Economic Incentives or Communication: How Different Are their Effects on Trust

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Abstract

This study investigates the effects of economic incentives and communication on the cognitive and behavioral responses after an alleged trust violation. We argue that these responses depend on the type of solution used to foster cooperation between agents. On the cognitive level, we compare the effects that structural (economic incentives) and motivational (communication) solutions exert on trusting beliefs and trusting intentions after an adverse event. On the behavioral level, we compare these effects on the willingness to bear risk. Our experiment shows that, after a negative event, relationships wherein communication is used to foster cooperation are associated to greater external causal attribution, greater perceived benevolence/integrity, and greater willingness to reconcile and to accept risks related to other's behavior. These findings suggest that relationships based on motivational solutions are more resilient to negative events than one based on structural solutions.

Keywords: Trust violation, communication, economic incentives, trustworthiness, trust.

1 Introduction

Trust plays a fundamental role in all human interactions, including economic transactions (Fehr, 2009). It is associated to several benefits, such as positive effects on cognitive, attitudinal and behavioral processes, generating superior collective performance results in organizations (Dirks & Ferrin, 2001). Although these various positive consequences, researchers have been examining numerous episodes where trust can be violated. Lying, broken promises, breaches of contracts and rules change "after the fact" are some cases of trust violations reported (Bies & Tripp, 1996).

When a negative shock occurs, it disconfirms positive expectations regarding another's conduct and, hence, it may change the perception of the offended party about the reliability of the relationship (Tomlinson, Dineen, & Lewicki, 2004). Reactions to violations of trust can be divergent, ranging from people choosing to get even, while others prefer to give another chance and reconcile.

How parties react to a negative event may depend on the nature of past relationship. Some scholars advocate that parties take into account the relationship as a whole when they evaluate a negative shock (Elangovan, Rizzi, & Szabo, 2007; Tomlinson et al., 2004). In other words, the history of a relationship matters.

A history of cooperation may be based in two widely studied experimental settings: structural and motivational solutions (Agarwal, Croson, & Mahoney, 2010; Zeng & Chen, 2003; Kollock, 1998). While the first focuses on economic incentives for cooperation; the second focuses on interpersonal processes (e.g., communication). Therefore, both may lead to cooperative behavior and are valid mechanisms of governance, but each one works in a diverse way to achieve cooperation (Falk & Kosfeld, 2006; Malhotra & Murnighan, 2002).

In this paper we investigate how these two ideal types of relationship, based on economic incentives or based on interpersonal processes, affect the cognitive and behavioral responses to negative shocks. We designed and implemented an experiment in which we manipulate different relational histories in order to test how parties react to an alleged trust violation, i.e. a negative shock that they cannot observe if it was caused by nature or by opportunistic behavior of the counterpart. As expected, results show that relationships based on interpersonal process tend to be more resilient to external shocks than relationships in which cooperation was based on economic incentives.

This paper is organized as follows. Next section summarizes the literature on economic incentives and communication as mechanisms to support cooperation, as well the concept of perceived trustworthiness, from which we derive the hypotheses that guide the experiment and discussion. Third section presents the experimental design and how variables are measured and the hypotheses are tested. Next, we present and discuss the results. Finally, we discuss some managerial implications, as well as the limitations of this study and offer suggestions for future research.

2 Theory and Hypotheses

2.1 Economic incentives and communication as mechanisms to support cooperation

Across the years, researchers have studied possible solutions to improve cooperation in situations where individual and collective interests are in conflict. In this discussion, a distinction between two broad categories of solutions is often made: structural and motivational solutions. (Komorita & Parks, 1994; Kollock, 1998; Messick & Brewer, 1983).

Broadly speaking, structural solutions change the economic incentives so that the dilemma can be modified or entirely eliminated. They involve any tangible changes in the parameters of the game structure that enhance the partner's payoff for cooperative behavior (Zeng & Chen, 2003). Changes in the payoff structure, reduction of group size, changes in the allocation rules, sanction systems and introduction of provision points are some examples of structural solutions (Davis & Holt, 1993; Ledyard, 1995). All of them have in common the fact that cooperative behavior has an instrumental value in the sense that it results of an enlargement of the payoff for cooperation. Therefore, when explicit incentives (tangible rewards for cooperation or tangible punishment for opportunism) are present, the conflict between personal and collective interest decreases. Indeed, Balliet and colleagues (2011), in a

recent meta-analysis, show that sanctions and rewards exhibit substantial positive effect on cooperation.

The social dilemma literature offered two main explanations for this effect. One explanation is that rewards and sanction systems reduce the attractiveness of opportunism, due to penalties provided to non-cooperative behavior. Another explanation is the indirect effect on expectations regarding other's choices, since the existence of penalties for defection assures that others will not exploit cooperators (Tenbrunsel & Messick, 1999).

In sum, cooperation results from a calculation which weighs the costs and benefits of a given action orientation, choosing the course of action which produces the higher gains (Zeng & Chen, 2003). According to this logic, when the agent acts in a cooperative fashion, he assumes that current gains resulting from opportunism will be outweighed by the loss of future gains.

