders were not allowed to make any promise; and several demographic indicators such as gender (dummy coded 1 if subject is male), race (dummy coded 1 if subject is white), academic status (dummy coded 1 if student is a freshman), and an indicator for whether the student is only child or not.

<Table 3 around here>

OLS regressions with the squared value of the amount sent (relative to the initial amount received) as a dependent variable⁶ reveal that the day of the experiment, the type of treatment (single-blind) and the freshman indicator are the only significant coefficients. When senders know recipients, they send a higher amount of money than in the double-blind treatment ($p < 0.05$). Subjects who participated in the second day of the experiment were also, for some reason, more trusting ($p < 0.05$, except model (1) where $p < 0.10$).⁷ The freshman indicator shows that subjects who just enrolled the university send lower amounts to recipients ($p < 0.05$), possibly suggesting that students increase their degree of trust as they evolve in their academic program. Other demographic variables, however, are insignificant, except the dummy variable Man in model (4), which is marginally significant ($p < 0.10$). Also, recipients' promise does not significantly affect senders' propensity to trust. Although this is apparently inconsistent with previous experimental results showing that non-binding promises matter (e.g. Malhotra and Murnighan, 2002), it is not so surprising in our context because recipients' promise was not enforced in any way.

All the trust measures used in the regressions (described in Table 1) are insignificant, including the GSS/WVS measure. This result is aligned with the finding in the Harvard study that attitudinal measures of trust poorly predict the actual amount sent by subjects (a behavioral measure of trust) in experimental conditions. Furthermore, the insignificance of all measures of

⁶ This transformation was employed to reduce heteroscedasticity.

⁷ This is not due to the experimental treatments. In each experimental day, we had both single-blind and double-blind sessions.

trust does not change across treatments (single-blind or double-blind). This rejects our conjecture that the lack of significant correlation between attitudinal and behavioral measures of trust in the Harvard of study might be due to the fact that the experiment was not double-blind, which could make subjects either act upon signals they would receive after meeting their partners in person, or make use of informal retaliation strategies that are unobserved to the experimenter. Apparently, attitudinal measures of trust poorly predict behavior in the experiment even in the case where subjects do not see each other prior to their interaction.

However, the mean reservation value (MRV) expressed by senders in the subsequent envelope drop experiment is significantly related to their amount sent ($p < 0.01$), and this effect is significantly reduced in the single-blind condition ($p < 0.05$), where subjects could interact face-to-face. This may explain why Glaeser et al. did not find any significant effect of MRV on the amount sent, since their experiment was solely single-blind. Since the envelope drop experiment essentially involves a condition where individuals do not know with whom they are interacting (i.e., the person who might return the envelope), its results should be compared to the results of trust game experiments where individuals do not meet face-to-face.

Determinants of the Amount Returned

Our next set of results explores the behavior of recipients, employing the ratio of the amount returned to the amount sent as a dependent variable (Table 4). As we discussed before, we expect that recipients who are known by senders should increase their amount returned fearing that the latter will employ personal sanctions when they meet again after the experiment is concluded. Although simple mean comparisons show significant differences across treatments (Table 2), regressions in Table 4 provide no firm evidence that the ratio is significantly higher when subjects know each other: the variable Single-blind is only significant ($p < 0.05$) in model specification (3), being marginally significant ($p < 0.10$) in model (1). Apparently, face-to-face interaction increases trust but has a weaker effect on trustworthy behavior after we control for some personal characteristics of recipients.

<Table 4 around here>

Results from Table 4 also show that recipients who promise to return at least as much as what their partners send significantly return more money ($p < 0.05$). Notice, however, that the variable coding recipients who could not make any promise is significant as well ($p < 0.05$), and with a coefficient of similar magnitude. This is because the reference group in this case is the set of recipients that had an opportunity to make a promise and chose not to do so; those individuals significantly return less money. Thus, only individuals who refuse to make any promise in fact “stick to their word.” Promises are apparently interpreted by recipients as strictly non-binding and hence have no relationship with their subsequent behavior. Demographic variables, as well as the dummy variable coding the day when the session was conducted, do not significantly explain recipients’ choices.

