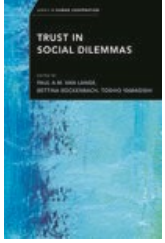

Trust in Social Dilemmas

Paul A.M. Van Lange (ed.) et al.

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CHAPTER

13 Improving Outcomes in the Trust Game: The Games People Choose in Oman, the United States, and Vietnam

Iris Bohnet, Benedikt Herrmann, Maliheh Paryavi, Anh Tran, Richard Zeckhauser

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Abstract

This chapter examines how people in Oman, the United States, and Vietnam deal with trust situations. It offers two trust-fostering mechanisms—a mitigation-based approach ("insurance"), decreasing the principal's cost of betrayal, and a prevention-based approach ("bonus"), increasing the agent's benefits of trustworthiness. What choices principals make were measured, as well as how agents respond to them and how both parties' behaviors compare to a situation where insurance or bonus was assigned by chance. About two-thirds of our principals prefer the safety of the insurance mechanism and about one-third prefer sending a bonus, making themselves vulnerable to the agent. This vulnerability pays off by tripling the likelihood of trustworthiness compared to when insurance is chosen. Still, when a bonus is chosen, only about half of the agents reward trust. This fraction is insufficient to make the principals whole. In terms of expected payoffs principals would be better off with insurance.

Keywords: Trust, trustworthiness, signaling, insurance, bonus, Oman, Vietnam, United States Trust, trustworthiness, signaling, insurance, bonus, Oman, Vietnam, United States

Subject: Social Psychology

Introduction

Trust has been studied extensively across the social sciences. It has been defined as a component of social capital, "features of social life, networks, norms, trust that enables participants to act together more effectively to pursue shared objectives" (Putnam, 1995, pp. 664–665). It has been argued that the level of trust that is shared in a society is the single cultural characteristic that determines a nation's well-being and ability to compete (Fukuyama, 1995, p. 7). Alesina and La Ferrara (2002) found that high measures of trust or social capital are associated with effective public policies and with more successful economic outcomes, themselves the results of smoothly functioning public institutions and reductions of transaction costs. Trust is also positively correlated with economic growth (Knack & Keefer, 1997), with improvements in institutions (Zak & Knack, 2001), and with reductions in corruption (LaPorta, Lopez-De-Silane, Shleifer, & Vishny, 1997).

Choosing to trust is a dangerous action. If one's trust is betrayed, one loses. Skilled practitioners often find ways to change the game to reduce their risks. Successful companies often are characterized by their ability to improve outcomes in trust situations. For example, eBay and Amazon changed the nature of online shopping by allowing buyers to issue public ratings of sellers. The reputational incentives thus changed anonymous one-shot interactions into the equivalent of repeated games. In a different approach, PayPal created insurance arrangements that protect buyers from nonfulfillment.

We are interested in examining how people—in contrast to firms—deal with situations where trust is at stake. When given the option, how do the first movers in a trust situation, the principals, find ways to improve their outcomes? Reputational mechanisms for the second movers, the agents, would be splendid but are not always available. We consider two possible instruments that increase either the willingness to trust or the incentive to be trustworthy. Insurance protects principals should they be betrayed, thus decreasing the risk involved in trusting. A bonus for trustworthiness encourages the agent to reward trust,
p. 238 thus decreasing ↳ the incentive to betray. Both mechanisms should make trust more likely although they work through different channels. While legal remedies, such as insurance or damage recovery through a lawsuit,[1] focus on reducing the cost of betrayal, bonuses for trustworthiness, through reputational and repeated-game incentives or direct compensation, seek to reduce the likelihood of betrayal. These two approaches can be thought of as mitigation and prevention (Bohnet, Herrmann, Al-Issis, Robbet, Al-Yahya & Zeckhauser, 2012).

This chapter uses laboratory experiments to examine whether principals choose a mitigation-based intervention that decreases the cost of betrayal (such as securing insurance) as opposed to a prevention-based approach (such as giving a bonus for trustworthiness) that seeks to decrease the likelihood of betrayal by agents. It assesses how these choices affect rates of trust and trustworthiness. In our experiments, we offered principals a choice between taking insurance and giving a bonus, and agents were informed of this choice. We measured what choices principals made, how agents responded to them, and how both parties' behaviors compared to a situation where insurance or bonus was assigned by chance, with agents being informed that chance made the determination. This setup enables us to assess whether the intentions and expectations that would be conveyed by choosing a certain trust-fostering mechanism affect agent behavior.

Whether a mitigation or prevention approach is chosen in a given context will likely relate to the principal's assessment of the likelihood that trust will be rewarded or betrayed. Other factors, such as concerns about payoffs to oneself and to one's counterpart, and betrayal aversion will also play a role. A significant body of research shows that people care about how their payoffs compare to those of others (e.g., Bolton & Ockenfels, 2001; Fehr & Schmidt, 1999), thus attention to social comparisons matter. In addition, Bohnet and colleagues (Bohnet, Herrmann, & Zeckhauser, 2010; Bohnet, Greig, Herrmann, & Zeckhauser, 2008; Bohnet & Zeckhauser, 2004) show that beyond pure monetary payoffs, people who are betrayed incur psychological costs and demonstrate betrayal aversion. Bohnet et al. (2008) and Bohnet et al. (2010) found betrayal aversion to be a general phenomenon in the potpourri of countries they studied: Brazil, China, Kuwait, Oman, Switzerland, Turkey, the United Arab Emirates, and the United States. Betrayal aversion was generally most pronounced in the Gulf countries and least pronounced in Brazil and China, with the other countries ranging in between. But while there were some cross-cultural differences (Al-Issis & Bohnet, 2016; Bohnet et al., 2012), one main conclusion from our earlier work is that betrayal aversion is a robust phenomenon, relevant in many different cultures. The larger the psychological costs of betrayal, the more likely it is that people will be willing to consider a prevention-based approach, one that increases the chances that their counterpart will reward trust.