However, some authors argue that economic incentives can create a "second order dilemma" (Van Lange et al., 2013). While a surveillance or sanction system may be good for the collective, they are costly and individuals may not be willing to contribute resources in order to maintain them (Fehr & Gatcher, 2002). In comparison, motivational solutions are more cost-effective mechanisms to improve cooperation (Zeng & Chen, 2003). They rely on more intangible ways to change individual's perception of the social environment. Social value orientation (Balliet, Parks, & Joireman, 2009; Bogaert, Boone, & Declerck, 2008), face-to-face communication (Balliet, 2010; Sally, 1995), group identity (Meleady, Hopthrow, & Crisp, 2013; Orbell, Van de Kragt, & Dawes, 1988; Kollock, 1998), long-term goals among partners (Weber & Murnighan, 2008; Axerold, 1984) are some examples of motivational solutions. Among them, communication is considered the most robust and effective mechanism of the motivational solutions. For instance, Sally (1995), in a meta-analysis review, showed that communication increases cooperation by 40%.

Although the positive effects of communication on rates of cooperation are well documented, what is less discussed relates to the underlying mechanisms that account for such cooperative behavior. Some authors (Weber, Messick, Kopelman, 2004; Zeng & Chen, 2003; Messick & Brewer, 1993) offer some possible explanations: (1) communication may provide valuable information regarding other's choices, facilitating conformity pressures in favour of collective choices; (2) it also offers an opportunity for moral suasion among group members, stressing what is "right and appropriate to do"; (3) when discussing the common problem they face, individuals may create a sense of group identity that can foster group norms and reduce the psychological distance between private and collective interest; and (4) it also offers the possibility for individuals to make promises about a particular course of action and in turn alleviating the perceived risk of unilateral cooperation, while the others free ride.

In sum, by noting these different solutions to social dilemmas, we intend to argue that cooperation can be grounded on different social basis that may influence differently how individuals perceive and respond to possible adverse events that may occur in a relationship and, in turn, to change the perceived trustworthiness of the partner.

2.2 Perceived trustworthiness and causal attribution

Although there is not a widely accepted scholarly definition of trust, positive expectations and willingness to be vulnerable are elements that are commonly observed in many definitions (Mayer et al., 1995). Rousseau, Sitkin, Burt, and Camerer (1998, p. 395), for example, define trust as "a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of the other".

Several studies have been focusing on conditions that lead to trust. Among them, some authors argue that the level of trust one party has for another depends on some attributes of the trustee. These factors lead to a greater or lesser perception of trustworthiness of the other.

According to Mayer et al. (1995), three factors help to explain the amount of trust for another party: ability, benevolence and integrity. Ability reflects the perceived technical competence on a specific domain that allows one to perform significant tasks on that area. Benevolence is related to the perception of goodwill of the trustee, who is concerned to the well being of the trustor. Regarding integrity, it reflects the perception that the trustee is aligned with a set of principles and values that the trustor understands as acceptable.

Hence, in general, variations in perceptions of ability, benevolence and integrity explain some part of the initial variation of trust one party has for another. Such initial level of trust, however, evolves over time as the parties interact. Consequently, trust has a dynamic nature and is dependent of the history of the relationship. As parties interact, initial expectations are adjusted, as a response to cumulative experiences they share with each other, which weakens or confirms initial judgments. Thus, cumulative interaction between parties provides relevant information to assess other's dispositions and intentions and, as a result, it helps to predict counterpart's behavior (Kramer, 1999; Kramer & Lewicki, 2010).

When a negative outcome occurs and parties cannot directly observe its source, it is expected that parties engaged in a relationship try to assess the possible causes of the unexpected event (Elangovan et al, 2007; Weiner, 1986; Lewicki & Bunker, 1996; Kim et al., 2013). This process of causal attribution relies on three primary dimensions: locus of causality, controllability and stability (Weiner, 1986; Weiner, 2012). The first dimension relates to the source of the outcome. Was it generated internally (by the trustee) or externally (by exogenous factors)? The second dimension refers to the degree of control an individual had over the outcomes or if the partner could have avoided or mitigate the undesirable outcome. Finally, stability refers to the degree to which the cause can be considered permanent or temporary. It relates to the likelihood of future occurrence of the episode. The

result of this causal assessment has an effect on the counterpart's trustworthiness and, hence, on trust (Tomlinson & Mayer, 2009).

2.3 Solutions for cooperation and cognitive response to trust violations

As noted earlier, in a relationship wherein cooperation is based on economic incentives, positive expectations regarding other's behavior emerge due to the existence of explicit rewards that foster cooperation (Lewicki & Bunker, 1996). However, as Malhotra and Murnighan (2002) argue, in situations where there are explicit incentives for cooperation and clear sanctions for opportunism, cooperative action is usually ascribed to the situational factors and not to the goodwill of the other. Thus, this sort of incentive for cooperation just lessens vulnerability or risk, but does not enhance perceived trustworthiness of the other, because when someone has no other rational option but to cooperate, due to the presence of incentives and punishments/fines, there is no reason to assure that person is intrinsically trustworthy.

As a result, negative outcomes are likely to be perceived as a consequence of greed and malfeasance of the other. Consequently, in an attribution analysis, the negative outcome may be seen as having an internal locus and as something that could be avoided by the counterpart.

Such attribution, in turn, may damage perceived benevolence and integrity, since the offended party will ponder that the other chose to defect. Moreover, stability will probably be disturbed too, because malevolence and lack of commitment to acceptable principles are considered more stable traits (Tomlinson & Mayer, 2009).