The amount sent by the player “sender” is significantly positive ($p < 0.05$) in all cases except in the regression specification (3), where it is marginally significant ($p < 0.10$). This result indicates that the higher the amount of money sent, the higher the amount returned, thus suggesting that subjects are driven by reciprocity concerns: a recipient who is granted trust is inclined to honor the sender’s trust (Berg et al., 1995).

Concerning our measures of trust, we find that the GSS/WVS Trust and the Trust Index significantly affect the amount returned by recipients ($p < 0.05$). Again, this is aligned with the results of Harvard study: attitudinal measures of trust appear to predict *trustworthiness*, instead of trust. Namely, subjects who declare to be more trusting are actually more trustworthy, that is, they return a higher portion of the money they receive from senders. However, those variables explain a very modest portion of the total variability of the dependent variable: 9% for the WVS/GSS scale and 13% for the Trust Index. Interestingly, the attitudinal measures of trustworthiness—Self-reported Trustworthiness and Honesty Index (see Table 1)—are insignificant, thus confirming again the poor ability of attitudinal measures to predict behavior in controlled experiments.

Figures 3 and 4 summarize these results. Figure 3 shows the relationship between the average amount sent by participants who declare to be non-trusting and the participants who declare the opposite. The difference between the average amount sent by subject within each group is insignificant. However, when observing the ratio of amount returned to the amount sent (Figure 4), we see that a person who does not trust others returns a lower amount of money than a person who declares to trust other people. This reinforces the result (also found in the Harvard study) that that a person who affirms to trust others tends to be more trustworthy.

Envelope Drop Results

Regressions in Table 5 examine the effect of subjects' personal characteristics on their mean reservation value (MRV) in the envelope drop experiment. Although most variables are insignificant across alternative model specifications, the indicator variable for white subjects shows a negative and significant impact on the mean reservation in some regressions ($p < 0.05$). Thus, white subjects appear to be less trusting: they are willing to trade the \$20 envelope for lower amounts of money for sure than other subjects.

<Table 5 around here>

Some attitudinal scales have some role in predicting subjects' MRV in the envelope drop experiment. Thus, the WVS/GSS trust measure is positively associated with MRV, as well as a variable called Pro-transfer (also used in the Harvard study), which measures subjects' propensity to favor redistribution to the poor.⁸ A possible explanation for the role of this variable in explaining subjects' MRV is that "dropping the envelope itself is seen as an act of charity" (Glaeser et al., 2000, p. 829), thus increasing the willingness of individuals with redistribution concerns to accept the envelope. However, the significance of those variables is marginal ($p < 0.10$): we have poor evidence that attitudinal measures explain choices in the envelope drop experiment.

⁸ Measured according to the following agreement scale: "Personal income shouldn't be determined by work".

CONCLUDING REMARKS

Attitudinal measures of trust, such as the WVS/GSS scale, have been shown to be correlated with important country-level variables reflecting economic and institutional development (e.g. Knack and Keefer, 1997; La Porta et al., 1997; Zak and Knack, 2001). An important research agenda, in this sense, is to assess what exactly those scales measure. Following the idea advanced by Glaeser et al. (2000), we provide in this study a validation of attitudinal measures of trust based on behavior measures of trust obtained from experimental sessions involving monetary transfers in the context of a “trust game” (Berg et al., 1995). Echoing Glaeser’s et al. results, we find that attitudinal measures of trust (such as the WVS/GSS scale) do not significantly explain trusting behavior in experimental transactions. However, attitudinal measures of trust do explain trustworthy behavior: individuals who affirm to be more trusting are actually less inclined to act opportunistically.