One such approach to make rewarding trust more attractive is to give the agent a present, a "bonus," should he choose this action. (For expository ease, principals are female in this analysis; agents are male.) Previous experimental research elaborated the power of positive reciprocity in games like the "gift exchange" game
p. 239 (e.g., Brandts & Charness, 2004; Fehr, Gächter, & Kirchsteiger, 1997; Fehr, Kirchsteiger, ↳ & Riedl, 1993; Hannan, Kagel, & Moser, 2002). In these experiments sending a gift, or an above-market-price wage offer, generally secures positive reciprocity. However, providing a bonus conditional on the reward decision of the agent is not identical to offering the agent an unconditional gift and thus may not elicit reciprocity in the same way. A conditional bonus instead is about reducing the cost for the agent to be trustworthy. It may still instill reciprocity if it was chosen by the principal (e.g., Rabin 1993).[2]

In our experiments, principals have the choice to use a fixed amount for either insuring themselves against the financial loss in case of betrayal through taking insurance or to award the agent with a bonus should he opt to reward trust. If some principals prefer sending a bonus to relying on insurance, this indicates how responsive they believe agents will be to this friendly gesture, its increased payoff for rewarding, and the magnitude of the principal's betrayal aversion. High responsiveness and high magnitude increase the attractiveness of using the strategy "bonus and trust."

Our experiments test for trust and trustworthiness behavior and, particularly, the choice between mitigation and prevention strategies under the significantly different social and cultural contexts represented by three disparate countries: Oman, the United States, and Vietnam. We find some differences among the studied countries, but, overall, our results show strong similarities. About two-thirds of our principals prefer the safety of the insurance mechanism. However, by insuring themselves, they make it less likely for their trust to be rewarded by the agent. The remaining one-third of our principals prefer sending a bonus, making themselves vulnerable to the actions of the agent. This vulnerability pays off by tripling the likelihood of trustworthiness compared to when insurance is chosen. Still, when a bonus is chosen, only about half of the agents reward trust. This fraction is not sufficient to make the principals whole. That is, in terms of expected payoffs, principals would be better off had they taken insurance. Either these principals are too optimistic about the induced change in their counterparts' trustworthiness or betrayal costs indeed loom large and the additional benefits from making betrayal less likely justify choosing the bonus option.

This chapter is organized as follows. The next section presents a conceptual framework. The third section reviews the experimental design and procedures. The fourth section reports the results, and the last section concludes.

Conceptual Framework

In a standard binary-choice trust game (e.g., Camerer & Weigelt, 1988; Kreps 1990), the principal first decides whether to Trust or not to trust his counterpart (i.e., chooses Not Trust). Table 13.1 illustrates with the payoffs used in our experiment, but the ordering of payoffs is the same as in any trust game. If the principal chooses Not Trust, that effectively ends the game and both earn the same payoff, here $10 each. If the principal chooses Trust, the agent must decide whether to Reward (i.e., be trustworthy) or Betray trust.
p. 240 If the principal chooses Trust and ↳ the agent chooses Reward, both parties earn the same payoff, say, $15. If trust is betrayed, then the agent earns $25 and the principal earns $5.

Table 13.1. Payoffs in the Standard Binary-Choice Trust Game

		Agent (Second Mover)	
		Reward Trust	**Betray Trust**
Principal (First Mover)	Trust	15, 15	5, 25
	Not trust	10, 10	

Positing that the players are self-interested money maximizers, if the principal chooses Trust, the agent's best response is to Betray. Hence, the self-interested principal will choose the Not Trust strategy. Hence, the Nash equilibrium is found in the lower box, where the agent has no move to make. Therefore, if self-interested behavior is posited, the players will never reach the Pareto superior outcome available in the upper left-hand box (Trust, Reward Trust).

However, besides monetary concern there are also potentially emotional payoffs associated with each action and outcome. The agent may experience a feeling of guilt if he Betrays trust or a warm glow if he Rewards trust. We denote these feelings as *G* (for guilt) and *W* (for warm glow) in Table 13.2. A rational self-interested principal will take these emotions into account and will make her decision according to her expectation of the distribution of such emotions in the population of agents (we return later and consider emotions of the principal). This attention to emotions helps to explain why the principal chooses Trust and the agent chooses Reward Trust in a large proportion of trust games played.

Table 13.2. Trust Game Payoffs, with the Agent's Emotions

		Agent (Second Mover)	
		Reward Trust	**Betray Trust**
Principal (First Mover)	Trust	15, (15 + *W*)	5, (25 – *G*)
	Not trust	10, 10	

In the real world, trust games usually do not end here, and people often make efforts to change the payoffs or the distribution of outcomes of the game they are playing. Schelling (1980, pp. 173–187) studied very familiar practices that involved making promises or threats. These actions are taken by the agent to affect the choices of the principal. Schelling considered the realistic case where second movers can lower their payoff, given an outcome. Our study is in the spirit of Schelling, but we focus on the principal and ask what she can do to change the outcome of the game. In the real world, the principal often has an ability to reward the agent for cooperative behavior, that is, to send a "bonus," or mitigate the damage incurred by an agent's betrayal by choosing "insurance." In this study, we create these possibilities by giving the principal the ability to add an amount ($5) to any one payoff in the matrix. We then assessed how agents responded.
p. 241 Our choice of trust-fostering mechanisms is inspired by the earlier literature in psychology on ↳ "fear" and "greed" (Rapoport, 1967; Snijders & Keren, 1998; Van Lange, Liebrand, & Kuhlman, 1990; Yamagishi & Sato, 1986).

In this "extended" trust game, the principal's first decision is whether to use insurance or offer a bonus. Given that decision, she then must decide whether to Trust or Not Trust. In the case the principal chooses Trust, the risk inherent in trusting can be affected by decreasing the cost or the likelihood of betrayal; this is exactly what the two alternative strategies accomplish in this study.

If the principal chooses Insurance, she reduces the cost of betrayal. If she chooses Bonus (delivered to the agent if he Rewards), this choice makes betrayal less likely. If Insurance is chosen, the principal is "made whole" in case of Betray. That is, an amount of $5 is added to her payoff in case of Betray, where 5 + 5 = 10. Insurance thus removes any financial risk from trusting, leaving the principal with a weakly dominant strategy to Trust, given that the agent may choose to reward Trust. The Nash equilibrium is now in the upper-left-hand box (Table 13.3). Note the subscript I on W and G, since we think the magnitude of the agent's warm glow and guilt will depend on whether the principal chose Insurance or Bonus. We speculate that both magnitudes would be smaller for Insurance than for Bonus.

Table 13.3. Trust Game Payoffs If the Principal Chooses Insurance

		Agent (Second Mover)	
		Reward Trust	**Betray Trust**
Principal (First Mover)	Trust	15, (15 + W_I)	(5 + 5), (25 – G_I)
	Not trust	10, 10	

If a principal chooses Insurance, how might that change the likelihood that the agent Betrays? The fact that the principal chose Insurance could be perceived as indicating a lack of faith in the trustworthiness of the agent, as well as being a less generous gesture. An intention-based model such as in Rabin (1993) would explain such behavior. Therefore, when Insurance is chosen, apart from monetary payoffs, this would make the agent less likely to Reward Trust.

