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A portfolio of dilemmas: Experimental evidence on choice bracketing in a mini-trust game

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**A Portfolio of Dilemmas:
Experimental Evidence on
Choice Bracketing in a
Mini-Trust Game**

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Abstract

Bracketing is a mental procedure about how people deal with multiple tasks. If a decision maker handles all the tasks at the same time, it is called broad bracketing. If she handles the tasks separately, e.g., one or a few tasks each time, it is called narrow bracketing. This paper experimentally investigates the effect of broad versus narrow bracketing in the context of a mini-trust game. The result shows that, in the narrow bracketing treatment, the investor (first mover) is more likely to place trust on others, but the receiver (second mover) is less likely to fulfill the trust under the same condition. The effect is partly conditional on beliefs in others' behavior.

JEL: C91 (Design of Experiments); D03 (Behavioral Economics)

Keywords: Framing, Choice Bracketing, Social Preference

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1. Introduction

When a decision-maker faces many tasks, she may evaluate the overall consequences simultaneously or group the tasks into multiple subsets, e.g., puts one or a few tasks in each subset, and solves the subsets separately. Such a mental process that describes how people solve several tasks is called choice bracketing. While the global evaluating process is termed as *broad bracketing*, the subset evaluating process is termed as *narrow bracketing*. Classical economic theory assumes that people use broad bracketing when making decisions. That is, they evaluate all the possible options at the same time and make decisions that could maximize the overall outcome. However, empirical research has found that this assumption is often violated. For example, in a study on consumer's behavior, Simonson (1990) set two hypothetical purchasing situations to the consumers: in one scenario, people needed to choose food consumption decisions simultaneously for three coming weeks which is a broad bracketing condition. And in the other scenario people made the decisions for each week at the beginning of every week which is a narrow bracketing condition. Simonson found that when making decisions simultaneously, consumers' choices were more variety-seeking than when making decisions subsequently. Moreover, in further research concerning consumer's purchasing decisions (Gourville, 1998), the price was framed either as an aggregate one-time expense (broad bracketing) or by dividing the cost into series of small ongoing expenses (narrow bracketing). The finding was that when facing a narrow bracketing situation which was called "pennies-a-day", consumers were more likely to purchase the product than in the broad bracketing scenario. Besides, choice bracketing had been found to be influential in the domain of investment decisions (Gneezy and Potters, 1997; Thaler et al., 1997), where people were more risk-averse when the gambles were presented at one time; and demand for the state lottery tickets (Haisley, Mostafa and Loewenstein, 2008), where people were more likely to buy lottery tickets when making several purchase decisions separately.¹

In the previous applications, suppliers exploit bracketing to their advantage. In so doing, they act strategically. But to the extent that suppliers are under the control of workable competition, the underlying situation is not one of strategic interactions. Does bracketing also influence choices if the situation is itself fraught with strategic interaction? This is the question posted in this paper. Specifically I investigate whether choices in a dilemma differ between two conditions: when two unrelated but identical dilemmas are presented sequentially, and when they are presented simultaneously. With this test, I aim at understanding how choice bracketing and social preference interact. To the best of my knowledge, this is the first study on this question. The answer is not only of interest for behavioral economists. If there is a sufficiently pronounced difference, bracketing might also serve as a very mild form of intervention for policy makers.

The workhorse used for testing the influence of bracketing in this paper is the mini-trust game (Berg, Dickhaut and McCabe, 1995). Experimental treatments include broad bracketing and narrow bracketing. The broad bracketing treatment is set by asking subjects to make the two choices

1 See Read, Loewenstein and Rabin (1999) for an extensive review of the literature on choice bracketing.

on the same screen, while the narrow bracketing treatment is set by asking subjects to make their two decisions on two subsequent screens.

If, as assumed in classic economics, people hold standard preferences, it is irrelevant how two independent choices are presented. Even for a person who holds social preferences, it is often supposed that the preferences are pretty stable, which means social preferences will not be affected by the visual frame of the tasks (Bolton and Ockenfels, 2000; Charness and Rabin, 2003; Fehr, Naef and Schmidt, 2005). Therefore, I offer a hypothesis that is consistent with classic theory. That is, there should be no difference between behaviors under two bracketing conditions. However, by intuition, the hypothesis is doubtful for the following reason. In previous research, it has been proved that, under different bracketing situations, the mental procedures that decision makers take are different, e.g., in the broad bracketing condition, subjects solve the problems by considering the overall tasks from a global perspective and maximizing the whole payoff, while in the narrow bracketing condition, subjects deal with the tasks separately, i.e., one or several tasks at a time. For the participants who are involved in two different bracketing conditions in my experiment, it is reasonable to doubt that they could invoke two different mental procedures. Suppose, if a participant faces two games sequentially and one per screen, she would develop a solution for the game she sees each time. But if a subject sees two dilemmas on the same screen, she is induced to consider both problems as a set. This could lead to more calibrations than in a single game. As a result, the decisions might not be the same as the ones when participants deal with the problems separately.