Consistent with this assertion, prior studies (Elangovan et al., 2007; Morrison & Robinson, 1997; Elangovan & Shapiro, 1998) found that erosion of trust is stronger, when the trustor perceives that the undesirable episode stemmed from a trustee's conscious decision of refusing to meet trustor's expectations. When the trustor feels that the counterpart at least tries

to do the right thing, but could not meet trustor's expectations, some credit can still be given to the offender and the fault may be seen as temporary and less likely to be repeated in the future. When this is not the case, however, perceived trustworthiness will decrease due to the lessening in perceived benevolence, integrity and stability. Moreover, the willingness to reconcile the relationship is smaller.

However, cooperation is achieved not only through economic mechanisms (tangible rewards and punishments), but also by means of sociological mechanisms (social norms) (Poppo and Zenger, 2002). When the latter is nurtured by communication among parties, social norms of mutual obligation may create a perception of benevolence and a belief in good faith and moral character of the other. Thus, in the occurrence of a negative event, although the locus of causality may still be internal, perception of controllability over the outcome tends to be alleviated. In addition, the negative event tends to be considered as transitory and, as such, less likely to be repeated in future interactions. As a consequence, under previous communication, perceived benevolence and integrity are more resilient to negative shocks. This discussion supports the following hypotheses:

Hypothesis 1: In relationships wherein cooperation is based on economic incentives, the causal attribution of a negative event is more internal than when cooperation is based on communication.

Hypothesis 2a: In case of a negative event, relationships wherein cooperation is based on communication are associated with a greater perceived benevolence between parties than when cooperation is based on economic incentives.

Hypothesis 2b: In case of a negative event, relationships wherein cooperation is based on communication are associated with a greater perceived integrity between parties than when cooperation is based on economic incentives.

Consistent with McKnight, Cummings and Chervany (1998), we differentiate between trusting beliefs and trusting intentions, where the first one refers to the beliefs about one´s perceived integrity or perceived benevolence, while the second one refers to a willingness to make oneself vulnerable to another in the presence of uncertainty. Therefore, in the occurrence of a negative event, in order to rebuild trust that may have been damaged, economic incentives and communication will be associated not only to different levels of trusting beliefs, but also to different trusting intentions. Thus:

Hypothesis 3: In case of a negative event, relationships wherein cooperation is based on communication are associated with a greater willingness to reconcile than when cooperation is based on economic incentives.

2.4 Solutions for cooperation and behavioral response to trust violations

A great obstacle to build trust relates to the initial lack of trust between parties. As such, initial actions of each party display considerable effect on the subsequent development of the relationship (Cook et al., 2005; Lount, Zhong, Sivanathan, & Murnighan, 2008; Pillutla, Malhotra, & Murnighan, 2003). These preliminary shared experiences will provide useful information to update the initial perceived trustworthiness of the other and adjust behavior in future interactions. Likewise, in a process of repairing trust, one may argue that the first decisions soon after the negative event display similarities with the decisions made in the beginning of the relationship and may play an important role in the future of the relationship, since the first actions may signal how well the violation was overcome and if the level of trust remained unaltered compared to those initially set.

After an alleged trust violation, however, taking risks may be more problematic, since new effort should be employed in order to rebuild trust that may have been eroded. The process of repairing trust can be even harder than building trust initially, since a violation can

lead trust to drop to a level below those set initially. As a consequence, the level of effort required to predispose a subject to take a risk position again gets a much larger magnitude (Elangovan et al., 2007; Kim, Dirks, Cooper, & Ferrin, 2006; Kim, Ferrin, Cooper, & Dirks, 2004). However, taking relatively small risks may signal hostile act, lack of trust or raise questions about the motives for the other not having trusted more. These interpretations, in turn, impair positive social reciprocity, lessening cooperation levels between parties (Fehr & Schmidt, 2007; Frey & Jegen, 2001). As Falk and Kosfeld state (2006, p. 1629): "trusting a bit is likely to be interpreted as not trusting at all".

Nevertheless, if intentions can predict subsequent behavior, as some authors have suggested (Aquino, Tripp, & Bies, 2001), it can be expected that, after a negative episode, assuming a risk position is more likely when cooperation is achieved through communication than when economic incentives are in place, since the former may lead to greater perceived trustworthiness of the other than the latter in the aftermath of a trust violation. Thus:

Hypothesis 4: In relationships wherein cooperation is based on communication, the party affected by a negative event takes a higher risk position than when cooperation is based on economic incentives.

3 Method

To test the hypotheses presented in the previous section, we designed an experiment, in a controlled environment, that allowed for the treatment of two mechanisms that induce cooperation: economic incentives and communication. We could then explore how these two different types of relationships – based on communication or based on economic incentives – were affected by a negative event whose cause was not observable by one of the parties.

3.1 Design and procedure

The experiment consisted of two games. In the first game, pairs of participants played a public good provision game for 12 periods. To each participant, an endowment of 20 tokens was given at the beginning of each period. Then, an individual decision should be made between invest any amount of the endowment to one of two accounts: a personal account (P) or a group account (G). The investment in the P account belonged totally to the individual; the investment in the G account received a certain amount of interest (it was multiplied by an efficiency factor of 1.6) and shared equally between the subjects of the same pair. As in any public good provision game, there was a feature of non-exclusion. In others words, the earnings from the G account were shared equally, no matter how much each agent invested at the provision of the public good. So each member's payoff was given by the sum of the investment made in the P account and a share in the G account. Each member's utility i was calculated by the following formula:

$$U_i = P_i + \frac{\left(\sum_{j=1}^{n} G_j \times r \right)}{n} \tag{1}$$

Where P_i is the amount invested in the personal account P by member i; G_j is the amount invested in the G account by each member of the pair; r is the efficiency factor on the contributions in the group account G; n is the number of members in a pair. In this game model, the dominant strategy is to allocate every token in the P account, though investing in the G account is the social optimum (Pareto efficiency).