Although the overall thrust of our study is not strictly new, our test differs from Glaeser’s et al. in two important ways. First, we examine whether attitudinal measures of trust explain trusting behavior not only when interacting individuals can see each other (the design employed by Glaeser et al.), but also when they cannot see each other. In the first case, responses may be affected by signals and social interactions (unobserved to the experimenters) that may attenuate the correlation between attitudinal and behavior measures of trust. As it turns out, we find absence of significant correlation even when individuals cannot see each other prior to their interaction. In an independent study, Bellemare and Kröger (2003) also evaluate the relationship between attitudinal and behavioral measures of trust and, differently from our results, find a significant and positive correlation. This discrepancy in results invites further tests with distinct design conditions.

Second, we run experiments in a country that has systematically exhibited the lowest level of trust according to the WVS measure: Brazil (see Table 1). This allows for a cross-country comparison of results between Brazil (our study) and the United States, since we tried to replicate Glaeser’s et al protocols as close as possible. Although Brazilian subjects report significantly

lower levels of trust than American subjects according to the WVS scale, their experimental responses do not significantly differ in terms of both the amount sent and the amount returned by recipients. This reinforces the idea that attitudinal responses are poorly related to behavior in controlled experiments.

Given these results, how can we explain the sharp differences in self-reported trust between Brazilian and US subjects according to WVS indicators? Since attitudinal measures appear to explain trustworthiness instead of trust, one might be tempted to conclude that Brazilians are less trustworthy instead of less trusting. However, those attitudinal measures explain only a small fraction of the variability of the amount returned by recipients in our experiment (around 9% in the case of the WVS/GSS scale). This might explain why direct comparisons between the results from the Harvard and USP experiments do not show significant differences in observed behavior, despite the fact that Brazilian students report lower levels of trust according to the WVS/GSS scale compared to their American counterparts who participated in the Harvard experiment.

Certainly, there are other factors driving the marked heterogeneity in attitudinal trust according to the WVS. A possible explanation is that the WVS scale may be also measuring something other than trust or trustworthiness. For instance, it may simply be capturing the effectiveness of legal enforcement across countries. When answering whether they “trust” or not people in general, respondents may simply be expressing their perception of the institutional environment of the country leading to more or less cooperation. In fact, the inefficiency of the Brazilian law system is well documented (e.g. Stone, Levy and Paredes, 1996). This explanation is consistent with Zak and Knack’s (2001) finding that the WVS trust measure is positively correlated with several measures of the strength of formal enforcement institutions.

This goes back to Williamson’s (1993) criticism of the literature on trust. If trust is simply the expectation that a transacting party will not behave opportunistically (e.g. Gambetta, 1988), then it may well be affected by the existence of legal penalties or other mechanisms of formal enforcement. WVS-like scales do not take this nuance into account, and hence may be

poor indicators of actual trusting behavior in the absence of formal enforcement—which, indeed, is the setting of experimental sessions used to validate those scales. Trust should properly be defined as the expectation that another person will not act opportunistically *even* in the absence of formal enforcement (Yamagishi and Yamagishi, 1994). This suggests a possible way in which WVS-like scales could be refined in the future.

Another possible explanation of why Brazil exhibits a level of trust (measured by the WVS scale) that is much lower than in other countries is that respondents may be influenced by stereotypes of the Brazilian culture. Thus, when answering whether they trust “people in general,” Brazilians may provide a biased assessment based on popular types such as the “malandro”: a person who is supposed to achieve social status solely by acting in his or her self-interest (DaMatta, 1991). When faced with a concrete setting (experimental transactions), subjects may be forced to provide more accurate assessments of the probability a particular person will act opportunistically.

Thus, our results confirm that analyses based on attitudinal measures of trust should be carried out with caution. We stress, however, that our study has important limitations. First, as is customary in controlled experiments, the sample size is small and not representative of the populations under consideration. Second, although we tried to replicate the experiment of Glaeser et al. as close as possible, we have not controlled for “experimenter effects,” as cross-country differences may be due, in part, to different operational procedures and personal characteristics of researchers who implemented the experiment in each country. A possible way to deal with this problem in future studies is to assign the same experimenter to different locations (e.g. Roth et al., 1991), which nonetheless has the downside of increasing costs. More studies along the lines of validating attitudinal measures of trust and other social variables of economic interest, using larger samples and refining the methods to promote cross-country comparisons, are certainly needed.

