Words Speak Louder Than Money

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Abstract: Should one use words or money to foster trust of the other party if no means of enforcing trustworthiness are available? This paper reports an experiment studying the effectiveness of two types of mechanisms for promoting trust: a costly gift and a costless message as well as their mutual interaction. We nest our findings in the standard version of the investment game. Our data provide evidence that while both stand-alone mechanisms enhance trust, and a gift performs significantly worse than a message. Moreover, when a gift is combined with sending a message, it can be counterproductive.

Classification codes: C70; C91
Keywords: Communication, content analysis, experimental economics, gift giving, investment game, message, trust, trustworthiness

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1. Introduction

Trust and trustworthiness are vital components of social and economic exchange and without their presence many welfare-increasing interactions would not take place.[1] Given that societies benefit from maintaining stable levels of trust and trustworthiness, it is important to ask: What types of mechanisms are best suited for achieving this goal? The motivation for our study draws on findings from the negotiation literature. In particular, before an agreement is made, parties negotiate the terms and often make concessions to win trust of the other party (e.g., Walton and McKersie, 1991). In our understanding, this suggests that it is important to combine words with actions that have monetary consequences.

In the presented experiment, we study two stylized mechanisms for promoting trust. One is a costly gift from the trustee to the trustor prior to playing the investment game that makes the trustor at least as well off as if no transaction ever took place. While certain aspects of gift giving have previously been explored in the context of dictator and gift-exchange games (see Camerer, 2003 and Cooper and Kagel, 2009 for excellent surveys), the novelty of our approach is that here gift preceeds the actual transaction and acts as a catalyst. The other mechanism is a written message, which involves no explicit monetary costs.

The choice of these two mechanisms is motivated not only by the fact that one often complements the other in real world applications (e.g., in striking a deal, a handshake often comes along with a bottle of wine), but also because neither of these mechanisms relies on any enforcement or intervention from an external party, such as courts or escrow. The nature of the moral hazard problem in the ensuing investment game is the same whether the trustee sends a gift or writes a message to the trustor. Therefore, the two mechanisms are directly comparable.

Whether the gift or the message is more effective in promoting trust and enhancing the efficiency of the relationship is an empirical question. Our experimental

[1] See Arrow (1974), Putnam (1993), Fukuyama (1995), Knack and Keefer (1997), La Porta *et al.* (1997) and Zak and Knack (2001) on the documented importance of trust.

[2] For example, Berg *et al.* (1995), Bolton *et al.* (2004), Ellingson and Johanesson (2004), Engle-Warnick and Slonim (2004), Andreoni (2005), Andreoni and Samuelson (2006), Charness and Dufwenberg (2006), Huck *et al.* (2006), Chaudhuri and Gangadharan (2007), Bracht and Feltovich (2009), Charness *et al.* (2008), Servátka *et al.* (2008), Ben-Ner and Putterman (2009), Ben-Ner *et al.* (2009), Deck *et al.* (2011)

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design includes treatments that allow us to observe the performance of each mechanism in isolation and as well as examine their interaction. An important feature of the design is that in our Interaction treatment the agent has the complete freedom to use either mechanism alone or both together. Therefore, the choices made by subjects reveal what they believe is the optimal usage of monetary and nonmonetary mechanisms in fostering trust.

In addition to observing choices, we also ask our subjects to interpret the reasons for using each mechanism. This allows us to gain better understanding of how the subjects' choices are connected to their perceptions of their counterpart's intentions. To the best of our knowledge, our data set is the first to allow the analysis of the interpretations of gifts and messages, which contributes to a growing literature on the content of communication.

Recent theoretical and experimental literature has produced some relevant insights into various other mechanisms that have been shown to influence the decisions of trustors and trustees.[2] Satisfaction guaranteed and escrow accounts -- two examples of costly mechanisms fostering relationships -- were experimentally studied by Andreoni (2005) and Bracht and Feltovich (2008), respectively. In their designs, giving the trustor an option to annul the transaction or forfeit the amount that the trustee deposited in the escrow account can provide sufficient incentives for the trustee to act upon the terms of deal. In practice, both of the mechanisms hinge on external enforceability, and thus it is not obvious whether they increase the intrinsic propensity to trust (i.e., whether the trustors would act in the same manner if the annulment of the transaction or forfeiting the escrow account were up to the trustee's discretion) or only replace trust with incentives relying on the rationality of trustees that make the trustors behave in the same way *as if* they were trusting. However, satisfaction guaranteed, escrow accounts and other enforceable trust-enhancing mechanisms are not always available to the transacting

[2] For example, Berg *et al.* (1995), Bolton *et al.* (2004), Ellingson and Johanesson (2004), Engle-Warnick and Slonim (2004), Andreoni (2005), Andreoni and Samuelson (2006), Charness and Dufwenberg (2006), Huck *et al.* (2006), Chaudhuri and Gangadharan (2007), Bracht and Feltovich (2009), Charness *et al.* (2008), Servátka *et al.* (2008), Ben-Ner and Putterman (2009), Ben-Ner *et al.* (2009), Deck *et al.* (2011) and many others.

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parties. Therefore, it is important to understand the effect of widely available mechanisms that do *not* rely on enforceability.

