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## CAN TRUST FACILITATE BRIBERY? EXPERIMENTAL EVIDENCE FROM CHINA, ITALY, JAPAN, AND THE NETHERLANDS

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This article investigates the impact of trust on bribery. We measure trust with a survey question from the World Values Survey on whether respondents think others would take advantage of them if given the chance, and we observe bribery behavior in an experimental bribery game. The research was conducted in China and Italy, which have relatively high perceived-corruption levels, as well as in Japan and the Netherlands, which have relatively low perceived-corruption levels. In the bribery game, participants have the opportunity to bribe another participant to cheat to their advantage. We hypothesized that honoring bribing agreements depends on trust, the endorsement of such agreements is independent of trust. We find evidence that trust enables bribery in the two low-corruption countries, but no evidence that trust enables bribery in the two high-corruption countries. More specifically, trust predicts bribers' trustworthiness in honoring the bribery agreement once they enter into one. The results reveal a dark side of trust: It supports socially detrimental cooperation when a deal is unenforceable.

*Keywords:* bribery; trust; economic experiments; cross-cultural experiments

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Cooperating, trusting, and reciprocating behaviors are usually considered pro-social, in the sense that they benefit society at large. Yet, these same behaviors are anything but socially beneficial when they occur in the interactions among criminals: consider bribery. The briber and the bribee can strike an agreement to cooperate: The briber will pay a bribe to receive a benefit, and the bribee will receive a compensation for providing some illegal service. However, the bribery agreement is nonbinding: the briber may defect on the bribe payment if the illegal service is delivered first; likewise, the bribee may defect on the delivery of the illegal service if the bribe is offered first. In a sense, bribery is a case of a trust game, in which cooperation is difficult to enforce.

When there are frequent interactions among the parties, it is generally assumed that trust and cooperation will emerge and stabilize. Individuals who care about their reputation as reliable partners have no incentive to cheat in repeated trust games or other social dilemmas with no known end point. Criminal interactions rely on trust as well. When trust breaks down—perhaps because the temptation to defect is too high—and legal enforcement is not an option, criminal organizations often seek to restore cooperation through violent means (Skarbek, 2014).

Many illegal interactions occur irregularly and infrequently, which limits the effectiveness of reputational concerns and group sanctions. Bribing a policeman, an office employee, or a government officer may be one-time events that require a high level of reciprocal trust since illegal deals cannot rely on the courts for enforcement, that is, these one-time interactions require cooperation and trust between the parties. Yet, it is exactly in this sphere of illegality that we expect the least trust. Who would trust criminals and crooks? It might also be expected that people engaged in bribery would display a low level of trust in their fellow perpetrators, that is, they may be more inclined to think that their fellow offenders would take advantage of others whenever they can.

In this article, we study how self-reported generalized trust can facilitate illegal agreements. We focus on bribery, which is essentially the abuse of power in return for a material gift.

## TRUST AND CORRUPTION

There is an extensive literature on trust and corruption, but there is little consensus on the relationship between the two. According to some scholars, societies with the highest levels of trust are the least corrupt (e.g., Rothstein, 2000).<sup>1</sup> In such societies, trust is a catalyst for socially beneficial cooperation. It has also been argued, however, that societies with greater levels of (particularized) trust might exhibit greater levels of “both corrupt and donative transfers” (Rose-Ackerman, 1999, p.

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1. Among those who claim that high-trust societies are less corrupt, there is some discussion on the direction of causation. Some found that low levels of trust drive high levels of corruption (Uslaner, 1999, 2005). Others found that (perceived) high level of corruption causes people to trust each other less (Eek & Rothstein, 2005; Rothstein, 2000; Uslaner & Badescu, 2004). Others claim that trust and corruption influence each other, so that countries are either blessed with a virtuous circle of high trust and low corruption or a vicious circle of low trust and high corruption (Rothstein & Uslaner, 2005).

97, quoted by Banuri & Eckel, 2012). If so, trust might be a catalyst for both socially beneficial and socially detrimental cooperation.

The discrepancy, according to some, is due to different interpretations of trust, namely, as *generalized trust*, defined as trust in people in general, or as *particularized trust*, defined as trust restricted to one's in-group. Using data from the World Values Survey and the World Business Environment Survey, Tonoyan (2005) found that the most corrupt countries had low levels of generalized trust, but high levels of particularized trust (see also Ensminger, 2001).

Some authors (Putnam, 1993) claim that there is continuity between particularized and generalized trust. According to this view, individuals who are embedded in a thick network of trusting relationships and experience the trustworthiness of people around them will have the propensity to extend trust even to strangers. In this light, it would be expected that a person who is accustomed to particularistic trust will be disposed to generalize and invest resources even when faced with anonymous partners. There are, however, many examples of discontinuity between particularized and generalized trust, and examples abound of societies in which individuals display high levels of trust or reciprocation among family members and small networks, but mistrust strangers, institutions, and other beneficiaries of generalized trust.

Yamagishi (2001) made an important distinction between trust and assurance that partly captures the above discontinuity. People within committed relations or stable groups feel safe with insiders because formal and informal sanctions (including ostracism) against a betrayer are strong enough. Assurance is precisely an expectation of trustworthiness of others based on an assessment of their interests and incentives. Assurance does not generalize to interactions or situations that are not "guaranteed" by existing incentive structures. Trust, by contrast, is meaningful only in situations of great social uncertainty, in which there are incentives to act dishonestly and the consequences of being the target of dishonesty are costly. Trust, in Yamagishi's view, is independent of an assessment of trustworthiness and is, rather, a generalized expectation about human benevolence.

We agree with Yamagishi in linking trust with social uncertainty. We take trust to be the willingness of a trustor "to make oneself vulnerable" to the actions of a trustee because the trustor believes that most people are trustworthy. The trustor makes himself vulnerable by entering a situation in which the trustee can harm him. In turn, the trustee is trustworthy if she "voluntarily refrains from taking advantage of the trustor's vulnerability" (Bohnet, 2008). Trust thus matters in situations in which it may be advantageous to make oneself vulnerable to another, but only if that other does not take advantage of one's vulnerability. Such trust situations are nicely captured by the trust game developed by experimental economists (Berg, Dickhaut, & McCabe, 1995; Camerer & Weigelt, 1988). As argued earlier, trust is important to bribery because people need to trust that the bribery agreement will be honored—as it cannot be enforced by courts—and they need to trust that the agreement will remain secret. Consistent with this view, Lambsdorf (2002) found that greater trust on the potential bribees' honoring the bribery agreements predicts higher corruption levels.