Using the public good provision game as a baseline, we implemented two different conditions to create a specific history of relationship – based on communication or on economic incentives (bonus). Pairs were assigned randomly to each type of condition.

For the communication condition, after subjects had read instructions about the game in the computer screen in their private cabins, they were informed that they would be allowed to communicate face-to face before the first period of the game. Subjects of the same pair could discuss anything they wish during their discussion time (ten minutes). At that time, instructors took each pair to a separate location, where others participants could not listen what was being discussed. When the discussion time was over, subjects went back to their private cabins, where any other form of communication was strictly prohibited.

This mechanism did not alter payoff's function. As we argue before, communication is able to mitigate the problem of opportunism in social dilemmas due to social pressure, moral persuasion, identification and interests sharing (Bottom, Gibson, Daniels, & Murnighan, 2002; Messick & Brewer, 1983; Ostrom, Walker, & Gardner, 1992; Shapiro, 1991).

The economic incentives condition worked as follow: at each period, if the joint amount contributed to G account was equal or greater than $G^* = 32$ tokens, each subject of the pair received a 10 tokens bonus. If contributions in the G account did not reach G^*, no bonus was given. Consequently, in this condition, each member's utility i is calculated by the following formula:

$$U_i = \begin{cases} P_i + \dfrac{\sum_{j=1}^{n} G_j \times r}{n} + B & if \sum_{j=1}^{n} G_j \geq G^* \\[4mm] P_i + \dfrac{\sum_{j=1}^{n} G_j \times r}{n} & if \sum_{j=1}^{n} G_j < G^* \end{cases} \qquad (2)$$

Where: B is the bonus provided and G^* is the minimum amount invested in the G account to receive the bonus. This mechanism worked as a variation of a provision point, but it did not require full endowment contribution of all players. As a result, each combination of subject's contributions, which reaches the provision point, is a Nash-equilibrium. To deal with this issue of multiple equilibria, subject's decisions were made sequentially (in both

conditions to guarantee symmetry) in order to create a unique equilibrium in the game. At each period, one player was the first one to make the decision to contribute in the G account. This decision was informed to the other, who should then decide how much to contribute in the G account. In the next period, decisions order was reversed.

For all conditions, following each period, subjects were informed about their own contribution in the G account, as well as their partner contribution. Their own individual profit (accumulated and in the period) and their partner´s profit (in the period) were also provided.

After eight periods, an unobservable shock was introduced to lower cooperation of one of the subjects in the pair. The purpose of this shock was to create uncertainty about the cooperative behavior of the other that could generate a perception of trust violation. Thus, at that point, the endowment of one of the players of each pair was reduced, while the other player´s endowment remained unaltered. At the beginning of the experiment, subjects were informed that, after 8th period, there was a chance that the endowment of one of the players could be reduced without notifying the other player of the pair for some randomly chosen pairs.

Accordingly, from 9th to 12th periods, player 1's endowment was actually reduced in 40% (12 tokens) for all of the pairs, but this reduction was not observed by player 2. This manipulation was necessary to create uncertainty about the real motives of player 1 strategy. Consequently, when player 1 contributed less in the G account in these periods, player 2 could not observe the reason for that: an endowment reduction, that she/he was aware that was possible, or an opportunistic behavior of player 1 to, free-ride on player 2's contribution in the G account. Next, subjects filled out a questionnaire to evaluate perceived trustworthiness of the other.

After the public good game, subjects played a one-shot investment game based on the

experiment of Berg, Dickhaut, and McCabe (1995). In this game, one player A chooses if he trusts or not in a player B, who then decides to honor or exploit trust. Then, initially each player receives an endowment of 10 tokens. While one of the players, say player B, pockets the initial endowment; the other player, say player A (trustor), must decide how much of his 10 tokens to send to player B (trustee). If player A decides send nothing, the game ends and each player pockets the endowment given by the experimenter. However if player A decides to send something, the amount sent is tripled. Next, player B, who received the amount tripled, must decide how much to return to player A.

From a rational perspective, player B's dominant strategy is to return nothing to player A. As player A anticipates player B's dominant strategy, the best strategy is to contribute nothing, which is the unique Subgame Nash Equilibrium. Consequently, any amount sent to player B leaves player A vulnerable, since player B can return none. Once this game is one-shot, there is no room for reputation building. This result is not collective efficient since any value sent by player A to player B enhances collective value.

Table 1

Type of Player by Game

	Public Good Game	Investment Game
Player 1	"Alleged Offender"	Trustee
Player 2	"Victim"	Trustor

In the investment game, subjects remained with the same pairs of the public good game (PGG): one as trustor and the other as trustee. Trustor was performed by the player who had his endowment unchanged in the public good game ("victim" in the PGG, i.e. player 2). Trustee was performed by the player who had his endowment reduced by 40% in the public game ("the alleged offender" in the PGG, i.e. player 1), as shown in Table 1. As in the public good game, we contrast relationships wherein cooperation was induced by communication

with those based on economic incentives. As stated by Hypothesis 4, we expect that the injured party takes a higher risk position in relationships of the first type.