If Bonus is chosen, the principal sends a bonus by adding $5 to the payoff of the agent, should he choose to Reward Trust. We chose the payoffs so that even with the bonus, Betray still offered a higher monetary payoff to the agent than Reward: that is, 15 + 5 < 25 (Table 13.4). In choosing the Bonus, the principal has two goals: to make Reward less costly to the agent relative to Betray and to encourage reciprocity
p. 242 represented by Reward. Hence, when Bonus is chosen, the warm ↳ glow and guilt feelings of the agent

would become W_B and G_B, respectively larger than W_I and G_I, which would make the agent more likely to Reward Trust.

Table 13.4. Trust Game Payoffs If the Principal Chooses Bonus

		Agent (Second Mover)	
		Reward Trust	**Betray Trust**
Principal (First Mover)	Trust	15, (15 + 5 + W_B)	5, (25 – G_B)
	Not trust	10, 10	

Additionally, we explicitly introduced a control treatment, where the choice between Insurance and Bonus was randomly assigned. Comparing outcomes between the experimental and control (random assignment) treatments will show whether the agent's perception of the principal's intentions mattered.

As we mentioned earlier, there may also be some emotional experience for the principal. Past studies have shown that individuals incur a psychological cost when they are betrayed (Bohnet et al. 2010; Bohnet et al. 2008; Bohnet & Zeckhauser 2004). We represent this cost as *k* and calibrate this psychological cost at its monetary equivalent.[3] The principal's decision will revolve around her assessment of the likelihood that the agent will Reward Trust. Let that assessment be *p* for the original Trust Game, p_I if she chooses Insurance, and p_B if she chooses Bonus. We hypothesize that $p_I < p < p_B$. That is, relying on Insurance makes one less likely to be Rewarded; indeed, that action itself shows doubt about the agent's trustworthiness. By contrast, a Bonus is thought to foster reciprocity and is given to encourage reciprocity.

Whether the principal chooses Insurance or Bonus, she should Trust. With Insurance, Trust has become her weakly dominant strategy. With Bonus, the only justification for the Bonus was to encourage reciprocity once one proceeded to Trust. If these were the only two available strategies, as they were for many of our principals, which should she choose? The expected payoffs for the two strategies are

$$\underset{\text{Insurance}}{p_I(15)+(1-p_I)(10-k)} \qquad \underset{\text{Bonus}}{p_B(15)+(1-p_B)(5-k)}$$

A Bonus will be preferred to Insurance if $(10+k)p_B > (5+k)p_I + 5$ $(10+k)p_B > (5+k)p_I+5$ This inequality will be satisfied when there is some combination of large values for $p_B - p_I$ and *k*. As a result, the Bonus is attractive if it substantially increases the probability of Reward or, if it only increases it modestly, if betrayal aversion is substantial. Whether the principal chooses Insurance or Bonus along with Trust, the sum of payoffs for the two players is the same, regardless of what the agent chooses. Hence, given that the principal Trusts, the efficiency of the game is unaffected by either his or the agent's choices.

The next section reviews the experimental design where we allow for insurance and bonus and assesses the impacts of those instruments on Trust and the probability of Reward.

Experimental Design and Procedures

Our experiment had two different treatments. The Choice treatment, described earlier, gave the principal the opportunity to add 5 points to alternative payoffs in the game. The Chance treatment added the payoffs
p. 243 at random to produce the ↳ Insurance or Bonus outcomes. The goal of the comparison was to see if the principal's intentions, as revealed by her choice, affected the agent's actions.

Choice Treatment: What Game Do Principals Choose to Play?

Subjects started with a binary-choice trust game. The payoffs were given in points and presented to subjects in a matrix and graphic form with neutral terminology (summarized in Table 13.5). Each player was identified as "X," the principal, or as "Y," the agent. Each principal was offered a choice to play or end the game. If a principal decided to exit (choice A) and end the game, both subjects earned E = 10 points. If she decided to trust (choice B) and the agent rewarded trust (choice 1), both would earn R = 15 points. If the agent betrayed (choice 2), he would earn B = 25 points and the principal would be left with C = 5 points. For each point earned, in the United States subjects were paid US$1, 0.2 Omani rial in Oman, and 5,000 Vietnamese dongs in Vietnam. The price of a modest dinner in a restaurant was used as a benchmark to control for purchasing power of average earnings from the experiment.

Table 13.5. Trust Game Payoff Table

		Player Y (Agent)	
		1	***2***
Player X (Principal)	*A*	15, 15	5, 25
	B	10, 10	

Before the game was played, each principal was offered a choice to change the game by allocating 5 points to any one of the payoffs, which would be earned if she were to Trust (i.e., one of the payoffs in row A in the Table 13.5). The 5 points could not be divided and had to go to one payoff. The agent was subsequently informed of the change. The possible changes to payoffs were presented to subjects in a matrix and graphic form with neutral terminology. It was hypothesized that principals would use the points either for Insurance as the principal's payment for the Betray outcome (A,2), or to give a Bonus as the agent's payment for the Reward outcome (A,1). That is, they would not give themselves 5 points extra for the Reward outcome, nor the second movers for the Betray outcome.

Neutral language was used to determine how the game would be changed. The principal, Player X, was asked: "To which payoff do you add the 5 points?" The payoff table was then modified accordingly and shared with player Y, who became aware of the changes made to the game by Player X (Table 13.6). Once the game was changed, the principal had to decide whether or not to trust: "Which alternative, A or B, do you choose from your modified Payoff Table?"

Table 13.6. Insurance Payoff and Bonus Payoff

Insurance Payoff		**Player Y (Second Mover)**	
		1	***2***
Player X (First Mover)	*A*	15, 15	**5 + 5 = 10**, 25
	B	10, 10	

Bonus Payoff		**Player Y (Second Mover)**	
		1	***2***
Player X (First Mover)	*A*	15, **15 + 5 = 20**	5, 25
	B	10, 10	

If the principal, player X, chose A, the agent, Player Y, was then asked whether he would choose 1 (Reward) or 2 (Betray).