The paper is organized as follows. In section 2, the experimental design illustrates how I set the bracketing environment for the participants as well as the experimental procedure in more details. Section 3 presents the experimental results. Section 4 discusses more possible explanations for the effects found in the experiment. Section 5 makes conclusion for the findings of the paper.

2. Experimental Design

2.1 The Game

Figure 1 shows the game tree of the mini-trust game where player A (investor) can choose to not place her trust (option A1) or place her trust (option A2). And player B (receiver) can choose not to be trustworthy (option B1) or to be trustworthy (option B2). In order to exclude the possibility that feedback concerning what the partner did in the previous game interacts with the frame, neither player A nor player B receive information of the decisions that were already made. Because this is a sequential game, for the sake of comparing the decisions made by all the second movers (players B), I use the strategy method to elicit their decisions (Selten, 1967). More specifically, player B is asked to answer the hypothetical questions, i.e., “if player A’s decision in stage 1 in blue/green game is A2, my decision is: B1 or B2”.

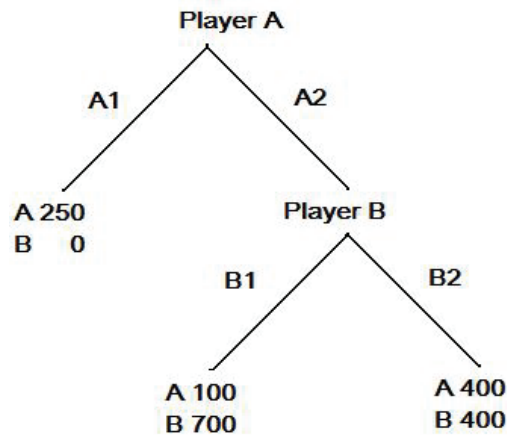


Figure 1 The Mini-Trust Game

There are two treatments in the experiment: broad bracketing and narrow bracketing, which are differentiated by the visual appearance displayed to the participants. In the broad bracketing treatment (*Broad*), two identical games are presented on the same screen, and the participants are asked to input the two decisions at the same time (see Appendix I, Panel A), while in the narrow bracketing treatment (*Narrow*), two identical games are presented sequentially—each time only one game is shown on the whole screen—and the participants have to input their decisions one by one (see Appendix I, Panel B). From the instructions, participants know that they will play the same game twice, and they will be randomly matched with two different players, but do not know how the games will be displayed on the screen. In order to avoid hedging, one game out of the two is drawn to implement for real payment.

2.2. Experimental Procedure

The experiments were run in the Bonn Econ Lab at the University of Bonn in 2010. All participants were recruited with ORSEE (Greiner, 2004). They were students from various disciplines at the University of Bonn who participated in the experiment for the first time. No subject is allowed to participate the experiment more than once. Payoffs were stated in an experimental currency in the games and converted into Euros at an exchange rate of 100 points per 1 Euro. Each session lasted about half an hour. On average, the students earned 2.37 Euros plus show-up fee, which was paid at the end of the session.

In each session, each participant randomly drew a number so as to know their terminal in the lab. After being seated in the cubicles that were visually separated from one another by curtains, the experimenter read the instructions aloud and explained them in detail (see the Appendix II for the instructions).² The experiment was programmed and conducted with the software z-Tree (Fischbacher, 2007). The participants had their roles assigned at the beginning of the game and knew that the roles would not change in the whole experiment. For the sake of distinguishing the

² The instructions used in the experiment were originally written in German.

two identical games they played in the experiment, the first game was called “blue game” and the second one was called “green game”.³

Participants received identical instructions (Appendix II) in both treatments. The instructions presented the game that would be played in the experiment, informed participants of the fact that the same game would be played twice, and explained the results of all the possible payoffs in detail, without supplying information on how the two games would be displayed on the screen(s). In the print-out instructions, characters instead of numbers were used in the payoff matrix. The reason of doing so was to allow participants to make their decisions only when they faced with the computers. If the game with real numbers was shown to the participants in the print-out instructions, it was possible that the decisions were already made when subjects were reading the instructions and the settings of the choice bracketing were meaningless then. This possibility needs to be strictly excluded.