3.2 Sample

To test the hypotheses, we implemented an experiment with undergraduate business students at a Brazilian school. Participation was optional. Participants were 53% female, an average of 22-years old and none of them had already participated in an experiment before. During four days, six experimental sessions were run at the lab with, on average, 20 participants per session. Each experimental session took, on average, 90 minutes. 116 students participated in this study and were broken into 58 random pairs upon arrival at the lab. Participants were rewarded with tokens that could be later exchanged by chocolate bars. The experiment was computerized using the software "Z-Tree" (Fischbacher, 2007).

3.3 Measures

Hypotheses 1, 2 and 3 were tested by a questionnaire based on Weiner's causal attribution model (1986) and on Mayer et al. (1995) model of perceived trustworthiness.

Perceived Benevolence (H1): Four items, on a 5-point Likert scale, ranging from 1 = *strongly disagree* to 5 = *strongly agree*, were used to assess perceptions of counterpart's benevolence, which is one of the elements of perceived trustworthiness (Mayer et al., 1995). This scale was adapted from Mayer and Davis (1999). Some of the resulting items were: "My partner is very concerned about my welfare" and "my partner really looks out for what is important to me". The Cronbach's α for this scale was .85.

Perceived Integrity (H1): five items were used to assess perceptions of counterpart´s integrity. This scale was also based on the integrity scale used by Mayer and Davis (1999).

Some of the resulting items were: "my partner has a strong sense of justice" and "sound principles seem to guide my partner's behavior". The Cronbach's α for this scale was .88.

Causal Attribution (H1): three items were used to assess to what extent the cause of the negative event can be attributed to the counterpart. These items were: "Is my partner responsible for not having contributed as much as I expected in the G account?", "Could my partner have done something to avoid or mitigate the negative event in the game?", "Do I expect that my partner behave opportunistically in future events?". The Cronbach's α for these three items was .87.

Willingness to Reconcile Relationship (H2): three items were used to assess subject's willingness to reconcile relationship after the negative event. It was a 7-point Likert scale, ranging from 1 = *highly unlikely* to 7 = *highly likely*. This scale was adapted from Tomlinson et al. (2004). These items were: "To what degree are you willing to reconcile the relationship with your partner?", "How difficult would it be to rebuild your relationship with your partner back to the point where it was at the beginning of the game?". The Cronbach's α for these three items was .74.

Hypothesis 4 was tested by the decisions made in the investment game. Specifically, risk taken (H4) was measured by trustor decision of how much to send (from 1 to 10 tokens) to the counterpart after a negative event.

4 Results

The PGG game had two main goals: one relates to the creation of a history of cooperation based on structural and motivational solutions. Therefore, two conditions (bonus and communication) were manipulated for this purpose. Secondly, in the three last rounds of

the PGG game, an adverse shock was introduced in order to disturb the ongoing cooperation and cause a possible perception of trust violation.

In the first eight rounds of the game, on average, players contributed 78,77% of their endowment in the G account, (15.75 tokens). No difference was observed between bonus and communication conditions ($M_{bonus1-8} = 78.88\%$ vs. $M_{com1-8} = 78.66\%$; $M_{bonus1-8} = 15.78$ vs. $M_{com1-8} = 15.73$), $F(1, 114) = 0.01$, ns), showing that both mechanisms enhanced cooperation levels in a similar fashion, as shown in Figure 1.
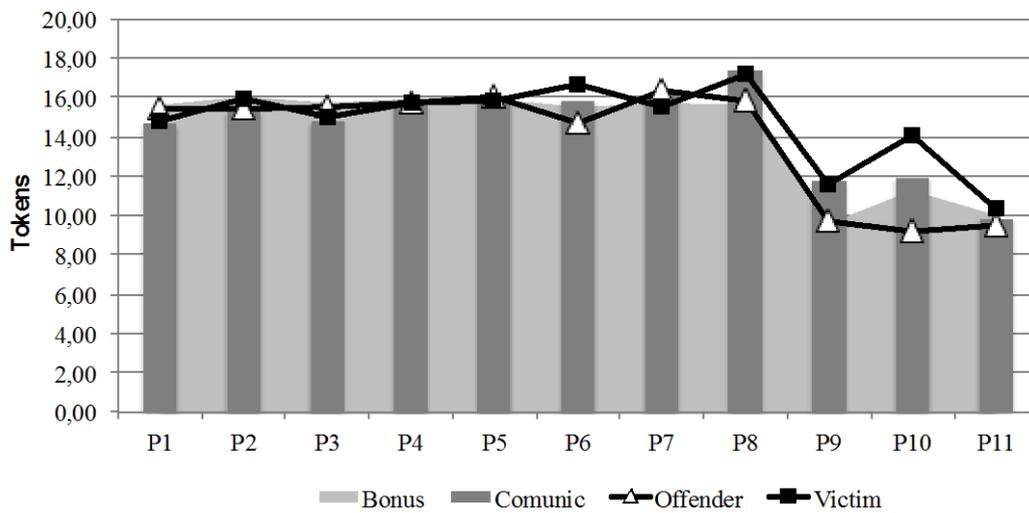