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Chance Treatment: A Control to Determine whether Intentions Matter

To observe if the principal's intentions and expectations about the agent's actions matter, we created a Chance treatment where the Insurance and Bonus structures were assigned at random (e.g., by drawing a red or black playing card from a deck). The Chance treatment thus served as our control experiment. Once the new payoffs were determined by Chance, players continued the game as described previously.

This allows us to compare the results of the Choice and Chance treatments to see if the intentional choice of Insurance or Bonus, as opposed to a random adjustment of the game, affected either trust or trustworthiness.

Procedures

This study was conducted with 606 student subjects in Oman, the United States, and Vietnam, with 180 subjects participating in Oman, 176 in the United States, and 250 in Vietnam. Demographic and summary statistics of subjects are presented in Appendix 13.A. About 55% of the participants were women, and the average age was approximately 22 years, with no significant differences among countries. Twenty sessions were conducted in total, seven each in Oman and the United States and six in Vietnam. Table 13.7 presents the number of subjects in our control treatment (Chance) and in our treatment condition (Choice) in the

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three countries. ↳

Table 13.7 Number of Subjects in Choice and Chance Treatments

	Oman	US	Vietnam	Total
Choice	108	94	126	328
Chance	72	82	124	278
Total	180	176	250	606

Subjects were randomly assigned to principal and agent roles and were randomly matched. All were identified by code numbers and were anonymous to other players. There was no communication among the participants, and the experiment took approximately one hour. The English version of the experimental instructions is included in Appendix 13.B. The instructions were drafted in English and next translated into Arabic (Oman) and Vietnamese (Vietnam). To ensure consistency, instructions were translated forward and backward. Experiments in all locations were conducted manually using pen and paper.

The experiments were in the native language of the location. Participants first read the instructions. Next, the experimenter summarized the instruction orally. To control for understanding, all participants had to solve some quizzes before the experiment started. In the United States, students were invited to participate from the CLER Laboratory subject pool at Harvard Business School in Cambridge, Massachusetts, which includes students from the greater Boston area. In Oman, experiments were conducted at the Sultan Qaboos University in Muscat, and in Vietnam the experiments were conducted at the Foreign Trade University in Hanoi. In Oman and Vietnam, students were recruited across the campus from all faculties and schools several days prior to the experiments, ensuring that participants would not know each other.

At the end of the study, subjects were informed of the outcomes of their decisions and, by presenting their code numbers, received their cash earnings in sealed envelopes. The next section presents the results from our experiments.

Experimental Results

We first present results for the principals and then for the agents. Before each result, we discuss the theory involved. For some results, only the Choice treatment is of interest. For others, the comparison between the Choice (experimental) and Chance (control) conditions is important.

Principal Behavior

Insurance versus Bonus

Theory makes no prediction as to whether principals will choose Insurance or Bonus. Which option a rational self-interested principal will choose, as discussed earlier, will depend on their assessment of the likelihoods that agents will Reward in the two cases.

Result 1: Most principals chose Insurance rather than the Bonus option.

Across the three countries, among the principals who chose either Insurance or a Bonus, 68% chose a mitigation-based intervention and thus protected themselves in case of Betrayal; the other 32% sent their agent a contingent Bonus.[4] There are no significant differences in allocation patterns among the countries; principals in each preferred to rely on Insurance rather than send a Bonus (p = 0.53). Table 13.8 presents the
p. 246 results. ↳

Table 13.8. Choice Treatment: Share of Principals Choosing Insurance versus Bonus

	Insurance (%)	Bonus (%)	*N*
Oman	73.7	26.3	38
US	62.2	37.8	45
Vietnam	68.9	31.1	45
N	87	41	128

Trust Depending on Insurance or Bonus Choice

Principals choosing Insurance have a weakly dominant strategy to Trust. A principal would have no reason to choose Bonus unless he intended to Trust. Theory would thus predict a very high level of Trust for Insurance and a high level for Bonus. This prediction leaves aside a principal's potential betrayal aversion, which would diminish levels of Trust.

Result 2: Principals trusted overwhelmingly in the Choice treatment, and their Trust rates were not affected by whether they chose Insurance or Bonus.

Choosing either the Insurance or the Bonus option produced an extremely high and virtually the same rate of Trust across all three countries. Table 13.9 presents the breakdown of these Trust decisions by principals' Insurance and Bonus decisions; it also shows no significant differences in rates of Trust between the two strategy choices in any of the countries. There were also no differences between countries (results not shown).

Table 13.9. Choice Treatment: Percentage Choosing Trust in the Insurance and the Bonus Games

	Insurance (%)	Bonus (%)	*p*-value*
Oman	92.9	90.0	0.774
US	85.7	82.4	0.763
Vietnam	83.9	85.7	0.874
N	87	41	128
p-value*	0.555	0.862	0.757

* *p*-values are determined using chi-squared tests comparing principals' choices within a country (horizontal comparison) or across subject pools (vertical comparison).

Trust with Chance versus Choice with Insurance and Bonus

Theory would predict high levels of Trust with Insurance for both Chance and Choice, given that it is a weakly dominant strategy. We should expect Choice to lead to less Trust, since when the principal chooses Insurance it conveys a negative signal about low expectations for Reward and/or lack of generosity.[5] Bonus, on the other ↳ hand, presents a different story. With Choice, the principal has put herself at risk by choosing Bonus, presumably with expectations of reciprocity (Reward choice by agent). Also, there was a selection effect: principals who are more (less) optimistic about Reward would differentially choose Bonus (Insurance) and then Trust (Not Trust). With Chance, by contrast, the Bonus choice is less likely to win Trust for two reasons: First, the principal did not allocate money in a manner that would win reciprocity. Second, there is no longer a selection effect among the principals.

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Result 3: Compared to the Chance treatment, principals in the Choice treatment were less likely to Trust if they chose Insurance and more likely to Trust if they chose Bonus.

Given Result 2, outcomes in the three countries were added together for this result. Principals were significantly less likely to Trust when they chose Insurance (87.4%) than when Insurance was randomly assigned to them (100%) ($p = 0.003$). It appears as if a random assignment of Insurance evaporates potential betrayal aversion or social comparison. In contrast, principals were significantly more likely to Trust when they had chosen to send a Bonus (85.4%) than when the Chance treatment assigned it to them (59.5%) ($p = 0.004$). We reiterate the two plausible explanations. First, principals believed that the intentions behind sending the Bonus would increase trustworthiness (likelihood of Reward) of the agent. Second, there was a selection effect at work. Principals who chose to send a Bonus revealed their confidence in the trustworthiness of their counterpart, at least if he received a bonus for Reward. Table 13.10a summarizes these results.