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Table 1: Attitudinal measures of trust and trustworthiness

Variable	Item(s)	
	English (Harvard study)	Portuguese (USP study)
WVS/GSS Trust	“Generally speaking, would you say (a) that most people can be trusted or (b) that you can’t be too careful in dealing with people?”	“De um modo geral, você diria (a) que se pode confiar nas pessoas em geral ou (b) que precisamos ter bastante cuidado quando tratamos com as outras pessoas?”
Trust Index	<ul style="list-style-type: none"> - WVS/GSS - “Would you say that most of the time people (a) try to be helpful, or (b) that they are mostly just looking out for themselves?” - “Do you think most people would try (a) to take advantage of you if they got a chance, or would they try (b) to be fair?” 	<ul style="list-style-type: none"> - WVS/GSS - “Você diria que a maioria das pessoas (a) tentam ser úteis ou (b) estão na maioria das vezes apenas olhando para si mesmas?” - “Você acha que a maioria das pessoas tentariam (a) tirar vantagens de você se elas tivessem chance ou (b) ser justas?”
Trust Behavior Index (frequency scale)	<ul style="list-style-type: none"> - “How often do you lend money to your friends?” - “How often do you lend personal possessions to your friends (e.g., CD’s, clothes, bicycle, etc....)?” - “How often do you intentionally leave your rooming group’s hallway door unlocked (when nobody is home)?” 	<ul style="list-style-type: none"> - “Com que frequência você empresta dinheiro a seus amigos?” - “Com que frequência você empresta artigos pessoais a seus amigos (ex., CD’s, roupas, bicicleta, etc....)?” - “Com que frequência você intencionalmente deixa a porta do corredor do seu quarto ou apartamento destrancada (quando ninguém está em casa)?”
Trust in Strangers (agreement scale)	<ul style="list-style-type: none"> - “These days you can’t count on strangers.” - “In dealing with strangers one is better off to be cautious until they have provided evidence that they are trustworthy.” 	<ul style="list-style-type: none"> - “Nesses dias, não se pode confiar em estranhos.” - “Ao lidar com estranhos é melhor ser cuidadoso até que eles forneçam evidências de serem confiáveis.”
Self-reported Trustworthiness (agreement scale)	“I am always trustworthy.”	“Eu sou sempre confiável.”
Honesty Index (frequency scale)	<ul style="list-style-type: none"> - “How often do you lie to your parents?” - “How often do you lie to your roommates?” - “How often do you lie to casual acquaintances?” - “How often do you lie to close friends?” - “If you have a girlfriend/boyfriend, how often do you lie to her/him?” 	<ul style="list-style-type: none"> - “Com que frequência você mente para seus pais?” - “Com que frequência você mente para os seus companheiros de quarto?” - “Com que frequência você mente para pessoas que você encontra casualmente?” - “Com que frequência você mente para amigos íntimos?” - “Com que frequência você mente para namorado/namorada.”

Table 2: Descriptive Statistics

	Harvard Study (US)	USP Study (Brazil)		
		All Treatments	Double- blind	Single- blind
WVS/GSS (% who affirm to trust others)	42.6 (3.5)	21.7 (3.4)	17.6 (4.6)	23.2 (5.1)
Average amount sent	\$24.80 (9.08)	\$21.36 (10.60)	\$16.88 (10.80)	\$25.71 (8.51)
% who sent the maximum value possible (\$30)	0.71	0.55	0.32	0.77
Average amount returned	\$24.60 (-)	\$19.74 (16.47)	\$13.47 (12.72)	\$25.83 (17.60)
Ratio of the amount returned to the amount sent	-	0.42 (0.27)	0.34 (0.18)	0.49 (0.31)
Average of Mean Reservation Value (MRV)	-	\$9.13 (4.55)	\$9.67 (4.63)	\$8.61 (4.44)

Note: Standard deviations are in parenthesis. Monetary values of the Harvard study were doubled to allow for comparisons to the results of the USP study.