## THE PRESENT STUDY

In this article, we report some specific results on trust and corruption from a larger experiment (Jiang, 2015a, 2015b). The larger experiment was designed to examine how social preferences and culture predict cheating in different corruption contexts ranging from embezzlement to bribery. Jiang (2015a) mainly reports results on how social preferences predict cheating in embezzlement contexts, whereas Jiang (2015b) mainly reports results on how social preferences predict behavior in bribery contexts. In this article, we report results on how trust predicts behavior in bribery contexts as we believe that it is a meaningful investigation to show that trust affects behavior in this game above and beyond social preferences.

We do not elicit trust behaviorally. We measure trust with the following question from the World Values Survey: "Do you think most people would try to take advantage of you if they got a chance, or would they try to be fair?" Although more elaborate measurement tools for trust have been developed (e.g., Couch, Adams, & Jones, 1996; Couch & Jones, 1997; Yamagishi & Yamagishi, 1994) and trust attitudes elicited by surveys might predict trusting behavior only weakly (Glaeser, Laibson, Scheinkman, & Soutter, 2000), we have opted for the simple self-report measure for practical reasons. Strictly speaking, the World Value Survey question elicits a diffuse expectation of others' trustworthiness, different from history-based trust founded on previous interactions. Measured this way, trust is best understood as an enduring attitude or a personality trait (Rotter, 1967, 1971; Stack, 1978). Moreover, though a belief in trustworthiness is not equivalent to trust, we know that trustworthiness beliefs are the best predictors of trusting behavior (Ashraf, Bohnet, & Piankov, 2006). Hence, we will just talk about people's trust.<sup>2</sup>

In the experiment, participants played the "dice bribery game" introduced by Jiang (2015b), in which pairs of participants could chat online and enter bribery agreements. The briber would promise to transfer money to the bribee, and the bribee would promise to cheat to benefit the briber. However, after entering a bribery agreement, each party could secretly renege on his or her promise. In other words, all players had an incentive to renege on their promise.

The dice bribery game resembles Abbink, Irlenbusch, and Renner's (2000) moonlighting game, in the treatment with the nonbinding contract. The moonlighting game simulates the contracting of unreported labor ("moonlighting") based on a trust game. In this game, the trustee can propose a nonbinding contract to the trustor before playing the trust game. The dice bribery game differs from the nonbinding contract moonlighting game in several important aspects. First, both players can initiate agreements in the more natural environment of chats. Second, the possibility of entering agreements is not made explicit in the instructions but has

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2. Note also that our trust question asks whether respondents think "most people" would take advantage of them, which seems to refer to people *in general*, so that the question seems to elicit *generalized* trust. However, since the trust question is not explicitly about people "in general," it is possible that some respondents interpret it as a question about particularized trust. In the conclusion, we make some suggestions on differentiating between generalized and particularized trust in studying the impact of trust on corruption.

to be discovered. Finally, the rules of the game do not allow cheating, while in the moonlighting game moonlighting is allowed. To simulate that cheating is bad, Abbink, Irlenbusch, and Renner (2002) designed a bribery game with negative outcomes for bribery and the possibility that colluders get sanctioned. However, bribing and cheating are still explicitly described as legitimate game options and neutrally framed, and so is sanctioning.<sup>3</sup> For these reasons, our dice bribery game provides a more natural and realistic simulation of the rule-breaking and power abuse aspect of bribery.

Our main hypothesis is that the honoring of bribing agreements depends on trust, but that the endorsement of such agreements does not. We hypothesize that individuals with high levels of trust will tend to honor bribery agreements. A person who believes that strangers are generally trustworthy is also likely to believe that, once one enters an agreement the agreement will be kept. The fact that the agreement is “illegal” should not matter to the promise keeper. What matters is that he made a promise. Even in situations where bribery agreements are not enforceable, that is, when, defectors cannot be punished, failing to deliver on the promise made in a bribery agreement can incur psychological costs. Most people are, for example, generally averse to breaking promises (Vanberg, 2008). Once a bribery agreement has been reached, the norm of promise keeping demands that the agreement be honored (Bicchieri, 2002). Our conjecture that trust plays a role in boosting the likelihood of promise keeping is also related to Jiang’s (2015b) finding that pro-social bribers tend to keep their promises.

We further examine whether the correlation between trust and corruption varies with the country’s perceived corruption level. More specifically, we suspect that the correlation between trust and honoring bribery may be lower in countries in which corruption is socially accepted or even expected (Bicchieri, 2006, 2015). As a result, the social norm of promise keeping may be a stronger predictor than the individual personality trait of trust, as the threat of betrayal is less likely to be present. The experiment was conducted in four countries from two different continents, Asia and Europe. In each continent, one country has a low score on the Corruption Perception Index (CPI)<sup>4</sup> (China: 3.6; Italy: 3.9), whereas the other has a high score (Japan: 8; The Netherlands: 8.9).

All in all, we conjecture that trust increases the likelihood that a promise will be kept. The more one expects others to honor their promises, the more psychological cost one would suffer when breaking the agreement. A high-trust person will thus be more trustworthy, even if the transaction is illegal. On the other hand, if one does not trust that the partner will honor the promise, one could find a legitimate

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3. Barr and Serra (2010) opt for non-neutral framing, while still describing bribing and cheating as valid game options. This is an excerpt from their instructions: “The game proceeds as follows. First, every Private Citizen can offer a bribe to the Public Official with whom he/she is playing.” In our bribing game, by contrast, the possibility of bribing and cheating needs to be discovered. This probably feels more natural to participants.

4. The Corruption Perceptions Index ranks countries/territories based on how uncorrupt their public sector is perceived to be by analysts, businessmen, and experts (<http://cpi.transparency.org/cpi2011/results/>). It is a composite index combining surveys and assessments of corruption collected by different institutions that met the criteria set by Transparency International.

excuse for not honoring the agreement. The role of trust, in this sense, is a catalyst for cooperation, even if the result of this cooperation is socially harmful. Finally, we predict that the perceived corruption level of participants' country of origin will moderate the correlation between trust and carrying out a bribery agreement.