While both strands of the literature on costly and costless mechanisms find that the levels of trust and trustworthiness can be enhanced, they do not allow for a direct comparison of their relative importance. This is due to different experimental settings across the studies, and more specifically and importantly, because of the aforementioned enforceability differences. In what follows, we present an experiment specially designed to address these two issues.

2. The Experiment

Our experiment consists of a 2x2 design (presented in Table 1) with treatment variables being the ability to unilaterally communicate and to give a $10 gift by the trustee. In all four treatments, subjects play the standard version of Berg *et al.* (1995) two stage investment game: There are two players, A and B, both endowed with $10. In stage one, player A decides how much of his initial endowment to send to his counterpart, i.e., he chooses a whole dollar amount $S \in \{0,1,...,10\}$. The remaining portion of the endowment is his to keep. The amount sent is tripled by the experimenter. In stage two, player B decides how much of the tripled amount, $R \in \{0,...,3S\}$, to return to player A. The amount kept by player B is added to his own endowment (if any).

Table 1: Experimental Design

	No Gift	**Gift**
No Message	Baseline	Gift
Message	Message	Interaction

The treatments vary in the pre-game stage: *Baseline* does not have a pre-game stage; in *Message*, player B can send a hand-written free form message to player A; in *Gift*, player B has an option to transfer his whole $10 endowment to player A or keep it for himself (irrespective of player Bs decision, player A is still constrained to send a maximum of $10 in stage one of the game); and finally, in *Interaction*, we study the interplay of the two variables by allowing player B to send a message and/or to transfer his endowment to player A.

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Our objective is to compare the two mechanisms for inducing trust (gift giving and message) in terms of their impact on the overall efficiency as determined by the transfer of player A. *Ex ante*, it is not clear which of these mechanisms is more effective. It is important to note that both a gift and a cheap talk message can be interpreted in the same way in our design. That is, both can be viewed by player A as a strong signal that player B is trustworthy, or as a strategic move of player B to induce a higher amount sent and a preparation for defection.

From the perspective of making meaningful comparisons of the two mechanisms, it is crucial that they are similar in structure. While allowing also for an intermediate amount of a gift would produce richer data that could possibly reveal further insights into the effects of gift giving on trust, we decided to implement a simpler setting to avoid the problem of having to find a "matching level of communication" in the other treatment. In the current design, both mechanisms produce binary outcomes (gift or no gift and message or no message) that reduce the complexity and simplify the interpretation of subjects' choices.

At the same time, the message is left free-form because it was our objective to compare mechanisms at their best performance. From the perspective of the recipient, the best gift in the Gift treatment is obvious, but this is quite unclear in the Message treatment. However, as opposed to a gift, a message is costless (when one abstracts from cognitive and writing costs of constructing the message) and therefore the sender always has the incentive to select the most persuasive one.[3]

Following our discussion in the introduction section, we have no theoretical reasons to favor gift giving over message or vice-versa. A message may represent a promise,[4] but it is still a cheap talk. A gift, on the other hand, is a costly signal (along the lines of the idiom 'put your money where your mouth is'), which might be a reason in itself for thinking that it will perform better than a stand-alone message. Then again, it has been documented that money can sometimes crowd out intrinsic motivation (Ostrom,

[3] An alternative design would be to use prefabricated messages, but Charness and Dufwenberg (2010) show that such approach greatly reduces the power of communication.
[4] A promise as presented by Charness and Dufwenberg (2006).

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2000; Frey and Jegen, 2001; Gneezy, 2004; Gneezy and Rustichini, 2000a, 2000b).[5] It is, therefore, plausible that giving a gift could have a negative effect on trust and perform worse than sending a message.[6]

Both Gift and Message are intended to induce a higher amount sent by player A. We expect that giving subjects the option to use both mechanisms will do at least as well as when they are limited to using just one of them. Our intuition is based on the fact that the subjects can now take advantage of both worlds. That is, give a gift to establish reputation (Servátka, 2009 and 2010) and/or trustworthiness via foregoing earnings as well as insuring that player A can be no worse off from investment than he was at the beginning of the game, and send a message to establish psychological enforcements (e.g., reciprocity, guilt, conformism) and counteract/address the potential negative aspects of gift giving that may lead to the crowding out of intrinsic trust. Lastly, if one of these mechanisms clearly dominates the other, then subjects can simply choose to use that mechanism and abstain from the other.

3. Procedures

The experiment was conducted at the University of Canterbury in Christchurch, New Zealand. A total of 270 subjects participated in the study. Most of the students had previously participated in economics experiments, and some (but not a majority) had experience with investment-game-like-scenarios. Each subject only participated in a single session of the study. On average, a session lasted 50 minutes including the initial instruction period and payment of subjects. Subjects earned on average 17.21 NZD.[7] All sessions were hand run in a classroom.

Each session included a minimum of 12 subjects who were randomly matched into pairs. The assignment of pairs was done according to the following process. The

[5] A nice exposition of possible detrimental effects of explicit monetary incentives can also be found in Fehr and Falk (2002).

[6] The behavior of both players can be seen as 'proxies' for trusting and trustworthy behavior (Charness *et al*. 2008). There are other possible motivations why players would send and return positive amounts, such as other-regarding preferences (Cox, 2004) or preferences for increasing social welfare (Charness and Rabin, 2002). One could, of course, also ask the follow up question: How does a message and a gift affect other-regarding preferences? In this paper we are primarily concerned with the size of the transfer and efficiency and leave this other exploration for future research.