Table 3: Determinants of the Amount Sent (Squared Root)

	(1)	(2)	(3)	(4)	(5)
Constant	3,195 (0,716)	3,466 (0,731)	2,961 (0,775)	3,059 (0,739)	1,973 (0,871)
Day	0,690 (0,347)	0,781 (0,354)	0,718 (0,362)	0,733 (0,349)	0,754 (0,330)
Single-blind	1,749 (0,444)	1,387 (0,397)	2,092 (0,852)	1,655 (0,413)	2,859 (0,705)
Pair Is of the Same Sex	-0,399 (0,430)	-0,478 (0,437)	-0,500 (0,435)	-0,557 (0,438)	-0,388 (0,403)
Made Promise	0,569 (0,611)	0,499 (0,627)	0,430 (0,615)	0,828 (0,623)	0,229 (0,569)
Couldn't Make Promise	0,320 (0,578)	0,074 (0,579)	0,081 (0,588)	0,645 (0,638)	0,229 (0,569)
Man	0,509 (0,392)	0,557 (0,408)	0,524 (0,395)	0,702 (0,415)	0,457 (0,369)
White	-0,326 (0,423)	-0,394 (0,420)	-0,445 (0,428)	-0,597 (0,453)	-0,235 (0,408)
Freshman	-1,391 (0,529)	-1,324 (0,531)	-1,110 (0,515)	-1,217 (0,519)	-0,979 (0,475)
Only Child	0,093 (0,976)	0,071 (0,979)	0,071 (0,987)	0,167 (0,987)	0,242 (0,922)
WVS/GSS Trust	0,407 (0,633)				
WVS/GSS Trust×Single-blind	-1,358 (0,885)				
Trust Index		0,061 (0,112)			
Trust Index×Single-blind		-0,227 (0,163)			
Trust in Strangers			0,805 (0,557)		
Trust in Strangers×Single-blind			-0,832 (0,923)		
Trust Behavior Index				-0,143 (0,147)	
Trust Behavior Index×Single-blind				0,333 (0,205)	
Mean Reservation Value (MRV)					0,124 (0,043)
MRV×Single-blind					-0,154 (0,068)
Adjusted R^2	0.249	0.254	0.209	0.247	0.326
N	61	61	61	61	61

Note: Standard errors are in parenthesis. OLS estimates.

Table 4: Determinants of the Ratio of the Amount Returned to the Amount Sent

	(1)	(2)	(3)	(4)
Constant	-0.128 (0.148)	-0.091 (0.154)	0.123 (0.307)	-0.356 (0.200)
Day	-0.046 (0.074)	-0.014 (0.080)	-0.028 (0.078)	0.029 (0.089)
Single-blind	0.164 (0.090)	0.192 (0.091)	-0.135 (0.095)	0.141 (0.092)
Pair Is of the Same Sex	-0.087 (0.093)	-0.122 (0.097)	-0.048 (0.098)	-0.034 (0.098)
Made Promise	0.241 (0.112)	0.251 (0.113)	0.255 (0.119)	0.367 (0.142)
Couldn't Make Promise	0.249 (0.106)	0.236 (0.108)	0.245 (0.113)	0.388 (0.132)
Man	0.045 (0.078)	0.037 (0.080)	0.021 (0.083)	0.094 (0.089)
White	-0.002 (0.081)	0.014 (0.086)	0.030 (0.086)	0.047 (0.089)
Freshman	0.146 (0.091)	0.127 (0.090)	0.068 (0.092)	0.108 (0.090)
Only Child	0.068 (0.127)	0.052 (0.126)	0.058 (0.136)	0.069 (0.126)
Amount Sent	0.010 (0.005)	0.013 (0.004)	0.010 (0.005)	0.012 (0.006)
WVS/GSS Trust	0.224 (0.087)			
Trust Index		0.047 (0.016)		
Self-reported Trustworthiness			-0.041 (0.046)	
Honesty Index				0.026 (0.037)
Adjusted R^2	0.245	0.269	0.143	0.250
N	55	53	55	48