## METHOD

### PARTICIPANTS

For this study, a total of 216 students participated in experiments that were conducted between October 2010 and July 2011 in four countries. Data of 16 participants were excluded from analysis due to missing observations on the trust measure. See Table 1 or the demographic data and the experimental field sites in which the data were collected in each country.

### THE BRIBERY GAME

The dice bribery game (Jiang, 2015b) models the essence of bribery by allowing the bribee to cheat and give the briber the requested benefits. This paradigm differs from the traditional bribery paradigms in the following way. Instead of being given an explicit option to bribe and be bribed in a modified trust game, participants themselves need to self-discover the loopholes of the rules when freely negotiating via an online chat the exchange of a side payment and the cheating service. The game consists of two stages: a bribing stage, in which the briber has the opportunity to bribe the bribee, and a cheating stage, in which the bribee has the opportunity to cheat to the advantage of the briber (see Figure 2). We first discuss the cheating stage, since it will help to understand the function of the preceding bribing stage.

*Cheating Stage.* Participants pair up with one player randomly assigned as the "Scorer" (the bribee) and the other the "Thrower" (the briber). Scorer earns a fixed amount of 50 points. Thrower's payoff depends on the outcome of the dice game. The dice game is repeated for 15 rounds and each round proceeds as follows: First, Scorer secretly chooses which side of the die will count for Thrower's payoff: the side facing up or the side facing down. The die is a normal 6-sided die, with the number of pips of opposite sides always adding up to 7. If 1 is up, down is 6; if 2 is up, down is 5; etc. (see Table 2 for a summary of the points earned by Thrower, given that Scorer chooses either up or down). The Scorer makes his choice in his mind and does not write it down or tell anybody at this moment.

Second, after Scorer has confirmed having secretly chosen a side (up or down), Thrower throws a die (on the computer screen). As the final step, Scorer indicates on the screen which side he or she chose in the first step. Scorer can do this truthfully or not, and there is no way for anybody to find this out with certainty. Whatever Scorer reports, the payoff of Thrower for that round is calculated accordingly, and Thrower immediately sees his or her payoff for that round. In sum, the three steps of the dice game are:







TABLE 1. Demographic Data of All Participants

	Number of participants	Male	Age	Number of siblings	Number of countries visited	Experience (Experiments participated)	Major: economics & business
Fudan University (Shanghai); Peking University (Shenzhen)	CN ( <i>n</i> = 48)	0.56 (32)	24.5 (35)	1.31 (36)	1.86 (36)	2.19 (36)	44% (36)
Waseda University (Tokyo)	JP ( <i>n</i> = 64)	0.57 (63)	21.5 (64)	1.14 (63)	3.54 (63)	2.44 (32)	42% (64)
University of Siena (Siena); University of Taranto (Taranto)	IT ( <i>n</i> = 56)	0.56 (55)	23.6 (55)	1.44 (54)	10.72 (54)	2.27 (55)	93% (55)
Tilburg University (Tilburg)	NL ( <i>n</i> = 48)	0.85 (48)	21.3 (48)	1.73 (48)	11.49 (47)	3.15 (48)	96% (48)

Note. Source from Jiang, 2015a. Number of participants with available demographic data in brackets. Some of the survey data on trust (13 from China, 1 from Japan, and 2 from Italy) fail to be recorded because of interrupted Internet connection.



TABLE 2. Payoffs

						
Up	1	2	3	4	5	6
Down	6	5	4	3	2	1

- (1) Scorer secretly chooses a side;
- (2) Thrower throws a die;
- (3) Scorer reports which side he or she chose in Step 1.

For instance, if Scorer chooses down in Step 1, Thrower throws 4 in Step 2 and Scorer reports “down” in Step 3, then Thrower earns 3 points ( $= 7 - 4$ ). Note that if Scorer would report “up” in Step 3, then Thrower would earn 4 points. This is exactly how Scorer can cheat for Thrower—by reporting the side that gives the higher payoff, even if it was not chosen in Step 1. Because Scorer can cheat, Thrower might want to bribe Scorer in the preceding bribery stage, which we discuss below.

*Bribing Stage.* As in Jiang (2015b), before the cheating stage in which the dice game is played, each matched pair can negotiate a one-shot transfer of a side payment  $X$  in a virtual chat. Since Thrower earns on average 52.5 points ( $3.5 \times 15$  rounds) without the help of cheating and Scorer earns 50 points, there is not much reason for participants to transfer money, unless they have cheating in mind. If anything, 1.25 points could be transferred from Thrower to Scorer out of an equality concern (or 1 or 2 points, since only integers were allowed). On the other hand, the small difference should suffice for those who are interested in bribes to legitimately negotiate a transfer. It is clear why Thrower might want to bribe Scorer. If Scorer always cheats to Thrower’s advantage, the latter’s expected payoff rises from 52.5 to 75 points ( $15 \times 5$  average expected points per round). The time limit for the discussion is 5 minutes. Both players submit their “report” on the transfer  $X$  in private; that is, the Scorer reports an amount  $X(S)$  and the Thrower reports an amount  $X(T)$ . This is done through an input box located below the chat window within the allotted five-minute chat. If Scorer and Thrower report the same amount, i.e.,  $X(S) = X(T) = X$ , then  $X$  will be implemented for the final payment (if  $X$  is positive, the transfer goes to Scorer; if  $X$  is negative, it goes to Thrower). Otherwise nothing is transferred. Note that the bribing stage occurs only once, before the 15 rounds of play (Jiang, 2015b).

The amounts agreed upon cannot be revised after submission. As soon as both Scorer and Thrower have submitted their amounts, the dice game starts. But neither Scorer nor Thrower is informed about the amount submitted by the other. Hence, neither player knows whether the agreed-upon transfer (if there is one) will indeed be implemented so that the briber can take advantage of the bribee by entering a smaller amount. After five minutes have passed, Thrower and Scorer move to the cheating stage and play the 15 rounds of the dice game described above (see Figure 1).