Table 13.10a. Percentage Choosing Trust in the Chance versus the Choice Game

	Insurance (%)	**Bonus (%)**	***p*-value***
Choice	87.4	85.4	0.757
Chance	100	59.5	0.000
p-value*	0.003	0.004	

* *p*-values are determined using chi-squared tests comparing principals' choices across allocation type (horizontal comparison) or treatments (vertical comparison).

As can be seen in Table 13.10b, principals in all countries responded in the same direction to the Chance versus the Choice treatment: They Trusted less when Insurance was chosen and Trusted more when Bonus was chosen. This is quite in accord with the theory, since both a selection effect and the indication of intentions to the agent work in the same direction.

Table 13.10b. Percentage Choosing Trust in Chance versus Choice Game, by Country

Choice	Insurance (%)	Bonus (%)	*p*-value*
Oman	92.9	90	0.774
US	85.7	82.4	0.763
Vietnam	83.9	85.7	0.874
N	87	41	128
p-value*	0.555	0.862	0.757
Chance	Insurance (%)	Bonus (%)	*p*-value*
Oman	100	63.2	0.005
US	100	30.4	0.000
Vietnam	100	78.1	0.007
N	65	74	139
p-value*	1	0.002	0.000

* *p*-values are determined using chi-squared tests comparing principals' choices across allocation type (horizontal comparison) or subject pools (vertical comparison).

The differences, however, were not significant in all countries. While the effect sizes were relatively comparable in the Insurance game, whether a Bonus was by Choice or by Chance had by far the biggest impact in the United States. Eighty-two percent of US subjects Trusted when they could choose to send a Bonus, whereas only 30.4% Trusted when the Bonus was randomly assigned ($p = 0.001$). The Trust rate in the Chance treatment was significantly lower in the United States, 30.4%, than in Oman and Vietnam, where
p. 248 it was 63% and 78%, respectively ($p = 0.002$). ↳

Agent Behavior

Result 4: In the Choice treatment, Reward rates were higher when Bonus rather than Insurance was chosen.

Agents were significantly more likely to Reward Trust in the Bonus game than in the Insurance game, with 46% Rewarding Trust in the Bonus game and 14% Rewarding Trust in the Insurance game ($p = 0.000$). This is as we would expect, given the effect of Bonus versus Insurance on both payoffs and in indicating the principal's intentions and beliefs. Although directionally supported in all countries, at least doubling the Reward rate, given the modest sample size the effect was only statistically significant in Vietnam (Table
p. 249 13.11), where Bonus had a Reward rate 2.8 times that of Insurance. ↳

Table 13.11. Choice Treatment: Percentage of Agents Choosing Reward in the Insurance and Bonus Games

	Insurance (%)	Bonus (%)	*p*-value*
Oman	11.5	33.3	0.135
US	20.8	42.9	0.149
Vietnam	11.5	31.8	0.002
N	76	35	111
p-value*	0.564	0.504	0.000

* *p*-values are determined using chi-squared tests comparing across decision type (horizontal comparison) or across subject pools (vertical comparison).

Result 5: Compared to the Chance treatment, agents in the Insurance game were less likely to Reward in the Choice game (but this effect was exclusively driven by Omani agents). Agents in the Bonus game were not affected by whether the Bonus was sent to them by the principal or allocated by Chance.

Agents were less likely to Reward Trust when principals chose Insurance (14%) rather than having it assigned to them by Chance (26%) ($p = 0.083$). This was significantly less than the 46% of agents who Rewarded Trust when principals actively chose to send a Bonus ($p = 0.000$). In addition, the difference in rates of Reward when Bonus or Insurance was randomly selected by the Chance lottery was also significant (Table 13.12a).

Table 13.12a. Percentage Choosing Trustworthiness in the Chance versus Choice Game

	Insurance (%)	**Bonus (%)**	***p*-value***
Choice	14.5	45.7	0.000
Chance	26.2	47.7	0.020
p-value*	0.083	0.859	

* *p*-values are determined using chi-squared tests comparing across allocation type (horizontal comparison) or treatments (vertical comparison).

As can be seen in Table 13.12b, agents in all countries were more likely to Reward Trust when their principals had chosen Bonus versus Insurance, although the effect is not significant in each country. In the Chance treatment, the picture is more mixed, with agents more likely to Reward with a random Bonus than random
p. 250 ↳ Insurance in the United States and in Vietnam but not in Oman. Generally, agents' responses to the Choice versus the Chance Treatments varied by country. Under Insurance, Omanis were less likely to Reward Trust ($p < 0.01$), Americans were more likely to Reward Trust ($p < 0.05$), and the Vietnamese Rewarded Trust roughly equally often in the Choice and Chance treatments. In the Chance treatment, the Reward rate was significantly higher in Oman than in the United States or in Vietnam. Whether the Bonus was due to Choice or Chance had no effect on Reward rates in any of our countries. The Reward rates were about the same.

Table 13.12b. Percentage Choosing Reward in Chance versus Choice Game, by Country

Choice	**Insurance (%)**	**Bonus (%)**	***p*-value***
Oman	11.5	33.3	0.135
US	20.8	42.9	0.149
Vietnam	11.5	58.3	0.002
N	76	35	111
p-value*	0.564	0.504	0.000
Chance	Insurance (%)	Bonus (%)	p-value*
Oman	52.9	25.0	0.132
US	0.00	57.1	0.000
Vietnam	26.7	56.0	0.027
N	65	44	109
p-value*	0.002	0.181	0.020

* *p*-values are determined using chi-squared tests comparing across allocation type (horizontal comparison) or subject pools (vertical comparison).

With the exception of Omani agents, our results suggest that agents were little affected by how the final outcomes came to be, by Choice or Chance. In contrast to the implications of an intention-based reciprocity model, agents were not more likely to Reward Trust when Insurance was randomly assigned, nor were they more likely to reward Trust when Bonus was chosen by the principals. This suggests that agents were largely driven by outcome-based considerations—because the bonus decreased the temptation to Betray.

Our results say nothing about two factors that could be significant, betrayal aversion by the principals or inequality aversion. We made no direct tests of the potential roles of these forces. Betrayal aversion, as mentioned, might eliminate the weak dominance of Trust given Insurance. It would increase the argument for Bonus, if the principal thought that gains in reciprocity were likely.