[7] The adult minimum wage in New Zealand at the time of the experiment was 10.25 NZD per hour.

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classroom was segmented in half such that all subjects of a given type would be located in the same half of the room. The desks for each type were arranged in two rows facing the wall, and thus neither type would be able to see the other when making decisions. The subjects were free to choose any seat upon entering the classroom. After the subjects signed experiment consent forms, the experimenters publicly flipped a coin to determine which side of the room was to be which type. The allocation of a player A and player B to a particular pair was done by experimenters randomly pairing one subject from each side of the room together.

The instructions were projected on the screen and read aloud.[8] The investment game and general procedures were explained first. Only then did the experimenters announced that: "Before you play the described game, player B will have an opportunity to write a message / send their endowment / write a message and/or send their endowment to their counterpart player A" and projected as well as read aloud the instructions for the pre-game stage.[9] At the end of the instruction period, the experimenters privately answered subjects' questions (if any).

In the pre-game stage, player Bs were given the opportunity to write a message / transfer their endowment / write a message and/or transfer their endowment to their counterpart player A on the provided pre-game decision form. In *Gift* and *Interaction* treatments the experimenters then filled in the blank in the following sentence on player As' decision form:

> *Player B has transferred $____ to you before the start of the game. This amount is yours to keep and will be added to your earnings.*

Player As were then asked to answer a question why they believed that player B transferred or did not transfer their $10 endowment to them in the pre-game. It was emphasized that this information would remain private.

In *Message* and *Interaction* treatments the experimenters passed the same pre-game decision sheet with (or without) a message to player As from their counterpart player B. Player As were asked to answer a question why they believed that player B sent

[8] The subject instructions are provided in Appendix A.
[9] Obviously, there was no pre-game stage in Baseline.

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or did not send a message to them in the pre-game and what did the message (a lack of message) mean to them. Again, it was emphasized that this information would remain private.

At the beginning of the experiment both players were endowed with \$10.[10] In stage one of the investment game, irrespectively of the treatment, player As had to decide how much of their \$10 endowment they wanted to keep for themselves and how much to transfer to their anonymous player B counterpart. This was done by writing down a non-negative integer from 0 to 10 on their decision sheet. As a check for understanding, the player As also had to answer how much money they kept for themselves. Once everyone made their decisions, all the decision sheets were collected. The experimenters completed the following statement on player Bs' decision sheets in order to indicate to player B the amount sent to them from their counterpart player A and the tripled amount for which they needed to make their allocation decision:

Player A has transferred \$_____ to you in Stage 1.
The experimenter has tripled this amount, and you have received \$_____

After all decision sheets were returned, player Bs decided how much of the tripled amount to transfer back to their counterpart player A and how much of it to keep for themselves. Once again as a check for understanding, player Bs had to write down both the amount returned and kept for themselves.

Upon the completion of stage two, one of the experimenters collected all decision sheets while the second experimenter transferred the decision information of player Bs to their player A counterparts' decision sheet. The first experimenter then returned the decision sheets to all participants to reveal their overall earnings. Lastly, subjects completed a short questionnaire. Upon completion, subjects were privately paid their earnings for the session.

[10] If Player B decided to transfer his endowment in the pre-game stage in Gift and Interaction treatments, he would start the investment game with \$0, while his counterpart player A with \$20. For a further discussion, see the results section or Servátka *et al.* (2010).

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4. Results

The purpose of our experiment is to study the effectiveness of gifts and messages in promoting trust and enhancing the efficiency of relationships. While the efficiency in all treatments solely depends on the amount sent by player As, the potential differences in subjects' behavior could be due to different usage of the two mechanisms (i.e., the proportion of player Bs who choose to give a gift and/or send a message in the pre-game stage) and the consecutive reaction by player As to receiving a gift and/or a message.

Note also that in order to shed some light on the issue of whether one of the mechanisms dominates the other in terms of inducing a higher amount sent by player As, we compare the usage and effects of each of them in isolation (Message and Gift) relative to the case when both mechanisms are available at the same time (Interaction).

We therefore present a comparison of subjects' behavior according to the following four criteria: (i) usage of available mechanisms; (ii) amount sent by player As conditional on employing available mechanism(s); (iii) overall efficiency at the treatment level; and (iv) amount and proportions returned by player Bs.

Result 1 (Usage of available mechanisms): A stand-alone message was used more frequently than a stand-alone gift. In Interaction, a message was used more often than a gift and the usage of either mechanism remained similar to that in isolation.

Support for Result 1: The summary statistics of subjects' behavior across all four treatments is presented in Table 2. As can be seen from the table, both mechanisms were used frequently: In Message 35 out of 36 (97.2%) subjects chose to send a message[11]; in Gift 26 out of 34 (76.5%) subjects chose to give a gift. According to the 2-sided Fisher's exact test, this difference is statistically significant (p = .012).

In Interaction, 30 out of 32 (93.8%) player Bs sent a message while 19 out of 32 (59.4%) gave a gift.[12] This difference is also statistically significant (p = .002), which is perhaps not surprising because of the obvious difference in monetary costs. Interestingly enough, all 19 player Bs who gave a gift in Interaction also wrote a message to player A,

[11] The paired player A of the only person who did not send a message sent 0 in stage one.
[12] In one of the two cases when player B did not sent a message, the paired player A sent 0 and in the other he sent 6 while player B responded with returning 8.