Figure 1. Average contribution in G account per player across periods in the PGG

After the 8th round, when the offender's endowment (player 1) was reduced, contributions dropped similarly in both conditions ($M_{bonus9-11} = 65.97\%$ vs. $M_{com9-11} = 73.07\%$; $M_{bonus9-11} = 10.24$ vs. $M_{com9-11} = 11.25$), $F(1, 114) = 2.047$, ns, and $F(1, 114) = 1.563$, ns, respectively. However, there was a difference in contributions by type of player. Offenders' contributions (player 1) did not change significantly as a percentage of their endowment (that was now lower due to the reduction of 40%) ($M_{Offender1-8} = 78.31\%$ vs. $M_{Offender9-11} = 79.02\%$, $t(56) = -.002$, ns). The alleged victims' contributions (player 2) decreased in relative terms ($M_{Victim-8} = 79.23\%$ vs. $M_{Victim9-11} = 60.02\%$, $t(56) = 5.61$, $p < .001$). As shown in Figure 1,

the drop in offenders' contributions in absolute terms (but not in relative terms) was followed by a reduction in victims' contributions both in absolute and relative terms (since their endowment remained the same).

Although no significant difference in contributions was observed between conditions in the last three rounds of the game, victims judged differently the cause of the negative outcome. Causal attribution was more internal in the bonus condition in comparison to the communication condition, $F(1, 56) = 6.195$, $p = .016$, when victims attributed more culpability and responsibility to the counterpart, as shown in Table 2. This result provides support for hypothesis 1.

Moreover, comparing trusting beliefs measures, perceptions of Benevolence ($F(1, 56) = 6.712$, $p = .012$) and Integrity ($F(1, 56) = 4.664$, $p = .035$) were also lower for the bonus condition, as shown in Table 1. These results provide support to hypotheses 2a and 2b. As for trusting intentions, victims were less willing to reconcile under the bonus condition, $F(1, 56) = 5.917$, $p = .018$, supporting Hypothesis 3

Table 2

Means and Standard Deviations of Perception of Victims by Condition

	Bonus (economic incentives)		Communication	
	M	SD	M	SD
Benevolence	2.70	0.76	3.27	0.91
Integrity	2.82	0.93	3.36	0.97
Causal Attribution	3.31	0.95	2.63	1.12
Willingness to Reconcile[a]	4.59	1.31	5.45	1.39

Note. [a] Willingness to reconcile was assessed using a 7-point Likert scale. The other measures were assessed using a 5-point Likert scale.

Results from the investment game show that, in the communication condition, the average of tokens sent by the trustor (player 2) was 8.59 and the average percentage returned by the trustee was 45%. Both trustee and trustor received an average payoff significantly higher than the Subgame Nash Equilibrium payoff (10 given the "sending nothing strategy"):

13.62 for trustor ($p = .002$) and 23.55 for trustee ($p < .001$). In the bonus condition, the average of tokens sent equal to 6.62 and the average percentage returned equal to 38%. The average gain of the trustor equal to 11.41, that is not significantly larger than 10 ($p = .136$). However, the average gain of the trustee equal to 21.83 and the average joint payoff equal to 33.24, both significantly higher than 10 ($p < .001$) and 20 ($p < .001$), respectively.

Consequently, in both conditions, the trusting behavior produced benefits to the trustee. Compared to the strategy of "sending nothing", however, trustor was best served only in the communication condition. Moreover, in both conditions, the trustee has absorbed most of the value created by the risk taken by the trustor.

The type of relationship largely affected the amount sent by the trustor. In the communication condition, the trustor sent a significantly larger amount than in the bonus condition ($M_{bonus} = 6.62$ vs. $M_{com} = 8.59$, Mann-Whitney, $p = .002$). Accordingly, the joint payoff was greater in relationships wherein cooperation was based on communication rather than on economic incentives.

In both conditions, trustor's decisions have concentrated largely on the focal points 5 and 10, as shown in Figure 2. In the communication condition, these two focal points accounted for 89% of the total choices made, though decision to send 10 tokens (maximum risk position) was more frequent (72% of total choices). In the bonus condition, decisions to send 5 and 10 tokens were observed in 66% of the pairs; with 5 tokens as the modal choice, with 38% of the total.

When grouping trustor's decision in two categories: (a) lower amounts sent (0 to 5 tokens) and (b) higher amounts sent (6 to 10), a Chi-Square test confirms that the latter was more frequent in the communication condition than in the bonus condition ($M_{bonus} = 48\%$ vs. $M_{com} = 79\%$), $\chi^2 (1, 58) = 6.05$, $p = .014$).
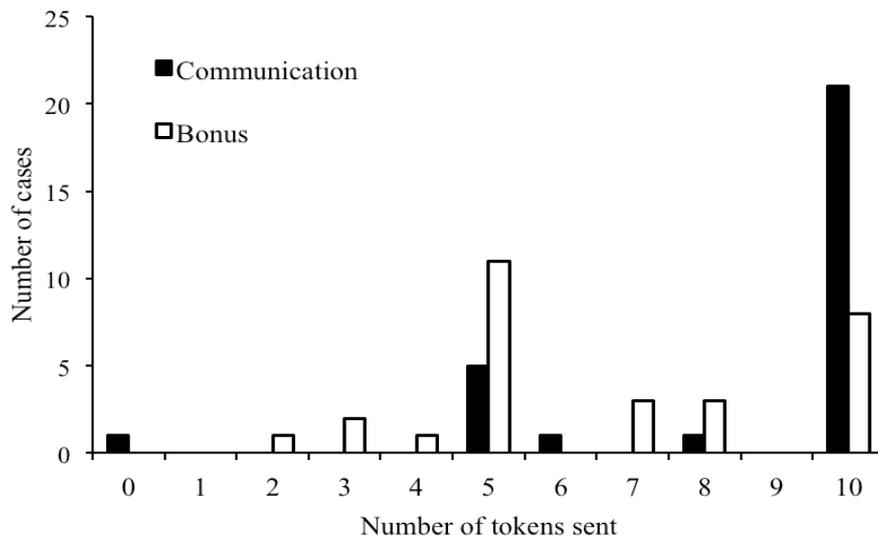
Figure 2. Distribution of amount sent by the trustor per condition in the investment game