Inequality aversion would produce a much more complex story. For the agent, its application would have to be modified by the fact that the principal had already made two choices that directly affected the inequality of outcomes. The principal who was inequality averse would have to assess the likelihood that the agent would Reward in order to know the structure of inequality. A further consideration, if the principal were Betrayal averse, would be how inequality aversion factors in the loss that comes with Betrayal. Though it may have a monetary equivalent, it is hardly clear that inequality-averse players would simply value it on a monetary basis. Interestingly, the observed 100% trusting of principals in the Insurance-Chance setting indicates that principals experiencing by chance a manna from heaven like Insurance lose all betrayal aversion and inequality aversion. Future research might show whether experience of good luck makes people less concerned about exposure to betrayal or inequality.

Conclusion

The experiments in this chapter offered people the opportunity to modify a Trust game to increase the chances of a successful outcome. Specifically, we allowed principals to choose between Insurance—a mitigation-based approach that decreases the cost of Betrayal to them—and Bonus—a prevention-based approach—that increases the likelihood of Reward by giving an agent an additional payment to Reward.

We find that about two-thirds of our principals prefer Insurance, to protect against Betrayal, as opposed to Bonus, to make Reward more likely. Still, one-third of principals are willing to forgo the safety of Insurance
p. 251 and take a gamble ↳ on their agent's trustworthiness by adding a bonus to their payoff should they Reward. Indeed, Reward rates are about three times as high when Bonus rather than Insurance is chosen. However, in our experiments, Reward rates in the Bonus treatment were still not high enough to make the principals whole on an expected value basis in pure monetary terms.

While possibly too optimistic, principals seem to anticipate agents' reactions to Bonus versus Insurance. Those who chose to provide a Bonus were more likely to Trust than principals who chose Insurance. This is not necessarily intuitive. Given that Insurance fully compensated principals for monetary losses in case of Betrayal, Trusting was a (weakly) dominant strategy. However, if we allow for betrayal aversion, and principals think a Bonus will greatly increase reciprocity levels, then Bonus is preferred.

Trustworthiness—the propensity to Reward—in our experiments was largely driven by outcome-based motivations. It generally did not depend on whether Insurance or Bonus was chosen by the principals or determined by Chance. Our agents were responsive to their personal payoff change that resulted from the Bonus. In short, agents generally did not respond significantly to principals' intentions and expectations of Reward, as conveyed through their choice of Insurance versus Bonus. There was one exception: Omani agents were substantially more likely to Reward Trust when Insurance came through Chance than through Choice, suggesting that they understood and responded to intentions and expectations. This last result accords with evidence from Jordan, another Arab country, where Jordanians cared much more about intentions in Trust situations than did Americans (Al-Issis & Bohnet 2016).

Principals appeared to overestimate how responsive Reward would be to whether the principal made a choice or was assigned an arrangement. Thus principals expected that the intentions and expectations conveyed through their choices would have a more powerful effect than they did in practice. Hence principals were more likely to Trust when they had chosen Bonus and less likely to Trust when they had chosen Insurance as compared to a Chance assignment.

Overall, our results suggest that at least some principals want to make Trust work. They send a Bonus to encourage trustworthiness (Reward) rather than insuring themselves against the losses from Betrayal

and/or merely choosing Not Trust to avoid exposure to potential betrayal. Given our results, it appears that these principals are too sanguine about the likelihood of Reward given proven intentions.[6] About half of our agents Betray despite being offered a Bonus. Mostly, agents seem to care about outcomes independent of how they came about.

Our chapter contributes to the larger debate about the relative importance of processes versus outcomes in determining how players will behave. Equally important, we suggest that in addition to studying how people respond to given environments, the laboratory lends itself to questions of institutional design. What games
p. 252 would people play if they could choose? And are people "good" at ↳ choosing? Do they have a good sense of what will work best? Our results raise some cautions. A prime dictum for choice in interactive situations is to place oneself in the other player's shoes. Unfortunately, that may not tell in which direction he would walk.

Notes

1. Of course, in situations where damages likely follow after a betrayal, that will also deter betrayals.
2. Note that it could also prove counterproductive if the agent regards it as a bribe and betrays so as to turn down the bribe.
3. For this analysis, we posit that the cost of betrayal is the same in the original trust game as it is when the principal relies on damages or sends a bonus. Future analyses should test for differences among these costs.
4. The corresponding fractions for all principals, including those who allocated the additional money to the two other payoffs (i.e., to themselves in case their agent rewarded trust or to their agent in case he betrayed) were 54% for Insurance and 25% for Bonus, with 21% of our principals making choices that did not make intuitive sense. The difference between Insurance and Bonus allocations remains significant.
5. The disparity might arise, despite the weakly dominant strategy because the principal did not fully understand the game but did understand that a reduced reward probability was bad. Alternatively, principals may have been betrayal-averse, which would remove the weakly dominant property of Insurance trust.
6. Obviously, for slightly different payoffs, this optimism might be justified.

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Appendix 13.A Demographic and Summary Statistics of Subjects

Demographic Variable	Oman	United States	Vietnam
Gender	41% Male	47% Male	45% Male
	59% Female	53% Female	54% Female
Race	100% Arab	57% Caucasian	100% Asian
		24% Asian	
		7% African	
		6% Hispanic	
		6% Other	
Age Distribution	NA	70% between 18–22 years	79% between 18–22 years
		13% between 23–26 years	14% between 23–26 years
		17% older than 26 years	7% older than 26 years
Religion	100% Muslim	37% None	46% Buddhist
		26% Protestant	46% None
		14% Catholic	8% Other
		13% Jewish	
		10% Other	
Education	99% Undergraduate	82% Undergraduate	96% Undergraduate
	1% Graduate Studies	18% Graduate Studies	4% Graduate Studies

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Appendix 13.B Experimental Instructions

Welcome to our Research Project (X-C)!

How the study is conducted. The study is conducted anonymously. Participants will be identified only by code numbers. There is no communication among the participants. In the experiment you will make decisions that earn you points. At the end of the study we will pay you in cash according to the amount of points you earned in the experiment using the following exchange rate:

> 1 point= $1

In this study half the participants are randomly chosen as a Person "X," the other half as a Person "Y." ***You are a Person "X."***

You will be randomly paired with one Person "Y" now present in this room. You will never know that person's identity nor will that person know your identity. In addition, your choice will not be known to other participants or to the researchers.

All information provided in these instructions is commonly known by all the persons "X" and all the persons "Y."

About your decisions.