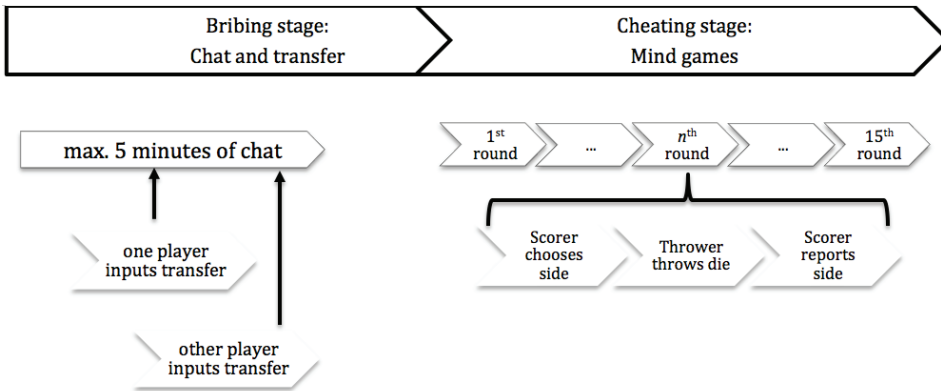


FIGURE 1. Diagram of the bribery game. The dashed arrows in the chat indicate that any player can (privately) input a transfer amount at any time in the 5 minutes allocated to chatting. When both players have inputted an amount, they move on to the cheating stage. Only if both players input the same amount, the transfer will be that inputted amount. Otherwise, the transfer is 0.

*Features of the Bribery Game.* Throwers (or Scorers) were not told that they can—or have to—bribe Scorers, and Scorers were not told they can ask Throwers for bribes. They were not told to play a “bribery game.” The game was described in neutral terms as a two-persons dice game, with the possibility of a 5-minute chat for negotiating a transfer  $X$ . However, most participants understand very well what can be done, as best illustrated in a quote by a Scorer: “...unless  $X$  is 20 it would not be interesting for me to cheat for you.”

Thrower and Scorer might come to a bribery agreement, namely an agreement that Thrower will transfer points to Scorer in return for Scorer subsequently picking advantageous sides. However, neither Thrower’s agreement to transfer points—that is, to bribe—nor Scorer’s agreement to report sides in a biased way—that is, to cheat—can be enforced: It is merely cheap talk. The players can defect on their promises without any chance of getting punished. When deciding to honor the agreement, they must trust that the other will do so as well. This makes the bribery game a game of mutual trust.

Since both parties see the earning points of Thrower after each round, Thrower can tell to a certain extent whether Scorer honored the agreement. However, Scorer instead can never know whether Thrower honored his side of the agreement. This is because Thrower enters the transfer amount privately and Scorer does not get any feedback on how much was ultimately transferred. Even when Scorer receives payment at the end of the experiment, it is impossible for him to find out how likely it is that Thrower inputted the agreed amount. Participants know this.

## MEASURES DERIVED FROM THE BRIBERY GAME

The bribery game provides us with a rich set of measures regarding bribery behavior (see Jiang, 2015b). More specifically, we observe (1) whether participants

endorse bribery in the chats, (2) whether they subsequently enter a bribery agreement, (3) how high the bribe amount is, and (4) whether they ultimately honor the bribery agreement.

*Bribery Endorsement.* A subject is said to endorse bribery if, in the chat at the bribing stage, the subject expresses a willingness to enter a bribery agreement, which implies that (1) Thrower transfers a positive amount to Scorer, and (2) the latter cheats in favor of the former. A subject endorses bribery either by initially proposing to enter a bribery agreement, or by accepting or otherwise confirming such a proposal by the other. We created a dummy variable of bribery endorsement  $B^{\text{endorse}}$ , with  $B^{\text{endorse}} = 1$  if the subject endorses bribery.

*Bribery Agreement and Bribe Amount.* A pair of participants is considered to have reached a bribery agreement, denoted by the dummy variable  $B^{\text{agree}}$ , if both participants (1) endorse bribery and (2) agree to transfer a strictly positive amount from Thrower to Scorer. Note that it is possible that both participants in a pair endorse bribery but do not agree on the bribe amount and thus do not reach a bribery agreement.

*Honoring the Bribery Agreement.* A Thrower honors the bribery agreement, that is,  $Honor(T) = 1$ , when the Thrower enters the transfer amount agreed upon (remember that this action is fully private). A Scorer, on the other hand, honors the bribery agreement when the Scorer actually cheats to the advantage of Thrower, as was agreed upon. When both Scorer and Thrower honor the bribery agreement, we say the bribery agreement is *successfully* enforced.

To quantify how much a Scorer has cheated, Jiang (2013) used a measure called *foresight*, namely the proportion of advantageous sides this Scorer picks in 15 rounds of the dice game. That is, if  $f_j$  is a dummy variable that equals 1 when Scorer chose the advantageous side in round  $j$  of 15 rounds (and 0 otherwise),

$$\text{then } F = \frac{\sum_{j=1}^{15} f_j}{15}, \text{ with } 0 \geq F \geq 1.$$

If Scorer always cheated to the advantage of Thrower, then  $F = 1$ . If Scorer did not cheat, the expected average of  $F$  was 0.5. By chance, however, foresight could be much higher (or lower). A binomial test is used to see whether foresight significantly deviates from the expected average of 0.5. On that basis, if there was a bribery agreement, we say that Scorer has honored cheating (i.e.,  $Honor(S) = 1$ ) if  $F \geq 0.80$  (one-sided binomial test,  $p = 0.02$ ).

## TRUST AND CHEATING PROPENSITY

*Trust.* The main explanatory variable of interest was people's general disposition to trust others. We measured trust with a survey question on expectations about others taken from the World Values Survey. The question is "Do you think most people would try to take advantage of you if they got a chance, or would they try to be fair?" on a scale from 1 (take advantage) to 10 (are fair).

*Cheating Propensity.* We also included participants' cheating propensity in as it can be a potential confounding factor. More trusting participants might be less prone to cheat, and cheating propensity has been found to correlate with bribery endorsement and honoring (Jiang, 2015b). Participants' cheating propensity was elicited by the one-player version of the dice game described above. In the one-player dice game (Jiang, 2013), each player is simultaneously Thrower and Scorer. The subject moves through the following three steps: The subject (1) chooses which side of the die will count for his or her own payoff, (2) throws a die, and (3) reports which side he or she chose in Step 1. The subject thus has the opportunity to cheat to his own advantage, rather than to the advantage of another subject, like in the cheating stage of the bribery game. The cheating game is repeated for 20 rounds. The subject earns an amount of points equal to the sum of pips of the sides reportedly chosen.

To quantify a subject's propensity to cheat in the dice game, we used the same measure of foresight  $F$  we used to quantify the cheating by Scorers in the bribery game. This time

$$F = \frac{\sum_{j=1}^{20} f_j}{20}$$
 with  $f_j = 1$  when the subject chose the advantageous side in round  $j$  of 20 rounds, and  $0 \geq F \geq 1$ . We infer that participants probably cheated if  $F \geq 0.75$  (one-sided binomial test,  $p = 0.02$ ).