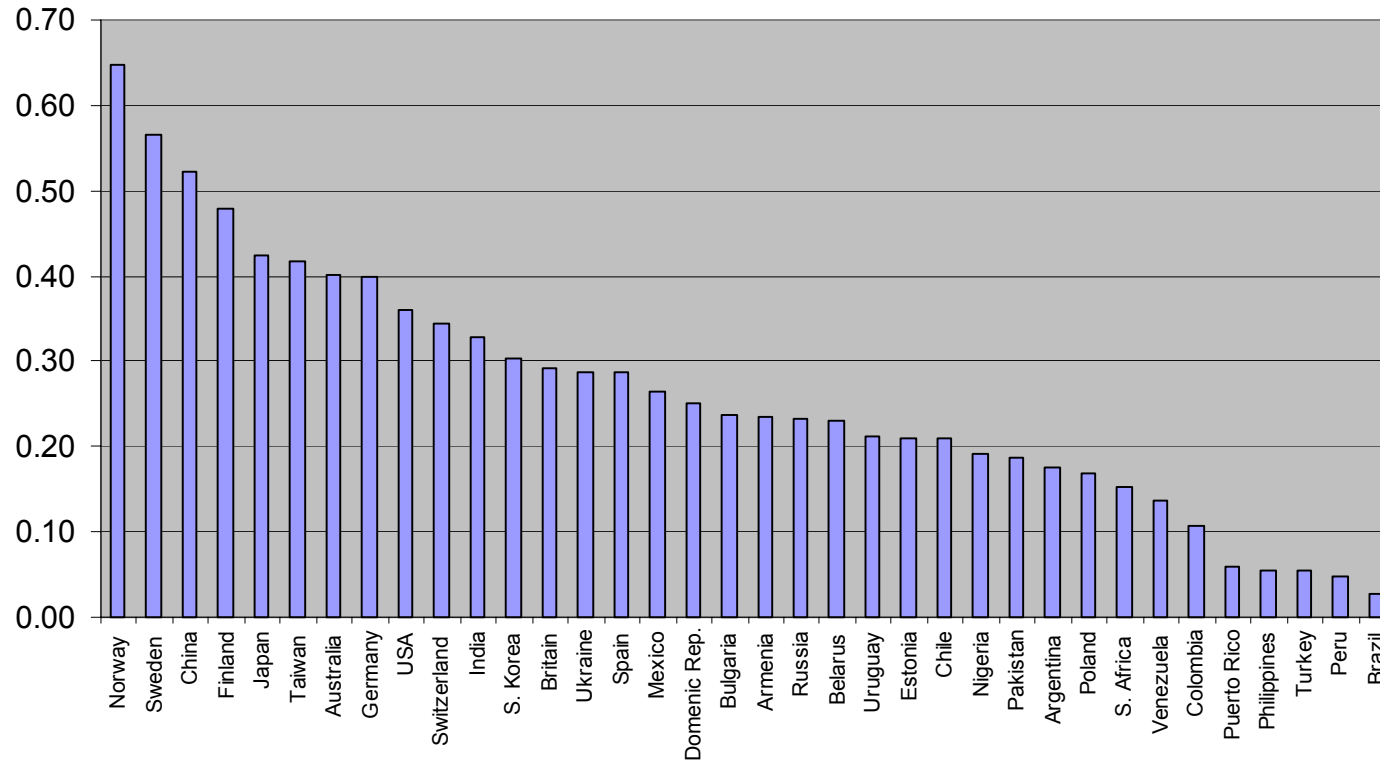
Note: Standard errors are in parenthesis. OLS estimates.