Such differences in risk taken in each condition are consistent with the perceptions of trust violation discussed previously. A Spearman's rank correlation shows significant correlation between risk position and: benevolence ($r = .297$, $p = .012$), integrity ($r = .291$, $p = .013$) and causal attribution ($r = -.336$, $p = .005$). Once subjects in the bonus condition showed lower trusting beliefs and intentions than subjects in the communication condition, it is expected that the former display lower willingness to take risks in the investment game than the latter. Moreover, using the already mentioned categories of trustor's decision (0 to 5 tokens sent and 6 to 10 tokens sent), it is possible to observe differences in perceptions of trusting intentions ($M_{0\text{-}5} = 2.73$ vs. $M_{6\text{-}10} = 3.21$, Mann-Whitney, $p = .026$) and causal attribution ($M_{0\text{-}5} = 3.40$ vs. $M_{6\text{-}10} = 2.73$, Mann-Whitney, $p = .022$). These results support hypothesis 4.

There was no direct effect of economic incentives and communication on the trustee decision, which was the party that was not subject to uncertainty in the PGG game. Percentages returned by the trustee ($M_{\text{bonus}} = 38.97\%$ vs. $M_{\text{com}} = 45.09\%$) were not significantly different in communication and bonus conditions (Mann-Whitney, $p = .148$). However, there was evidence that trustor and trustee decisions are related. A Spearman

correlation shows significant correlation between trustor and trustee decision ($r = .324$, $p = .007$). Similarly to the score found by Berg, Dickhaut and McCabe (1995), this result indicates that the decision to return tokens by the trustee is somehow influenced by the previous decision to trust by the counterpart.
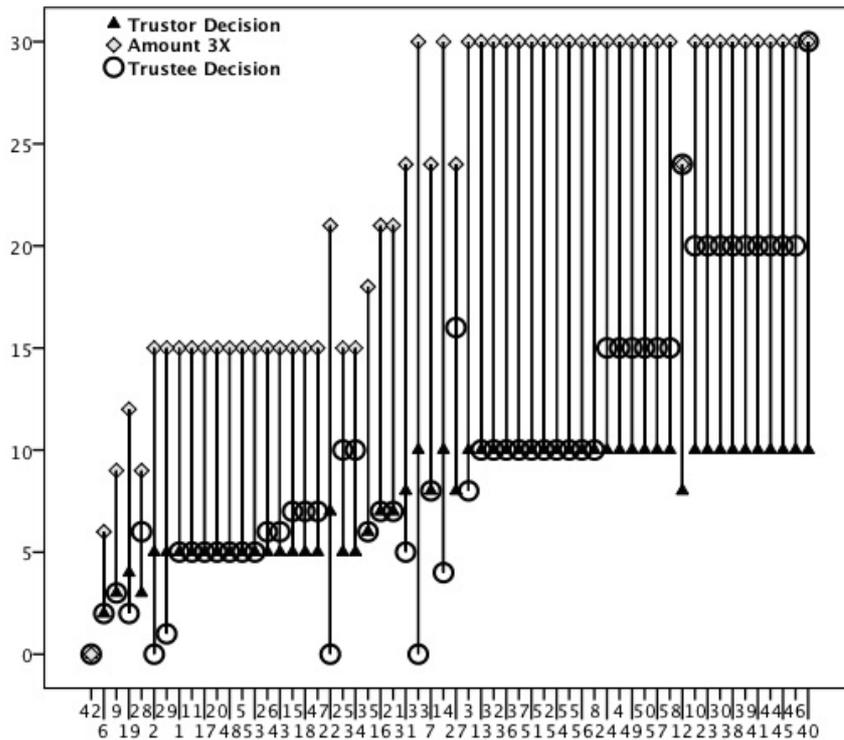

Figure 3. Trustor and trustee decisions in the investment game

Figure 3 displays the decisions of each pair of subjects in the investment game and shows that the most frequent return strategy is the "give back" – where the trustee returns exactly the amount sent by the trustor, and appropriates the entire surplus generated by the joint investment - (which accounted for 43% of the choices). Also, it is noteworthy that trustees' strategies are more generous than the "give back" strategy, when the trustor takes maximum risk (i.e. to send 10 tokens). As displayed in Figure 3, some players have decided to return 20 tokens (out of a total of 40 tokens), aiming to equalize outcomes with the counterpart.

5 Discussion

The findings of this study help to clarify the effects of economic incentives and communication on the cognitive and behavioral responses after an alleged violation. The analysis provides evidence that these two mechanisms to foster cooperation are associated to different patterns of response, such as perception of trustworthiness and risk position. In short, relationships wherein cooperation is based on communication are more resilient to negative shocks than the ones wherein cooperation is based on economic incentives.