## PROCEDURE

The data analyzed in this experiment are taken from a larger experiment (see Jiang, 2015a, 2015b).<sup>5</sup> Participants received instructions and a short test of comprehension for the *cheating game* and proceeded with this game (20 rounds), afterwards they received instructions and a short comprehension test for the *bribery game* and proceeded with this game (15 rounds). Finally, they answered a *trust* survey.

*Entering and Instructions.* To alleviate the experimenter effect, instructions were given by audio files pre-recorded by native speakers. Because of the cross-cultural nature of the experiments, special precautions were taken. All instructions were translated into the native language and back-translated into English by different translators.

*Games.* In all the games, participants could earn points that were convertible into money. The average payment per hour was €10 in both Italy and the Netherlands, 45 Yuan in China and ¥1000 in Japan. Participants received 15 fen per point in China, 4 yen per point in Japan, and 4 eurocent per point in Italy and the Netherlands. Note that participants were not told that they were playing "cheating games" and "bribery games" or that they could "cheat" and "bribe." The instructions were framed neutrally, and participants had to discover by themselves the possibility of cheating and bribing.

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5. Details on the procedure and discussion of other results can be found in Jiang, 2015b.

*Post-Experimental Survey and Payment.* At the end of the experiment, participants completed a survey in which we asked the World Values Survey question on trust. After that, they were paid.

## RESULTS

### DESCRIPTIVE RESULTS: BRIBERY, CHEATING PROPENSITY AND TRUST

There was much evidence for bribing and reciprocal cheating in the bribery game. Eighty-seven pairs (out of 100) reached an agreement on a transfer. Seventy-five pairs agreed on a positive transfer instead of zero or a negative transfer (which implies that the transfer goes from Thrower to Scorer), among which 53 pairs had an explicit bribery agreement (see Jiang, 2015b for the coding of a bribery agreement based on the chat data). Among those who reached a bribery agreement, the average agreed upon “bribe” was 14. The average bribe actually paid was 12, as 11% of the Throwers did not honor the agreement and entered a different number than the one agreed upon. Most Scorers who agreed on bribery subsequently cheated for Throwers, with an average foresight of 0.92. Thirteen percent of these Scorers did not honor the agreement: their foresight cannot be inferred to be statistically unlikely ( $F < 0.8, p > 0.02$ ). We report in the Appendix excerpts from players’ chats that show the role trust plays in bribery agreements.

As for cheating propensity, a substantial proportion of participants cheated for themselves in the individual cheating game. Moreover, in line with the Corruption Perception Index ranking, the proportion of cheaters was significantly higher in the corrupt cluster (China and Italy) than in the clean cluster (Japan and the Netherlands; 74% vs. 56%),  $\chi^2(1) = 6.636, p = 0.01, n = 200$  (see Jiang, 2015a for more results on cheating propensity).

Figure 2 shows the overall distribution of trust (1 means “most people try to take advantage of me whenever they can”; 10 means “most people are fair”). Note that both the mode and the median were on the lower spectrum of the distribution at “3.” We used a median split with the median participants included in “Low Trust” to generate a binary variable of relative trust: we classified those who trusted with a score of 3 or below as “Low Trust” ( $n = 116$ ), and those with a score higher than 3 as “High Trust” ( $n = 84$ ).

### MAIN RESULTS: TRUST, BRIBERY ENDORSEMENT, AND BRIBERY ENFORCEMENT

*Trust and Bribery Endorsement.* Since an agreement in the bribery game is cheap talk without any monetary cost, we do not expect that more trusting participants are more likely to enter a bribery agreement, as less trusting participants might be equally likely to enter such an agreement, except for not honoring it afterwards. Trust should not play a role in endorsing bribery.

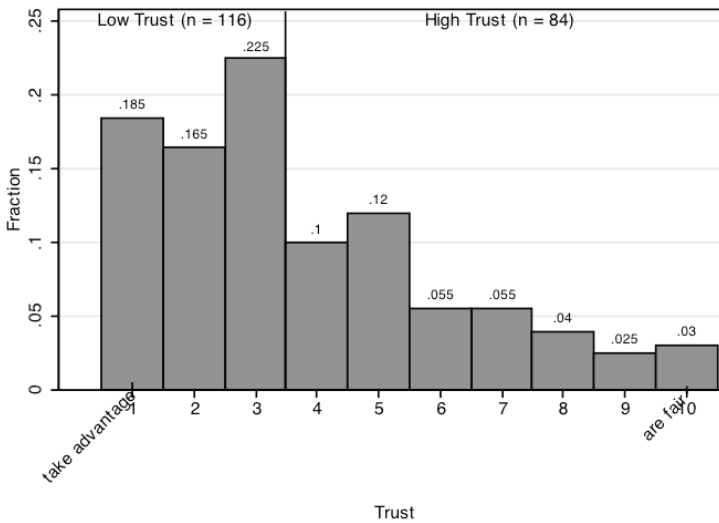


FIGURE 2. The distribution of trust.

As shown by the Fisher's exact test results at the bottom row in Table 3 there was indeed no evidence that high trust participants (both Scorers and Throwers) in our sample were significantly more or less likely to endorse bribery ( $p > 0.1$ , with effect sizes being small or negligible). Table 3 columns 1 and 2 show the respective proportions of bribery endorsers corresponding to their trust type and their role in the bribery game for all participants. This result held for both the corrupt country cluster (China and Italy) and the clean country cluster (The Netherlands and Japan). Columns 3 and 4 show the results only for participants from China and Italy, two countries that score high in the Corruption Perception Index. The last two columns show the results only for participants from Japan and the Netherlands, two countries that score lower in the Corruption Perception Index.

*Trust and Bribery Honoring.* Our main hypothesis was that trust facilitates the honoring of the bribery agreement. This hypothesis was partially supported. As shown in Table 4, columns 1 and 2, high-trust Throwers honored the promise of paying the bribe more frequently than did low-trust throwers (Cohen's  $d = 0.697$ ,  $p < 0.05$ ), whereas high-trust Scorers did not more frequently honor the promise to provide the cheating service (Cohen's  $d = 0.152$ ,  $p > 0.1$ ). The large majority of high- and low-trust Scorers honored the agreement in both clean and corrupt clusters. Among Throwers, only low-trust throwers defect on their agreement to pay a bribe. Moreover, as shown in columns 4 and column 6, the effect was found only in the clean cluster with medium to large effect size (Cohen's  $d = 0.857$ ,  $p < 0.05$ ), but not in the corrupt cluster (Cohen's  $d = 0.406$ ,  $p > 0.1$ ).