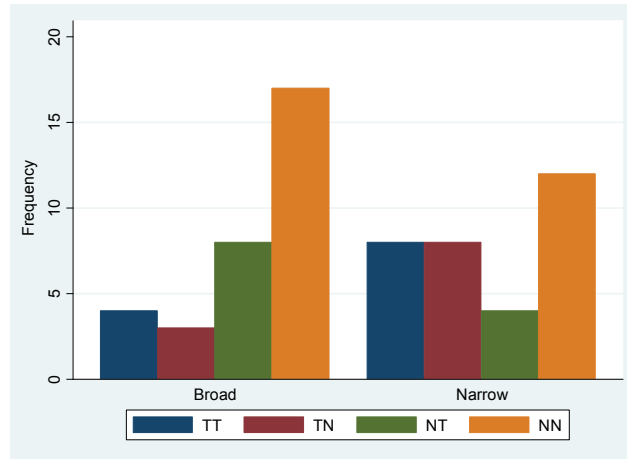
Furthermore, a player A was randomly matched with a player B in the blue game and randomly matched with another player B in the green game. Once all the participants made their decisions, their beliefs about the behavior of others were elicited before they received information concerning their payoffs in the experiment. And they did not know that their beliefs would be elicited in advance. Participants needed to answer questions about behavior of both players A and players B in this stage (see Appendix III). The decisions on beliefs were not incentivized.

3. Experimental Results

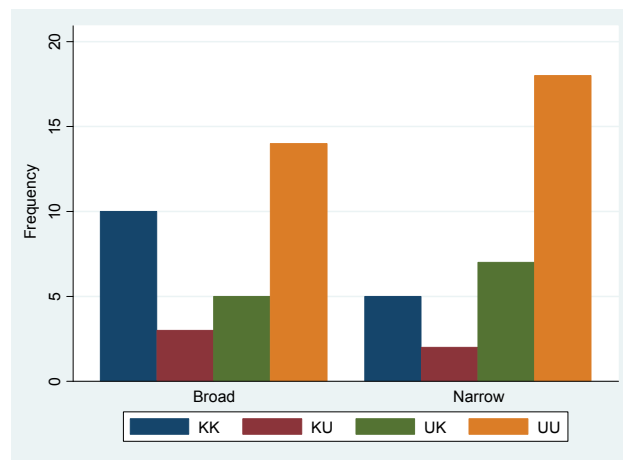
In this section, I will show the experimental results in two main parts: from the perspective of the investor (Player A) and the receiver (Player B). Figure 2 descriptively presents the choices participants made in the games.

From Figure 2 it could be seen that, under two bracketing conditions, both players A and players B behaved differently, especially with regard to the selection of two undesirable choices, e.g., NN of player A and UU of player B, and the selection of two desirable choices, e.g., TT of player A and KK of player B.

3 In order to avoid color-dependent emotional behavior, blue and green are intentionally chosen for labeling games (Valdez and Mehrabian, 1994).



Panel A: Player A's Decisions



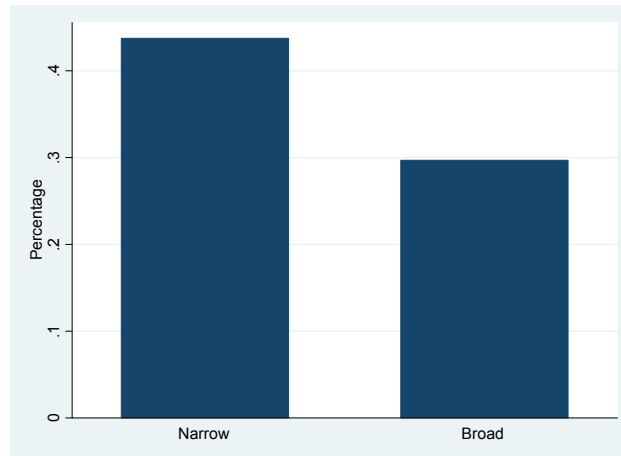
Panel B: Player B's Decisions

Broad denotes the broad bracketing treatment and *Narrow* denotes the narrow bracketing treatment. T denotes investor places trust (option A2). N denotes investor does not place trust (option A1). U denotes that the receiver is not trustworthy (option B1). K denotes that the receiver is trustworthy (option B2). The first letter in a pair, e.g., T in TN, denotes the strategy chosen in the first game (blue game), and the second letter denotes the strategy chosen in the second game (green game).