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suggesting that the message is at least as important as a monetary transfer. Finally, there is no difference between the usage of either mechanism in Interaction or in isolation (p = .598 and .118 for messages and gifts, respectively). □

Table 2: Summary Statistics – Amount Sent by Player As and Returned by Player Bs

	Baseline (n=33)		**Message (n=36)**		**Gift (n=34)**		**Interaction (n=32)**	
	Sent	**Returned**	**Sent**	**Returned**	**Sent**	**Returned**	**Sent**	**Returned**
Average	5.55 [4.07]	4.87 (29.3%) [6.35]	8.92 [2.67]	12.75 (47.7%) [7.95]	6.47 [4.17]	3.38 (17.4%) [5.08]	7.88 [3.97]	7.81 (33%) [6.49]
Median	5	2	10	15	9.5	0	10	10
Avg if Gift Given		-		-	7.31 [3.82] {26}	3.58 (16.3%) [4.50]	8.95 [3.15] {19}	8.42* (31.4%) [4.73]
Avg if No Gift		-		-	3.75 [4.33] {8}	2.75 (24.4%) [7.00]	6 [4.61] {13}	7.50 (41.7%) [8.70]
Avg if Message Sent		-	9.17 [2.22] {35}	13.11 (47.7%) [7.76]		-	8.20 [3.80] {30}	8.06** (32.8%) [6.43]
Avg if No Message		-	0.00 [0] {1}	-		-	3.00 [4.24] {2}	4.00 (44.4%) [5.66]

Standard deviations in brackets. Number of subjects in subsamples in braces. Amount returned as a percentage of the triple amount sent in parentheses.
*All (19/19) player Bs also sent a message
**19/30 player Bs also gave a gift.

Result 2 (Amount sent): Conditional on employing the available mechanism(s), a message induces higher amount sent by player As than a gift. Both mechanisms, whether employed individually or together, increase the amount sent comparing to Baseline. Finally, the combination of a message and a gift in Interaction outperforms a stand-alone gift and does not do better than a stand-alone message in the respective treatments.[13]

[13] Unless otherwise noted, giving a gift and sending a message refers to Gift and Message treatments, respectively.

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Support for Result 2: In order to test whether a gift or a message influences the subjects' behavior to a greater degree, we compare the amount sent by player As in Message and Gift treatments conditional on employing the available mechanism (see the bottom four rows in Table 2). While both mechanisms increase the average and the median amount sent by player As relative to Baseline, the conservative robust rank-order test presented in the right hand side panel of Table 3 detects that the difference is strongly statistically significant if a message was sent (p = .000), but only marginally if a gift was given (p = .083). A less conservative nonparametric Wilcoxon rank-sum test detects the latter difference at a higher significance level (p = .044). Finally, the amount sent in Message following a message was statistically significantly higher than the amount sent in Gift treatment following a gift (p = .047).

While making the two treatments comparable in terms of incentives resulting from the use of Message and Gift, our design creates non-negligible differences in terms of potential income effects if player B decides to give a gift, but does not distinguish whether the larger amount sent by player A in comparison to Baseline was due to player A currently having \$20 rather than \$10 or whether it was the received gift that was responsible for the observed increase. In a follow-up note to the current paper (Servátka *et al.*, 2010), we address this issue directly and find that the "gift effect" causes the increase in amount sent while the larger endowment had no significant effect on player A's decision.

Lastly, we test whether a combination of sending a gift and a message in Interaction enhances the amount sent by player A in comparison to a stand-alone gift or a stand-alone message in the respective treatments. According to the robust rank-order test reported in Table 4, the amount sent in Gift after a gift was given is lower than the amount sent in Interaction (p = .064) when both mechanisms were employed simultaneously. The same test does not detect statistically significant difference between Message and Interaction (p = .891) conditional on mechanisms being used, but it is worth noticing that the average amount sent is higher in the treatment where only sending a message is available, suggesting that the usage (not necessarily the availability) of giving a gift might undermine the incentives generated by the message. □

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Table 3: Robust Rank-Order Test Results for Amount Sent by Player As

	All data			Conditional on the Mechanism Used		
Efficiency ordering:	**Message**	**Interaction**	**Gift**	**Message**	**Interaction**	**Gift**
Baseline [a]	-3.56	-2.34	-0.93	-3.86	-3.22	-1.39
	(.000)	(.009)	(.175)	(.000)	(.001)	(.083)
Gift	-2.47	-1.50	-	-1.99	-1.85	-
	(.014)	(.135)	-	(.047)	(.064)	-
Message	-	-	-	-	-0.14	-
	-	-	-	-	(.891)	-
Interaction	-0.66	-	-	-	-	-
	(.511)	-	-	-	-	-

[a] All tests comparing the Baseline data to other treatments are 1-sided.
p-values in parentheses

Result 3 (Efficiency): The treatment with the highest efficiency (as measured by actual realized payoffs for each pair of players over the maximum possible payoffs) was Message (89.2%), followed by Interaction (78.8%), and Gift (64.7%). The lowest level of efficiency was observed in Baseline (55.5%).