As a robustness check, we used the continuous trust measure. As shown in Table 5, the logistic regression results using the discrete variable of trust were robust: Trust was not correlated with bribery endorsement for either Scorers or Throwers, but it was correlated positively with more bribery honoring by Throwers.

TABLE 3. Trust and Bribery Endorsement

% Endorse Bribery	All participants (n = 100 pairs)		Participants in the corrupt cluster (n = 44 pairs)		Participants in the clean cluster (n = 56 pairs)	
	Scorer	Thrower	Scorer	Thrower	Scorer	Thrower
High Trust (Trust ≥ 4)	67.5% (27 out of 40)	64.4% (29 out of 45)	52.9% (9 out of 17)	61.1% (11 out of 18)	78.3% (18 out of 23)	66.7% (18 out of 27)
Low Trust (Trust < 4)	63.3% (38 out of 60)	60.0% (33 out of 55)	63.0% (17 out of 27)	50.0% (13 out of 26)	63.6% (21 out of 33)	69.0% (20 out of 29)
Fisher's Exact	<i>p</i> = 0.669	<i>p</i> = 0.649	<i>p</i> = 0.364	<i>p</i> = 0.338	<i>p</i> = 0.191	<i>p</i> = 0.540
Cohen's <i>d</i>	<i>d</i> = 0.088	<i>d</i> = 0.090	<i>d</i> = - 0.201	<i>d</i> = 0.220	<i>d</i> = 0.317	<i>d</i> = - 0.049

TABLE 4. Trust and Honoring the Bribery Agreement

% Honor Bribery	All participants (n = 53 pairs)		Participants in the corrupt cluster (n = 20 pairs)		Participants in the clean cluster (n = 33 pairs)	
	Scorer	Thrower	Scorer	Thrower	Scorer	Thrower
High Trust (Trust ≥ 4)	90.0% (18 out of 20)	100% (26 out of 26)	100% (6 out of 6)	100% (9 out of 9)	85.7% (12 out of 14)	100% (17 out of 17)
Low Trust (Trust < 4)	84.9% (28 out of 33)	77.8% (21 out of 27)	78.6% (11 out of 14)	90.9% (10 out of 11)	89.5% (17 out of 19)	68.8% (11 out of 16)
Fisher's Exact	<i>p</i> = 0.464	<i>p</i> = 0.013**	<i>p</i> = 0.319	<i>p</i> = 0.550	<i>p</i> = 0.574	<i>p</i> = 0.018**
Cohen's <i>d</i>	<i>d</i> = 0.152	<i>d</i> = 0.697	<i>d</i> = 0.585	<i>d</i> = 0.406	<i>d</i> = 0.115	<i>d</i> = 0.857

Note. \*\**p* < 0.05.

TABLE 5. Logistic Regressions with Discrete Measure of Trust

	$B^{endorse(S)}$	$B^{endorse(T)}$	$Honor(S)$	$Honor(T)$
	(100 pairs)		(53 pairs)	
Trust	0.143 (0.15)	0.086 (0.83)	-0.027 (-0.20)	0.422** (2.57)
Constant	0.566 (1.38)	0.170 (0.41)	1.985*** (2.88)	0.678 (0.91)
Log-likelihood	-64.73	-65.939	-20.673	-17.355
Wald $\chi^2$ (1)	0.02	0.69	0.04	6.59
Prob > $\chi^2$	0.882	0.408	0.844	0.010

Note. bootstrapped z-scores in parentheses (\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ ), with 500 bootstrapped replications.

Consistent with the results shown in Table 4, when we ran the regressions separately for the clean and the corrupt country clusters, the positive role that trust plays in Throwers' likelihood of honoring the bribe payment only holds in the clean country cluster.

#### ADDITIONAL RESULTS: CHEATING PROPENSITY AND THE JUSTIFIABILITY OF CORRUPTION

*Trust and Cheating Propensity.* Although we found some evidence that trust supports antisocial cooperation, we have not shown whether in our sample there is some supporting evidence that trust is also involved in honest behavior, that is, whether high levels of trust (the belief that most people are trustworthy) have a negative correlation with cheating for oneself. For that, we ran an additional analysis correlating trust and cheating propensity (for private benefit) in the non-interactive cheating game.

Based on simple logistic regressions, we found that the correlation between trust and the cheating propensity dummy is negligibly negative ( $r = -0.075$ ,  $p = 0.218$ , LR  $\chi^2 = 1.52$ ,  $n = 200$ ). There is a miniscule tendency among more trusting participants to cheat less for themselves. When we ran the regressions in the high-corruption or low-corruption country cluster separately, however, we found a marginally significant and negative correlation in the low-corruption cluster ( $r = -0.158$ ,  $p = 0.055$ , LR  $\chi^2 = 3.82$ ,  $n = 112$ ), but barely any correlation, and if any, a positive one, in the high-corruption cluster ( $r = 0.057$ ,  $p = 0.594$ , LR  $\chi^2 = 0.29$ ,  $n = 88$ ). At least in the low-corruption cluster, trust seems to have a bright side, as more trusting participants tend to cheat less. It could be argued that those who trust people to be trustworthy are themselves trustworthy and honest, so they are less inclined to cheat for themselves (Krueger, Massey, & DiDonato, 2008).

*Robustness Controlling for Cheating Propensity.* Since the propensity to cheat for oneself has an effect on endorsing bribery as shown by Jiang (2015b), cheating propensity can be a potential confound for trust, although the correlation between trust and cheating propensity is weak. Hence we also checked the robustness of our main result controlling for cheating propensity. As shown in Table 6 the result is robust controlling for cheating propensity.