On the cognitive level, results indicate that both conditions have similar effects on cooperation levels after an adverse event. When the endowment reduction was introduced for one player of the pair, contributions in G account dropped for both conditions. In the communication condition, however, causal attribution was less likely to be internal than in the bonus condition. Moreover, counterpart's perceived responsibility for the negative outcomes were alleviated, as well as the perception that an opportunistic behavior would happen in the future. Consequently, perceived benevolence and perceived integrity were more resilient in relationships wherein cooperation was based on communication than in the ones that was based on economic incentives. Such positive causal attribution observed in the communication condition implies that injured parties were more likely to assume that the cause of the negative outcome was due to external reasons, and that the counterpart could not control it.

As for the behavioral effect, the two types of relationship are associated to different effects on the willingness to take risks after an alleged violation. In the communication condition, the trustor undertook a higher risk than the ones in the bonus condition. More important, the risk taken was positively related to the perceived trustworthiness of the other

after the negative event. These findings support Tomlinson and Mayer (2009) propositions about the feedback looping between perceived trustworthiness and subsequent behavior. Therefore, perceptions of an eventual non-cooperative behavior of the other have considerable effect on the risk taken in future interactions.

Regarding to trustee's decisions in the investment game, the two types of relationship are not different with respect to decisions to reciprocate counterpart's trusting action. Trustee's decisions were related to the risk taken by the trustor. Results also show that the most frequent return strategy adopted by trustees was the "give back". Moreover, "zero returns" strategy was rarely used (only 7% of total choices). Such findings are consistent with the idea that people tend to view themselves in a positively manner (Murnighan, Oesch, & Pillutla, 2001) and, as such, may feel a moral obligation to return at least the amount sent, avoiding to be seen as selfish and greedy to their own eyes.

Moreover, more generous return strategies were observed, when trustors had sent their entire endowment. Thus, results support the assertion that taking small risks may send a message of lack of trust, reducing the likelihood of reciprocity. So, after a negative event, taking greater risks, despite engendering greater vulnerability, may be the most appropriate strategy to ensure higher levels of cooperation from the counterpart.

6 Managerial Implications

Some practical implications can be drawn from this study. First, the results suggest implications for the design of incentives in inter-firm contracts and within organizations. Economic incentives are normally seen as powerful mechanisms to restrain opportunistic behavior by means of legal sanctions for noncompliance, and explicit rewards for cooperation. Nevertheless, since they are grounded in extrinsic incentives for cooperation,

they hinders one's ability of judging the other as benevolent or trustworthy (Malhotra & Murnighan, 2002) and, hence, crowds out intrinsic incentives in a substitution effect (Frey & Jegen, 2001). In contrast, our results suggest that motivational solutions (such as communication), which rely on intrinsic motivation (Poppo & Zenger, 2002), are more resilient to negative events, since they engender more positive causal attributions and greater perceived trustworthiness in the aftermath of an alleged trust violation.

Second, after the occurrence of a negative event, partners may become more careful and take relatively small risks in order to lessen vulnerability to exploitation. However, this non-committal behavior may send a message of lack of trust and hamper reciprocity. In our findings, reciprocity was mainly influenced by the risk position taken. Therefore sending a clear signal of trust (engaging in trusting action) helps to rebuild trust and to encourage further cooperation of the counterpart.

Summing up, we submit that motivational solutions are particularly important in transactions subjected to high uncertainty, in particular when the adverse shocks are only partially observed. This is the case of transactions within organizations that operate in different geographic locations, which is typically the case of tourism service networks and academic collaboration. Moreover, relational contracting is likely more efficient in countries where institutions are weaker and regulation unpredictable. For its resilience property, motivational solutions deal more efficiently with the adverse shocks, that are more likely in riskier business environment.

7 Limitations and Future Research

Some limitations in the study need to be addressed. First, in the communication condition, face-to-face communication has occurred only once over the game. As a result,

some may argue that it just has enabled coordination of decisions to maximize joint results rather than allow the emergence of social norms. However, other studies have already found that the mere visual identification of the partner was able to raise cooperation levels due to reducing social distance (Andreoni & Petrie, 2002). Moreover, the absence of explicit incentives to enhance cooperation in the communication condition indicates that any cooperative action denotes the existence of some social norm improving cooperative behavior. Nevertheless, the absence of an instrument that could capture the content of communication between participants is, in fact, a limitation.

Second, other concern relates to the sample used. Participants were undergraduate students. Several other studies (see Davis & Holt, 1993 for a revision) have already compared the behavior of decision makers in natural environments with those observed in standard sample used in experiments (undergraduate or MBA students) and no difference was detected. Besides, the decision problem presented to participants did not require any kind of specific knowledge or experience. Nevertheless, it would be worthwhile to replicate this study with a different population (i.e. middle and senior level managers).

Third, due to the size of the sample, only one player ("the victim" in the PGG) of each pair played as trustor in the investment game. Therefore, it was not possible to analyze risk taken by the player who played "the offender role" in the public good game and observe the use of some defense strategy by this player against any eventual retaliation from the counterpart, for example. So it would be useful to examine whether different roles played in the PGG may influence decisions in the investment game.

Finally, according to Dirks, Lewicki, and Zaheer (2009), three important domains are affected by a trust violation: cognitive, behavioral and emotional. The first two were addressed in the current study. It would be interesting to examine the emotional response

following a transgression, since negative emotions (such as anger, frustration and outrage) may entail severe implications for the viability of the relationship.

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