Support for Result 3: The efficiency levels in each treatment depend on the amount sent by player As (see the first two rows of Table 2) as a reaction to the mechanism used (or whether no mechanism was used) by player Bs in the pre-game. The robust rank-order tests presented in Table 3 reveal that the amount sent by player As in Message and Interaction are higher than in Baseline (p = .000 and .009, respectively). The same test does not detect a significant difference between the amount sent in Gift treatment and Baseline (p = .175). Therefore, the mere availability of the message mechanism itself as well as message and gift together (in Interaction) significantly increased efficiency comparing to Baseline while the availability of gift increased efficiency only insignificantly. □

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Result 4 (Amount and proportions returned): Player Bs who sent a stand-alone message returned a higher proportion of the tripled amount comparing to Baseline, while player Bs who gave a stand-alone gift returned a lower proportion. In Interaction, those player Bs who employed both mechanisms simultaneously returned more compared to Baseline, but this was still less than player Bs who sent a message in Message.

Support for Result 4: Table 2 presents a summary of player Bs' behavior across the four treatments in terms of the absolute amount as well as the proportion of the tripled amount returned. However, because of different strategy spaces available to individual player Bs this only draws a partial picture on their behavior. To get a better understanding of player Bs' behavior conditional on the use of mechanism, we exclude subjects whose only choice was to return zero in order to partly correct for correlation of choices caused by the experimental design and compare the distributions and the medians of amount returned by player Bs using Epps-Singleton and robust rank-order test (respective upper and lower line within each category in Table 4). Our data indicate that when the available mechanism(s) is (are) employed, i.e., gift is given in Gift, message sent in Message, and both message and gift provided in Interaction, the amount returned in Message (proportion returned = 47.7%) is higher than in Gift (16.3%) and Interaction (31.4%) as well as in Baseline (29.3%). In all three cases the distributions are different at the 1% level, i.e., $p = .000$.

It is possible that player Bs who gave a gift returned a lower proportion than in Baseline as they might have felt that they were entitled to the money they were sent by player A and were reluctant to return relatively large amount back because they had to pay to influence the outcome (see Gächter and Riedl, 2005 for a study on entitlement effects). A similar entitlement arises in experiments with real effort where subjects give less to their partners when they have to exert effort to earn their endowment (e.g., Rutström and Williams, 2000; Cherry *et al*., 2002) or the role that gives them some sort of advantage in the game (e.g., Hoffman and Spitzer, 1985; Hoffman *et al*., 1994).[14]

The tests in Table 4 also reveal that if a gift was given in Gift, then the amount returned was lower than if a message and gift were used simultaneously in Interaction (*p*

[14] We thank an anonymous referee for suggesting this explanation.

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= .001), altogether suggesting that sending a message increases trustworthiness but giving a gift undermines it. □

Table 4: Epps-Singleton and Robust Rank-Order Tests of Player Bs' Returns

Treatment	Message	Message Sent	Gift	Gift Given	Interaction	Interaction (Message Only)	Interaction (Gift and Message)
Baseline	29.15 (.000) -3.36 (.001)	29.14 (.000) -3.36 (.000)	7.60 (.107) 1.20 (.229)	11.70 (.020) 0.98 (.330)	24.32 (.000) -2.10 (.036)	19.79 (.001) -0.74 (.460)	45.78 (.000) -2.23 (.026)
Message	-	-	62.55 (.000) 5.41 (.000)	-	41.42 (.000) 2.60 (.009)	-	-
Message Sent	-	-	-	85.71 (.000) 5.78 (.000)	-	24.74 (.000) 0.69 (.493)	73.33 (.000) 3.04 (.002)
Gift	-	-	-	-	19.93 (.001) -3.4 (.001)	-	-
Gift Given	-	-	-	-	-	8.79 (.067) -1.34 (.180)	16.99 (.002) -3.47 (.001)

Tests exclude observations where player A sent 0 to player B.
Epps-Singleton test presented above robust rank-order test within each category.
p-values in parentheses.

5. Interpretation Analysis of Gifts and Messages

To gain a deeper insight into the inner workings of gifts and messages, we have asked their recipients (player As) for their interpretations of why the message or the gift was sent to them.[15] These interpretations serve as foundations for the decisions of player As. There are two advantages of asking this question: (i) we obtain cleaner data about

[15] The main reason for including questions regarding player As' interpretation of messages and beliefs was to increase our understanding of the two mechanisms. Additionally, the answers enabled us to verify that the subjects had a good understanding of the game. We decided to include non-salient questions after every decision in all treatments for consistency reasons and also not to highlight in the eyes of the subjects which of the decisions were crucial for our study as increased cognitive attention might cause the subjects to behave differently. Obviously, by including the non-salient questions on subjects' decision forms, our procedures differ from the standard way the investment game is run. We have, therefore, checked our data against data in Cox (2004) for any effects of including these questions and have found no significant differences in subjects' behavior in the respective baseline treatments.

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decision-relevant content of messages than if we just coded the content of messages; and (ii) we obtain data on interpretations of gifts that we would not be able to get otherwise. This allows for a comparison of gifts and messages in terms of the intentions they signal to the recipient.