First we present the basic problem to you (Payoff Table 1 and Figure 1). Your first decision is which payoff to increase in the problem (Payoff Table 2, Figure 2). Your second decision is to choose between A and B from the modified Payoff Table 3. We will ask you to make these decisions and will then determine the points you have earned.

Basic Problem

The basic problem is described in Payoff Table 1. Figure 1 presents the problem graphically. You have to choose one of two alternatives, A or B:

A gives you a payoff for sure and Person Y takes no action.

B gives you an outcome that depends on Person Y's behavior. If you choose B, Person Y has to choose between options 1 and 2.

Payoff Table 1

You choose	Nature of choice	Earnings to you	Earnings to Person Y
A	Certain outcome	10	10
B	Person Y chooses 1	15	15
	2	5	25

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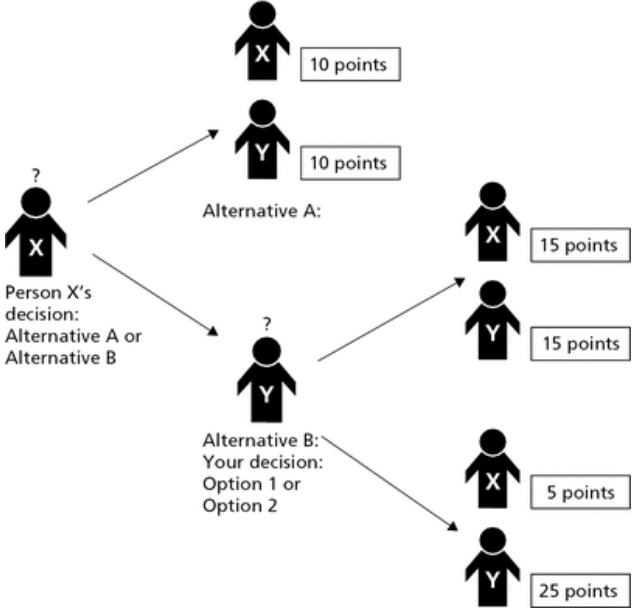
The payoff table reads as follows:

If you choose A, you and Person Y will each get 10 points.

If you choose B and Person Y chooses 1, you and Person Y will each get 15 points.

If you choose B and Person Y chooses 2, you will get 5 points and Person Y will get 25 points.



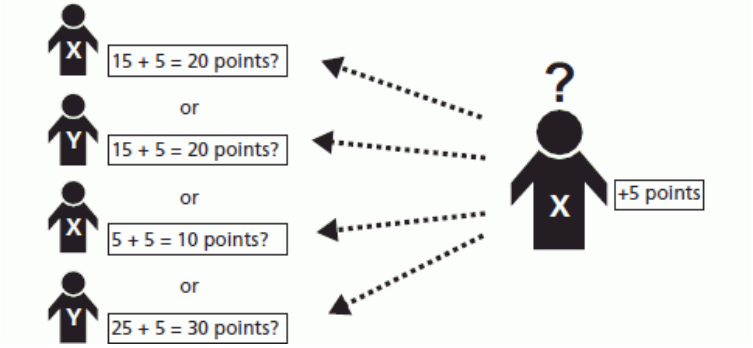
Possible Changes to Basic Problem

Before you decide between alternatives A and B, you are asked to allocate an additional 5 points. You can add these 5 points to any of the payoffs in Row B of Table 1. The 5 points cannot be split. All must go to one payoff. Your person Y will be told where you put the points. Payoff Table 2 shows all possible changes to the payoff structure you are allowed to make. *You need to choose one of them.* Figure 2 presents your options graphically.

p. 257 Payoff Table 2

You choose	*Nature of choice*	*Earnings to you*	*Earnings to Person Y*
A	Certain outcome	10	10
B	Person Y chooses 1	15 + 5 =20?	15 + 5=20?
	2	5 + 5 =10?	25 + 5=30?

Choose one



Conduct of Study

(i) **We will distribute YOUR ANSWER FORMS to you, where you can indicate your decisions.**

(ii) **First you will be asked to decide where to add the 5 points, then you will be asked to choose either alternative A or alternative B.**

(iii) **After you have made your two decisions, we will collect all answer forms.**

(iv) **Answer forms will be randomly distributed to Persons Y.**

(v) **If you chose alternative A, your Person Y will not have a decision to make. If you chose alternative B, your Person Y will choose between Options 1 and 2.**

(vi) **After Persons Y have made their decisions, we will collect all answer forms.**

(vii) **We will calculate your earnings.**

Completion of Study and Earnings

- After conducting the study, we ask you to complete a post-study questionnaire.
- You can collect your earnings by presenting your COIE NUMBER FORM at the end of the study. Your earnings will be in an envelope marked with your code number.

YOUR ANSWER FORM (PERSON X-C) Your code number is: ..... .

QUESTION: To which payoff do you add the 5 points? Please indicate your choice in Payoff Table 3 below. Remember, you can only add the 5 points as a whole to one of the payoffs in Row B.

Payoff Table 3: YOUR ANSWER

You choose	Nature of choice	Earnings to you	Earnings to Person Y
A	Certain outcome	10	10
B	Person Y chooses 1	**15 + ...**	**15 + ...**
	2	**5 + ...**	**25 + ...**

Before you decide between alternatives A and B, please answer the following questions:

1. Based on the modified payoffs in Table 3, how much do you earn if you choose alternative A? _____
   How much does Person Y earn in this case? _____
2. Based on the modified payoffs in Table 3, how much do you earn if you choose alternative B and Person Y chooses option 1? _____
   How much does Person Y earn in this case?_____
3. Based on the modified payoffs in Table 3, how much do you earn if you choose alternative B and Person Y chooses option 2? _____
   How much does Person Y earn in this case?_____

FINAL QUESTION: Which alternative, A or B, do you choose from your modified Payoff Table 3?

YOUR ANSWER: I choose _____

Welcome to Our Research Project (Y-C)!

How the study is conducted. The study is conducted anonymously. Participants will be identified only by code numbers. There is no communication among the participants. In the experiment you will make decisions that earn you points. At the end of the study we will pay you in cash according to the amount of points you earned in the experiment using the following exchange rate:

> 1 point = $1

In this study half the participants are randomly chosen as a Person "X," the other half as a Person "Y." ***You are a Person "Y."***

You will be randomly paired with one Person "X" now present in this room. You will never know that person's identity nor will that person know your identity. In addition, your choice will not be known to other participants or to the researchers. All information provided in these instructions is commonly known by all the persons "X" and all the persons "Y."