TABLE 6. Logistic Regressions with Discrete Measure of Trust

	$B^{\text{endorse}}(S)$	$B^{\text{endorse}}(T)$	$Honor(S)$	$Honor(T)$
	(100 pairs)		(53 pairs)	
Trust	0.028 (0.25)	0.086 (0.81)	0.155 (0.61)	0.408** (2.48)
Cheating	2.69** (2.15)	-0.041 (-0.03)	6.455 (1.20)	-1.274 (-0.37)
Constant	-1.557 (-1.38)	0.204 (0.16)	-3.410 (-0.84)	1.765 (0.59)
Log-likelihood	-61.855	-65.939	-17.740	-17.245
Wald $\chi^2$ (1)	4.73	0.67	1.47	6.29
Prob > $\chi^2$	0.094	0.714	0.142	0.043

Note. Bootstrapped z-scores in parentheses (\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ ), with 500 bootstrapped replications.

*Trust, Justifiability of Corruption in WVS, and CPI.* It can be argued that more trusting participants in the low-corruption cluster but not in the high-corruption cluster might find corruption less justifiable. To test on this possibility, we ran further regressions using the World Value Survey data (2010–2014) on trust and how justifiable cheating and bribe taking are seen at the individual level in countries with varying perceived corruption levels. Respondents were asked to rate the justifiability of the following five behaviors related to cheating and bribery (10: always justifiable; 1: never justifiable):

- Claiming government benefits to which you are not entitled
- Avoiding a fare on public transportation
- Stealing property
- Cheating on taxes if you have the chance
- Someone accepting a bribe in the course of their duties

The overall reliability score of the five items was reasonably high (Cronbach's  $\alpha = 0.845$ ) and hence we constructed an overall index of justifiability of cheating and bribe taking by taking the mean of all five items. In our samples, the clean cluster consists of Japan [the score of Corruption Perception Index (CPI): 8] and the Netherlands (CPI: 8.9), whereas the corrupt cluster consists of China (CPI: 3.6) and Italy (CPI: 3.9). Here we first examined whether the correlation between trust and the justifiability of corruption is different for countries perceived to be at least as clean as Japan and for countries perceived to be at least as corrupt as Italy. It turns out that for countries with  $CPI \geq 8$ , the overall correlation was negative and significant, though very small,  $F(1, 10232) = 8.28$ ,  $r = -0.044$ ,  $p = 0.004$ . More trusting participants found corruption less justifiable. For countries with  $CPI \leq 3.9$ , the correlation was also significant, but positive,  $F(1, 41609) = 97.87$ ,  $r = 0.081$ ,  $p < 0.001$ , that is, more trusting participants found corruption more justifiable.

In light of this additional piece of evidence, we further examined if the correlation between trust and justifiability of corruption was overall more negative for the clean countries. We took the significance of the regression coefficient of "Trust" and "Overall justifiability" in each country as the dependent variable and the CPI

score of a country as the independent variable. We found that the  $t$ -value of the coefficient (Mean = 0.553, Standard Deviation = 3.475) was negatively correlated with the CPI score,  $F(1, 52) = 4.70$ ,  $r = -0.462$ ,  $p = 0.035$ . This finding highlights the complexity of the relationship between trust and corruption.

## DISCUSSION

The results indicate that the relationship between trust and corruption is more complex than the traditional view that high-trust countries are less corrupt (e.g., Rothstein, 2000). First, there are different kinds of corruption. For instance, bribery is very different from embezzlement. Bribery requires trust, because bribery agreements cannot be legally enforced. In the case of bribery, our experiment shows that trust enables corruption since more trusting bribers are more likely to honor the bribe payment in the two low-corruption countries. This is the *dark side of trust* (Tonoyan, 2005). In contrast, embezzlement does not require trust, since it involves only the embezzler. As a result, trust might play a deterring role in embezzlement as more trusting participants tend to cheat less in the two low-corruption countries, which is the bright side of trust.

Second, trust plays a role only at a specific stage in the bribery transaction. Our results show that trust is important when executing the bribery agreement, but not when negotiating a potential bribery agreement. In other words, trust matters for bribery enforcement, but not for bribery endorsement in situations in which endorsement is not costly. Only when executing the agreement, that is, when costs are incurred, does the need to trust the other party arise. One will only honor the agreement when one trusts that the other will honor the agreement as well and will not take advantage of one's vulnerable position in the shady context of bribery.

A third complication arises when thinking of the different roles in a bribery transaction. We have shown that trust only influences whether the *briber* (the Thrower, in our game) honors the agreement: it does not influence the extent to which the *bribee* (the Scorer, in our game) honors the agreement.

To understand the reasons for the asymmetric effect of trust on the different players' roles, let us consider the different tasks entailed by the two roles: while Thrower's agreed-upon action is to pay Scorer a side payment in return for a cheating service, Scorer's agreed-upon action is to cheat for Thrower. In other words, Thrower's action has a monetary cost, since Thrower has to transfer earning points, while Scorer's part of the agreement—cheating in favor of Thrower—does not cost Scorer any earning points. Trust might play a much less important role for Scorers, because honoring the agreement has no monetary cost, whereas for Throwers trusting that the other will honor the agreement is an important consideration that motivates keeping a promise, even at a personal cost. This result is consistent with findings in Jiang (2015b) where the effect of pro-sociality on honoring a bribe also interacts with the role of the player: while more pro-social Throwers tend to honor

the bribe payment, more pro-social Scorers are not more or less likely to honor the cheating service.

Finally, our experiment suggests something surprising, namely, that trust matters in clean countries but we do not find evidence that supports its role in corrupt countries. We speculate that in corrupt countries corruption is a descriptive, and possibly a social, norm: in such countries most people are corrupt and expect that most others are corrupt, too. Hence, trust is much less important in countries with widespread corruption than in clean countries, in which it is not obvious that one will find a trustworthy partner in crime.

Here, we offer some speculations on why the effect of trust only plays a role in clean countries. In a clean country, corruption is uncommon. Therefore, the expectation is that people will not cheat easily. A low-trust Thrower may have little faith that the Scorer will fulfill the agreement. The low-trust Thrower may think that even a Scorer who agreed to be bribed may have second thoughts, or just be the type of person who reneges on promises if there is something to be gained. A high-trust person, however, might still keep his promises as the psychological cost of promise breaking is too high. If, however, corruption is the descriptive norm in a country or society, it is common to enter and honor bribery agreements, and trust may play a much lesser role.

The low correlation at the individual level between trust and personal cheating in the two more corrupt countries is consistent with the result that there is little correlation between trust and bribery in the high-corruption cluster. One potential explanation for this finding is that when corruption is socially accepted or even expected (Bicchieri, 2006, 2015), individuals may engage in it without feeling that their behavior is socially detrimental. In such a context, even high-trust people may be likely to engage in corruption. In a clean society, however, corruption is infrequent and socially condemned. In such a society, engaging in corruption is more likely to be a personal, somewhat deviant choice, as it is not a socially expected or condoned behavior.