Following the standard in the communication literature (e.g., Ellingsen and Johannesson, 2004; Charness and Dufwenberg, 2006; Ben-Ner and Putterman, 2009; Ben-Ner *et al*., 2009), we have coded the interpretations of messages and gifts into several categories. Because a gift is qualitatively different in its nature than a message, we have selectively and subjectively chosen the most relevant categories for each of them. Two undergraduate students have independently coded all the statements into the provided categories, assigning a value of 1 if the category reflected the content of the message and 0 otherwise. The two students read subjects' instructions to the game, but were not told the specifics about our research question. We took a conservative approach and considered a statement as belonging to a category only when both of our coders have agreed.[16]

First, we analyze the contents of stand-alone messages and stand-alone gifts by looking at the Message and Gift treatments separately. Then, we look at the impact that messages combined with gifts had on the amount sent. This is done by comparing Gift and Interaction treatments.[17]

5.1. Interpretations of Messages

The interpretations of messages have been coded into the following categories: proposal of *Equal Split*, proposal of *Equal Payoffs*, *Promise*, *Trust* appeal, *Pleasantries* (e.g. thank you, smiley face), and statement implying both being *Better Off*. All the remaining interpretations were categorized as *Other*. Table 5 reports for each category the frequencies of interpretations along with average amount sent. The first two rows summarize the full data. Notice that a problem with this categorization might be that if

[16] The coder instructions are provided in Appendix B.

[17] A similar comparison could be done between Message and Interaction treatment. In the Interaction treatment, the gift and an accompanying message complement one another. It would make little sense to ask for the interpretation of each of them separately. With gifts as the main object of our interest, we have chosen to ask about the interpretation related to gifts. Thus we can directly compare the Gift and Interaction treatments in terms of content.

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some interpretations of messages carry rich contents and hence fall into more than one category, our data would become non-independent. This could confound our analysis. To avoid this problem, in the bottom two rows we report data for only "clean" interpretations that fall in just a single content category, e.g., a message was interpreted as just a promise and nothing else. We limit our statistical testing to clean data with at least four observations per category.

Table 5: Interpretations of Messages (Message Treatment)

	Equal Split	Equal Payoffs	Promise	Trust	Pleasantries	Better Off	Other
All Message Interpretations							
Frequency	5.56% {2}	5.56% {2}	13.89% {5}	2.78% {1}	5.56% {2}	38.89% {14}	41.67% {15}
Average Amount Sent			10 [0]			9.64 [1.34]	7.73 [3.67]
Clean Message Interpretations							
Frequency			11.11% {4}			30.56% {11}	41.67% {15}
Average Amount Sent			10 [0]			10 [0]	7.73 [3.67]

Number of interpretations coded into a given category in braces. Standard deviations in brackets.

The results clearly show that player As primarily interpreted the messages as either carrying a promise to return higher amount or implying that sending more to player B would ultimately make both players better off. From the bottom two rows of Table 5 it becomes apparent that both of these interpretations induced a full amount sent on the part of player As. The difference between *Better Off* and *Other* is significant at 10% level according to a robust rank-order test (one sided $p = .058$).[18]

[18] Albeit all player As who interpreted a message as promise sent the maximum amount, this category contains only four observations and thus the statistical test would not have enough significant power.

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5.2. Interpretations of Gifts

The interpretations of gifts have been coded into the following categories: *Minimizing Risk*, indicating *Good Will*, inducing *Guilt*, implying *Reciprocity*, and implying both players being *Better Off*. The category *Other* contains all remaining observations – in this case, both when a gift was sent but was not interpreted according to any of our categories or when a gift was not sent.

Table 6: Interpretations of Gifts (Gift and Interaction Treatments)

	Min. Risk	Good Will	Guilt	Reciprocity	Better Off	Explanation	Other
All Gift Interpretations							
Frequency	0% {0}	17.65% {6}	0% {0}	50.0% {17}	8.82% {3}		38.24% {13}
Average Amount Sent		7.5 [4.18]		8.64 [2.78]	2.67 [2.52]		3.85 [4.1]
Clean Gift Interpretations							
Frequency		5.88% {2}		35.29% {12}	5.88% {2}		38.24% {13}
Average Amount Sent				9.75 [0.62]			3.85 [4.1]
All Interaction Interpretations							
Frequency	0% {0}	0% {0}	0% {0}	18.75% {6}	25.0% {8}	43.75% {14}	28.13% {9}
Average Amount Sent				8.33 [4.08]	10 [0]	8.57 [3.63]	5.78 [4.63]
Clean Interaction Interpretations							
Frequency				12.5% {4}	15.63% {5}	28.13% {9}	28.13% {9}
Average Amount Sent				7.5 [5]	10 [0]	7.78 [4.41]	5.78 [4.63]

Number of interpretations coded into a given category in braces. Standard deviations in brackets.

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Looking at the clean data one can quickly spot that most gifts were interpreted as an attempt to establish a reciprocal relationship between the players. The difference in the amount sent between *Reciprocity* and *Other* is substantial and significant at 1% level with p = .000.[19]

A different story emerges when gifts are accompanied by a message. A message seems to switch the interpretation of the gift from a reciprocal relationship to both players benefiting. The impact of this is efficiency enhancing as player As who interpret the message along these lines send their whole endowment without an exception. On the other hand, those who maintain the reciprocity interpretation do not send as much as they did in Gift treatment.