About your decisions.

First we present the basic problem to you (Payoff Table 1 and Figure 1). Then we explain to you how a Person X can make changes to the basic problem (Payoff Table 2, Figure 2). Finally, you will make your decision based on the modified Payoff Table 3.

Basic Problem

The basic problem is described in Payoff Table 1. Figure 1 presents the problem graphically. Person X has to choose one of two alternatives, A or B.

A gives you and Person X a payoff for sure and you take no action.

B gives Person X an outcome that depends on your behavior. If Person X chooses B, you have to choose between options 1 and 2.

Payoff Table 1

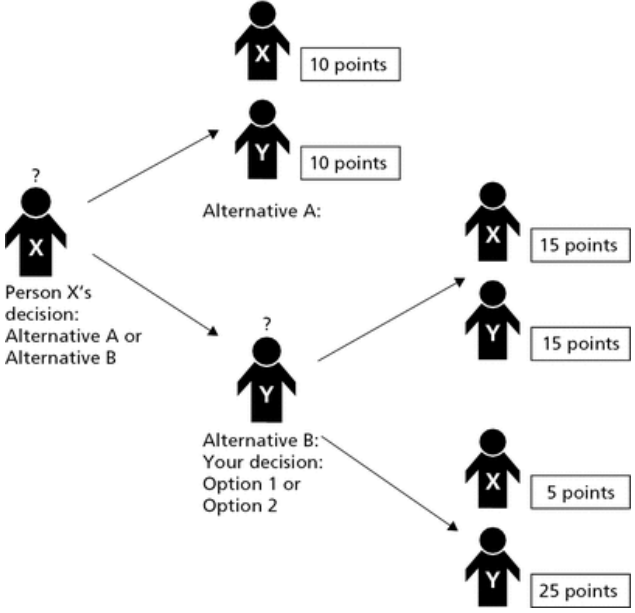
Person X chooses	Nature of choice	Earnings to Person X	Earnings to you
A	Certain outcome	10	10
B	You choose 1	15	15
	2	5	25

The payoff table reads as follows:

If Person X chooses A, you and Person X will each get 10 points.

If Person X chooses B and you choose 1, you and Person X will each get 15 points.

If Person X chooses B and you choose 2, you will get 25 points and Person X will get 5 points.



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Possible Changes to Basic Problem

Before Person X decides between alternatives A and B, Person X is asked to allocate an additional 5 points. Person X can add these 5 points to any of the payoffs in Row B of Table 1. The 5 points cannot be split. All must go to one payoff. You will be told where Person X put the points. Payoff Table 2 shows all possible changes to the payoff structure Person X is allowed to make. *Person X needs to choose one of them.* Figure 2 presents Person X's options graphically.

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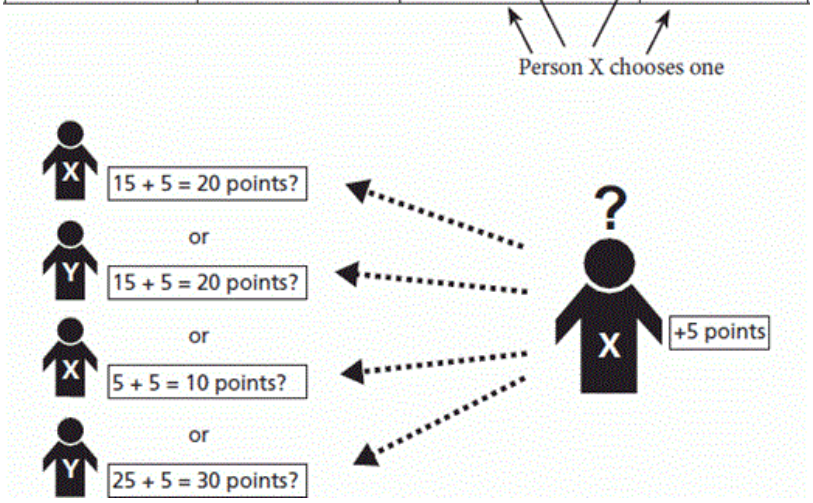
Payoff Table 2

Person X chooses	*Nature of choice*	*Earnings to Person X*	*Earnings to you*
A	Certain outcome	10	10
B	You choose 1 2	15 + 5 =20? 5 + 5 =10?	15 + 5=20? 25 + 5=30?



Conduct of Study

(i) **We will distribute answer forms to Persons X, where they can indicate their decisions. They make two decisions: to which payoff to add the 5 points and what alternative, A or B, to choose. First Person X will be asked to decide where to add the 5 points, then Person X will be asked to choose either alternative A or alternative B.**

(ii) **After all Persons X have made their two decisions, we will collect their answer forms.**

(iii) **Answer forms will be randomly distributed to Persons Y. In addition, you will receive YOUR CHOICE FORM to indicate your decision.**

(iv) **You look at your answer form. You will learn to which payoff your Person X has added the 5 points and which alternative, A or B, your Person X has chosen.**

a. **If Person X has chosen alternative A, you do not make a decision.**

b. **If Person X has chosen alternative B, you decide between Options 1 and 2.**

(v) **After you have made your decisions, we will collect all choice and answer forms.**

(vi) **We will calculate your earnings.**

Completion of Study and Earnings

- After conducting the study, we ask you to complete a post-study questionnaire.
- You can collect your earnings by presenting your COIE NUMBER FORM at the end of the study. Your earnings will be in an envelope marked with your code number.

YOUR CHOICE FORM (PERSON Y-C) Your code number is: ..... .

Your counterpart's code number is: ..... .

INFORMATION: Please learn from Payoff Table 3 on your Person X' ANSWER FORM where the 5 points were added. On the Answer Form, you also see which Alternative, A or B, your person X has chosen.

Before you make any decisions, please answer the following questions:

1. Based on the modified payoffs in Table 3, how much do you earn if Person X chose alternative A? _____
   How much does Person X earn in this case? _____
2. Based on the modified payoffs in Table 3, how much do you earn if Person X chose alternative B and you choose option 1? _____
   How much does Person X earn in this case?_____
3. Based on the modified payoffs in Table 3, how much do you earn if Person X chose alternative B and you choose option 2? _____
   How much does Person X earn in this case?_____

MAIN QUESTION: If Person X chose alternative B, which option, 1 or 2, do you choose?

YOUR ANSWER: I choose _____