Table 5: Dependent Variable: Mean Reservation Value (MRV)

	(1)	(2)	(3)	(4)	(5)
Constant	9.830 (1.032)	10.347 (1.086)	10.029 (1.581)	10.089 (1.042)	7.830 (1.596)
Man	0.826 (0.921)	0.743 (0.969)	0.971 (0.944)	1.032 (0.946)	1.083 (0.941)
White	-2.328 (0.977)	-2.241 (1.042)	-2.216 (1.001)	-2.197 (0.995)	-2.553 (1.011)
Freshman	0.255 (1.070)	0.035 (1.111)	-0.036 (1.083)	-0.112 (1.111)	0.127 (1.114)
Only Child	0.904 (1.923)	0.811 (1.968)	0.775 (1.966)	0.688 (1.981)	0.469 (1.971)
WVS/GSS Trust	2.003 (1.038)				
Trust Index		0.275 (0.197)			
Trust in Strangers			0.069 (0.930)		
Trust Behavior Index				0.067 (0.220)	0.018 (0.221)
Pro-transfer					0.891 (0.482)
Adjusted R^2	0.037	0.021	0.006	0.006	0.026
N	121	117	121	121	120

Note: Standard errors are in parenthesis. OLS estimates.

Figure 1: Levels of Trust in Selected Countries



Source: World Values Survey (1995-1997)

Figure 2: The “Trust Game”