The combination of a gift and a message in Interaction treatment allows for the most complete analysis. We define an additional category *Explanation* that indicates whether the message attempted to explain why the gift was sent or not sent. As can be seen from Table 6, the explanation itself enhances the amount sent relative to *Other*, but the difference is not significant. However, an interesting subsample is one in which the gift was sent and the accompanying message contained an explanation. About 42% of gifts carried a message with an explanation. For this subsample, the increase in amount sent becomes more pronounced as its mean jumps to 8.75 (standard deviation 3.54). The *Explanation* raises the amount sent above the *Other* category at 10% level (p = .083).

The bottom line is that a message has the power to alter the interpretation of the gift itself and it appears to be a delicate issue as to how to best use and explain a gift so that it is most effective in inducing trust. A robust finding in our data seems to be that a key to building a trusting relationship is in conveying the idea that both players are entering a mutually beneficial transaction that will result in both of them being better off. Incidentally, our data also highlight a difference between the degrees of trust following a gift that is (with the help of a message) interpreted as mutually beneficial (category *Better Off*) and a message that comes without a gift (in the same Interaction treatment). The

[19] One may have a concern that *Other* is not quite the appropriate benchmark for comparison as it pools observations when gift was given, but was not interpreted according to any of our categories and observations when gift was not given. We find no difference between amounts sent by player As in these two subgroups (the former has five data-points with mean 4 and standard deviation 4.18, the latter has eight data-points with mean 3.75 and standard deviation 4.33). Therefore, we feel comfortable pooling all these into the single category *Other*.

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mean in the former is 10 (see Table 6) and the mean in the latter is 6.91 (standard deviation 4.59). Although the difference is not significant, the overall lesson learned may be the following: in real life where gifts and messages are all available tools at our disposal, the best way to generate trust (according to our results) is to use a gift and tailor a message to highlight its welfare enhancing purpose.

6. Discussion

This paper reports an experiment that studies relative performance and mutual interaction of two mechanisms that are qualitatively different, but comparable. Our data provide evidence that both Gift and Message mechanisms significantly enhance amount sent in comparison to the standard investment game. However, we find that gift giving performs significantly worse than free form written messages. Furthermore, our results point to the fact that gift giving can even be counterproductive when combined with the ability to send a message. It still remains an open question, however, whether giving a gift is a negative signal towards its recipient, e.g., that the recipient is not a trusting person, or a negative signal about the giver, i.e., that the giver cannot be trusted.

Our results imply that the gift undermines the trust generated by the message. This corroborates the findings of Gneezy (2004) and Gneezy and Rustichini (2000a, 2000b) who have observed qualitatively similar behavior in different contexts. Thus, our paper could be viewed as the next step in establishing generality of these conclusions.

Our results are also in line with Brandts and Cooper (2007) who observe that communication enhances coordination better than financial incentives. The presented experiment also complements earlier work by Andreoni (2005) who finds that offering a satisfaction guarantee always increases trustworthiness of player Bs, even when honoring it is fully voluntary, but only elicits the trust of player As when it is legally enforced. On the other hand, our findings seem to be at odds with Bracht and Feltovich (2008) who find that a chosen high escrow amount leads to more efficient outcomes. However, it is important to notice that there is no direct comparison to our study because escrow effectively eliminates the need for trust, which does not happen in our setting with Gift. Furthermore, we have implemented only one level of a gift, and hence it is plausible that a larger gift (if available) would increase trust significantly.

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In order to better understand the two studied mechanisms, we have complemented the data analysis with a novel way of studying communication. Rather than classifying the messages according to researchers' subjective (e.g., Charness and Dufwenberg, 2006; Schotter and Sopher, 2007; Kimbrough *et al.*, 2007) or third party salient (e.g., Houser and Xiao, 2011) or non-salient (e.g., Sheremeta and Zhang, 2010) opinions and then linking these interpretations to subjects' decisions, we asked the decision-makers to interpret the messages themselves. Such approach eliminates the possibility of classifying messages differently than the decision-maker and thus has a potential of producing more accurate estimates of behavior while being more efficient in terms of time and research expenditures. We have also shown that in our setting employing this method did not alter subjects' behavior.

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Appendix A: Subject Instructions

[These are the general instructions presented at the beginning of every session.]

You are a Player ____ ID#:____

GENERAL INSTRUCTIONS

This is an experiment studying decision-making. The instructions are simple and if you follow them carefully and make good decisions, you might earn a considerable amount of money which will be paid to you in cash at the end of the experiment. It is therefore very important that you read these instructions with care.

No Talking Allowed
It is prohibited to communicate with other participants during the experiment. Should you have any questions please ask us. If you violate this rule, we shall have to exclude you from the experiment and from all payments.

Anonymity
Each person will be randomly matched with another person in the experiment. No one will learn the identity of the person she/he is matched with. You will be matched with the same person for the entire experiment.

Types
Each two person group will consist of two types of participants (Player A and Player B) that are assigned randomly. Your assigned type will be listed at the top of each task instruction sheet.

The Game
You are randomly paired with another individual. One member of your pair will be a player A and the other one will be player B. Find your type in the upper right corner of this sheet. You will never be able to find out the identity of the player you are paired with.

Each player's final dollar payout will be determined according to the process below. The game is divided into stages in which players take turns making decisions. Both player A and player B begin the game with $10. We will refer to this initial $10 as each player's endowment.