There are several caveats we need note. First, we investigated the specific case, in which the benefit to the briber is at least as large as the cost to experimenter: bribing therefore is not inefficient, though the psychological cost of the abuse of power may still remain. Thus, our result might not generalize to situations in which the social harm produced by cheating is more salient. For future research, one might consider making the social harm significant instead of merely hurting the experimenter, so that the bribery deal is socially inefficient in a salient and costly way.

Second, Scorer's honoring of the cheating service is only psychologically costly, if any, but not monetarily. Future research could examine whether the results would hold if honoring cheating becomes payoff-wise costly, by incorporating the risk of being punished when cheating is discovered.

Third, in the bribery game, trusting and trustworthiness are not clearly separated. Thrower's untrustworthy defection on Scorer, or the other way around,

could result from lack of trust on the other's trustworthiness. Thus, the success of a bribery deal—the pair reaching a bribery agreement that is honored by both parties—crucially depends on the mutual trust. Depending on the research questions, future research can also utilize a sequential variant of the game with symmetric information so that the bribee is informed about the bribe amount paid before he plays the cheating game, to resemble more a real life bribery situation.

Finally, although attitudinal trust has been found to predict behavioral trustworthiness in a trust game (see, e.g., Glaeser et al., 2000), one promising direction would be to correlate behavioral trustworthiness and the propensity to honor a bribery agreement. Moreover, multi-item trust measures (e.g., Couch, Adams, & Jones, 1996; Couch & Jones, 1997; Yamagishi & Yamagishi, 1994) might give more robust results than the single-item measure we used.

## CONCLUSION

This study sheds some light on the complex relationship between trust and corruption. The role trust plays in corruption can potentially have both a bright and a dark side. Our results shed light on the negative role trust plays in facilitating bribery agreements that are difficult to enforce. Moreover, the bribery game we used (see Jiang, 2015b) provides a tool to study this complex relationship. Our study cannot offer final answers to the puzzle of trust and corruption: it can only indicate in which directions we should go.

Here are some questions that merit an answer: What is the impact of particularized trust versus generalized trust on bribery behavior? How do expectations about the other party honoring his or her part of the agreement matter? What is the relationship between trust and expectations, and how do they interact and drive the dynamics of bribery over time? These are important questions that involve large-scale sociopolitical phenomena that affect the welfare of many people. We believe future experiments can take further steps to answer some of these crucial questions.

## APPENDIX

To shed light on the dynamics of bribery negotiation and illustrate some of the thinking of corrupt participants in the lab setting, we cite some excerpts from the chats in the bribing stage. The content of these chats shows that many participants were well aware of the possibility of bribing, and provides some evidence about the role of trust in the bribery game.

First, there is evidence from the chat data that participants perceive the bribery game as a bribery situation. Here is an example from Jiang (2015b) that shows that some participants explicitly express their aversion to bribery while others claim that it is just “a virtual game.” The conversation between the Chinese pair goes as follows:

Scorer: “Hi. = = Is this [*huilu*](translation: bribery in Chinese)? Sigh. My heart is so very tangled up. Ha, no need to give anything.”

Thrower: “Yes, you choose the biggest every time and I will give you 13, what do you think? Because if you choose the biggest one every time, I can earn  $15 \times 3 = 75$ . But you can only earn 50. So if I give you 13, then we are even?”

Scorer: “Are you male?”

Thrower: “Sorry, it should be  $15 \times 5 = 75$ . Yes, I am male. Then we both do 13.”

Scorer: “Hey, I don’t like bribe.”

Thrower: “It is almost time. What can we do then. This is just a virtual game. It is an economic decision, not political bribery.”

Now let us look at a Japanese conversation. Although Japanese conversations tend to be very short, the dynamics of the bribery negotiation is clearly exposed, even within a few sentences. For instance, a Japanese Scorer says that the expected payoff of Thrower would be 75 (without explicitly saying if he would cheat) and asks about the transfer. Thrower says: “Personally, zero is good.” Scorer agrees in a very nice way. The Thrower then reveals his preference for honesty in an implicit way: “Could I ask for a total number about 50?”

These examples show that some participants do take the game seriously: cheating is *not* good. But a substantial proportion of participants in our experiment did mention cheating explicitly or implicitly. While in the bribing stage the participants could decide on a “transfer,” it was clear that many saw it as an opportunity to offer or solicit bribes in return for cheating in the next stage. In the Netherlands, participants even cover up their cheating with humor. When a Dutch Thrower, not convinced that his expected payoff would be 75, said: “But I don’t always throw that high,” the Scorer answered: “But I always think high.” Here is how a Japanese Thrower requests the favor after offering a bribe: “We will need the Scorer to have a very keen guess.”

Another observation from the chat data is that participants were also aware that the transfer relies on trust. In particular, Scorer needs to trust that Thrower does input X as promised. A Dutch Scorer said: “I can’t be sure about what you put as X, so I will just have to trust you as well...Filling it in now. Filled it in?” Here is another Dutch pair who just agreed to input 12.5. Scorer: “Is it working over there?” Thrower: “No. I think you have to fill in whole

numbers. So 12 then?" Scorer: "Ha-ha, just checking whether you really filled in 12.5. Smiley. Well, because it's you: 12."

Some enforcement mechanism like oral blackmailing also emerged as a result of the challenge on trust. For instance, an Italian Thrower proposes a transfer of zero. Scorer: "Well, but then I will punish you, and I write that I had always chosen in mind the side unfavorable for you...If we agree something like 20, I will always mark the favorable side for you and you will be fine." Thrower says that a negative transfer is better for him/her but cannot convince Scorer. Thrower: "Let's do 5. 20 is too much." Scorer: "Let's do 17: It brings good luck. If we get a lot of 1s, I mark the down side and you earn 6." Thrower: "I don't believe it. I don't trust it. 10 and we don't talk more." Scorer: "15 last offer." Thrower: "Mmm... OK." Result: Thrower indeed transfers 15 and Scorer indeed always picks the good sides. It is also interesting to see that Italians negotiate a lot but do not revolt against being blackmailed and do not punish blackmailers—suggesting that they might see it as a legitimate bargaining strategy.

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