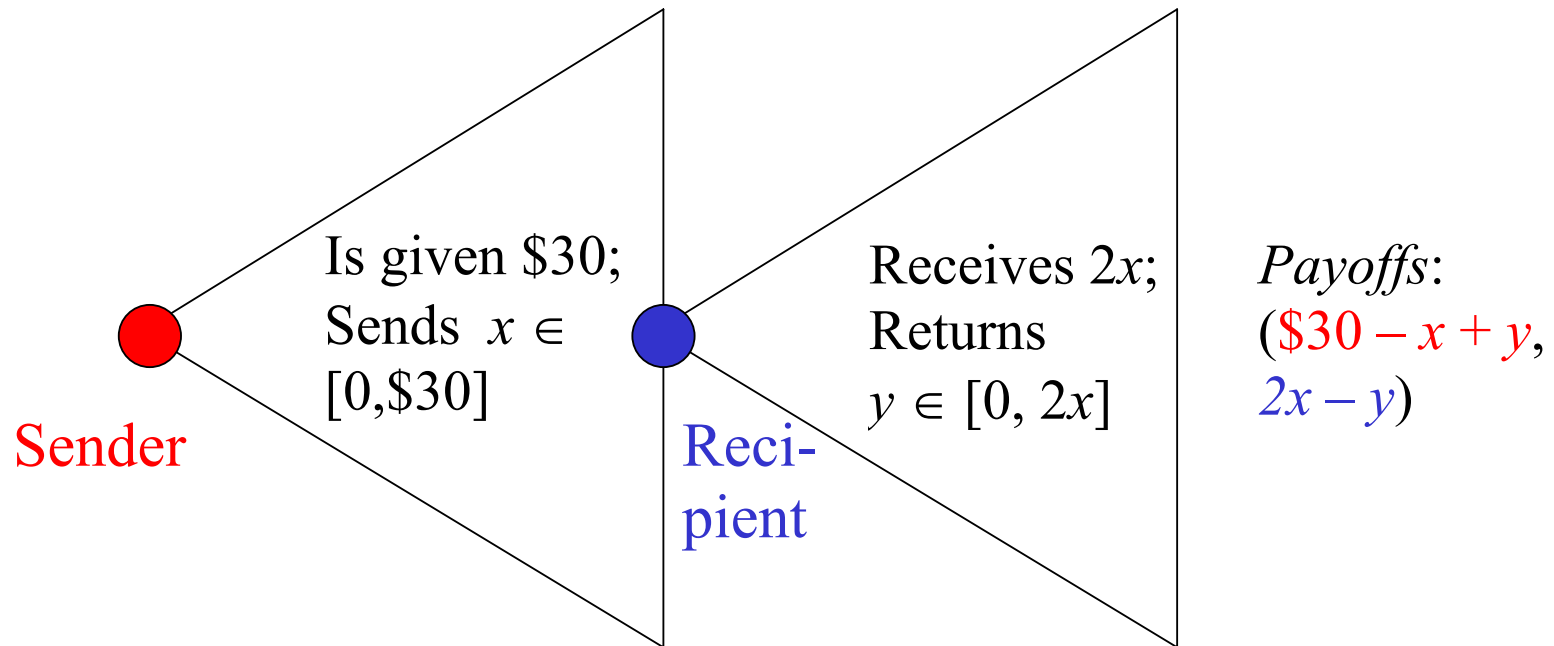


Figure 3: Amount Sent According to Sender's Attitudinal Level of Trust (95% Confidence Interval)

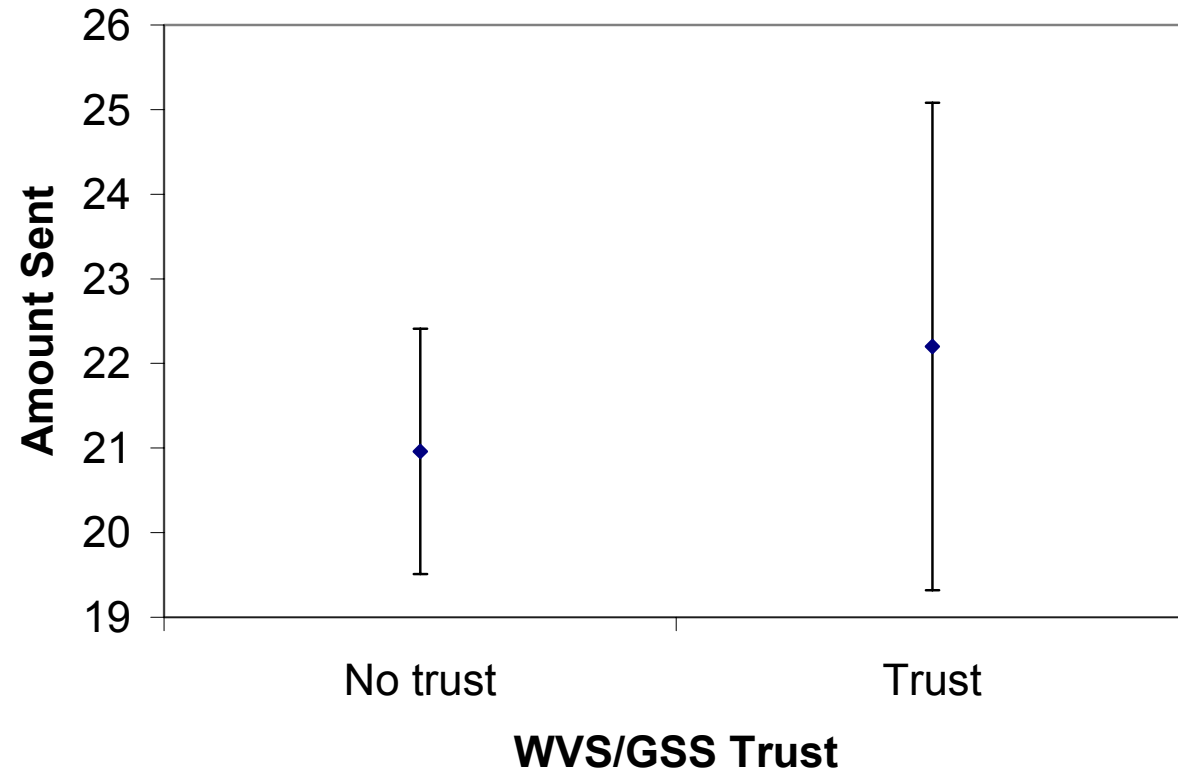


Figure 3: Ratio of the Amount Returned to the Amount Sent, According to Recipients' Attitudinal Level of Trust (95% Confidence Interval)