Stage 1:
At the beginning to stage 1, player A has the opportunity to transfer all, any portion, or none of his/her $10 endowment to player B. The amount that is not transferred is player As to keep. The amount that player A transfers triples when it reaches player B. For example, if A transfers $10 to B, B receives $30. If A transfers $5 to B, B receives $15. If A transfers $0 to B, B receives $0.

Stage 2:
Player B then has the opportunity to transfer all, any portion, or none of the tripled amount that was transferred to him/her from player A. The amount that is not transferred is player Bs to keep, and the amount transferred is added to player A's final dollar payout.

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[These are the Gift instructions for the pre-game stage specific to player B. That is, only player Bs received these particular instructions (decision sheets), but a copy was placed on the overhead for all to see and read aloud by the experimenter.]

You are a Player B ID#:____

Pre-Game Instructions

Player A is endowed with $10. Player B is endowed with $10.

The Game to be played <u>NEXT</u>:

- Player A must decide how much, if any, of his/her $10 endowment he/she wants to transfer to player B.
- Each dollar that is not transferred is player As to keep.
- Each dollar that is transferred to Player B is multiplied by 3 by the experimenter.
- Player B must then decide how much, if any, of this tripled amount they want to transfer back to player A and the remaining portion is theirs to keep.

Before we play this game, Player B has the opportunity to transfer his/her $10 endowment to player A and the opportunity to write a message to Player A.

If player B transfers the $10, then it is added to player A's earnings.
If player B does not transfer the $10, then it is added to player B's earnings.

Note: If the $10 endowment is transferred by player B,

- it **<u>DOES NOT</u>** increase the amount that player A has available to transfer in Stage 1.
- the $10 transferred **<u>IS NOT</u>** tripled.
- Player A is guaranteed to be at least as well off as the initial starting position ($10 endowment) regardless of both players' transfer decisions during the game.

Why did you transfer or not transfer your $10 endowment to player A?

_____

_____

_____

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[These are the Interaction treatment instructions for the pre-game stage specific to player B. That is, only player Bs received these particular instructions (decision sheets), but a copy was placed on the overhead for all to see and read aloud by the experimenter. After the decisions were made by player B, the exact sheet was given to the counterpart player A to reveal the decision and message (if any).]

You are a Player B ID#:____

Pre-Game Decision Sheet

You have the opportunity to write a message to player A. If you choose to write anything to your counterpart, please write the message on the space below:

_____

_____

_____

Please complete the statement below by circling one of the amount:

I have decided to transfer the following to player A:

$0 or $10

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[These are the Stage 1 instructions (decision sheets) specific to player A. That is, only player As received these particular instructions (decision sheets), but a copy was placed on the overhead for all to see and read aloud by the experimenter. Player Bs never saw the actual decision sheet of their counterpart. The information/decisions were transferred to Player B's decision sheets by the experimenter. Therefore, all handwriting was the same and no additional messages/information could be transferred.]

You are a Player A ID#:____

The Game: Stage 1 Decision Sheet

Player B has transferred $____ to you before the start of the game.
This amount is yours to keep and will be added to your earnings.

Why do you believe Player B transferred or did not transfer their $10 endowment to you in the pre-game?

_____

_____

_____

The Game decision:
You must decide how much, if any, of your $10 endowment you want to transfer to player B.

Each dollar that is not transferred is yours to keep.

Each dollar that is transferred to Player B is multiplied by 3 by the experimenter.

Please complete the statements below. Your decisions must be non-negative integers, e.g. 0, 1, 2,…, 10.

I have decided to transfer $_____ to player B.

Therefore, I have decided to keep $_____ for myself.

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[These are the Stage 1 instructions (decision sheets) specific to player B. That is, only player Bs received these particular instructions (decision sheets), but a copy was placed on the overhead for all to see and read aloud by the experimenter. Player As never saw the actual decision sheet of their counterpart. The information/decisions were transferred to Player A's decision sheets by the experimenter. Therefore, all handwriting was the same and no additional messages/information could be transferred.]

You are a Player B ID#:____

The Game: Stage 2 Decision Sheet

Player A has transferred $_____ to you in Stage 1.
The experimenter has tripled this amount, and you have received $_____.

Why do you believe Player A transferred $____ to you in stage 1?

_____

_____

_____

You must decide how much, if any, of the $_____ you want to transfer to player A.

Each dollar that is not transferred is yours to keep.
Each dollar that is transferred is added to player A's earnings.

Please complete the statements below. Your decisions must be non-negative integers.

I have decided to transfer $_____ to player A.

Therefore, I have decided to keep $_____ for myself.

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Appendix B: Coder Instructions

Purpose: To study how communication affects the play of the game.

Game: Refer to the attached instructions for the experiment.

Coding Rules:

(1) The unit of observation is a single message.

(2) If a message is deemed to contain the relevant category of content, enter "1" for the category in the relevant row, otherwise enter "0".

(3) Each unit can be coded under as many or few categories as you deem appropriate. Enter the additional codes in rows at the bottom.

(4) You should **independently** code all messages. Do not discuss with anyone about which statements should fall into which categories.

(5) Your job is to capture what had been said rather than why it was said or what effect it had. Think of yourself as a "coding machine."

Please track the time you spend on coding the messages and training. You will be paid **$18** for each hour working on this project. Thank you.

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