Figure 2 Decisions in the Mini-Trust Game

3.1. The Behavior of Player A (Investor)

Now I first focus on the behavior of the investor - player A. In the game, player A needs to decide whether to place trust (option A2) or not to place trust (option A1) on player B. If player A is reluctant to place trust, the game is over. Otherwise the right of making a final allocation is given to player B. There are 32 subjects in each treatment. Each player makes 2 decisions, so there are 64 decisions made in each treatment. The behavioral result is the following: the frequency of the trust strategy (A2) being chosen is higher in the narrow bracketing treatment (28 times out of 64 decisions) than in the broad bracketing (19 times out of 64 decisions), as shown descriptively in Figure 3.



Note: *Narrow* stands for the narrow bracketing treatment. *Broad* stands for the broad bracketing treatment. The y-axis is the percentage that *Trust* option was chosen out of 64 decisions in each treatment.

Figure 3 Player A's Decisions

It is obvious in Figure 3 that players A tend to trust more frequently in the narrow bracketing condition than in the broad bracketing condition. Yet, the difference between treatments is neither parametrically nor non-parametrically statistically significant. The Logit regression (random effect model) with a treatment dummy only confirms the idea.⁴

Relying on Hardin's (2006) argument that trust is encapsulated self-interest, player A has to find good reasons to trust her partner player B. If both players hold standard preferences, i.e., if either of them maximizes her payoff, and if she expects her counterpart to do the same, beliefs do not matter. The game is solved by backward induction. A receiver holding standard preferences exploits the investor when given the opportunity. In anticipation, the investor does not place trust. Yet from earlier experiments it is well known that a substantial fraction of receivers refrains from exploitation (Arrow, 1972; Fukuyama, 1995; Putnam, 1993). Such behavior has been explained by social preferences, and by the intention-based preference for reciprocal behavior in particular (Cox, 2004; Bohnet, Greig, Herrmann and Zeckhauser, 2008; Fehr, 2009; Ben-Ner and Halldorsson, 2010; Ermisch, Gambetta, Laurie, Siedler and Noah Uhrig, 2009). If the investor deems trusting behavior not impossible, for her decision, beliefs are critical. So it is reasonable to doubt whether player A's belief in what players B will do is the potential alternative that leads to the treatment difference in the experiment. Besides, previous studies pointed out that expectations not only influence individual decision-making when expectation relates to payoff (Rapoport and Eshed-Levy, 1989; Rapoport and Suleiman, 1993; Offerman et al., 1996; Croson, 2000; Croson and Shang, 2006; Charness and Dufwenberg, 2006), but also when they are irrelevant to payoff (Cason and Mui, 1998; Bardsley and Sausgruber, 2005). Although how the other players A choose will not influence player A's payoff, the prediction is a normative expectation. Therefore I introduce player A's beliefs in both the behavior of players B and the other players A

⁴ I run a Logit regression (random effect model). The dependent variable is the decisions players A made in the experiment. The independent variable is the treatment dummy. The effect of treatment dummy is not statistically significant.

into the regression for finding out the factors that influence player A's behavior in each treatments.

First, I regress player A's decision to place trust on the bracketing conditions, the sequence of games and beliefs. There are two beliefs in the regression. One is player A's belief in the percentage of players B who will not fulfill the trust (*Belief Not Trustworthy*) in the blue game (when *Sequence*=1) or in the green game (when *Sequence*=0). The other is the percentage of the other players A who will not place trust on player B (*Belief Not Trust*) in the blue game (if *Sequence*=1) or in the green game (if *Sequence*=0). The regression result is presented in Table 1.

The result in the table reveals the fact that player A's predictions of the behavior of the others play an crucial role regarding her decisions, and the effect is highly significant. First, in the experimental setting, the most straightforward belief that player A normally uses for making decisions should be the belief in the actions of players B. If player A deals with the problems strategically, she needs to consider the choices of players B so as to find out the best response. This is proved by the significance of the variable - *Belief not Trustworthy*. The negative coefficient of the variable indicates that the higher an investor believes the fraction of receivers will not to be trustworthy is, the lower probability that an investor places her trust is. Player A succeeds in reacting strategically to the prediction of the behavior of the players B. Besides, it is interesting to find that, in games, player A cares about what the other players A behave as well, and this effect is surprisingly stronger than *Belief Not Trustworthy* which could be inferred from the variables' coefficients. The negative coefficient of the variable - *Belief Not Trust* proves that the higher the proportion that a player A forecasts that the other players A will not place their trust is, the lower the probability that a player A chooses to trust is. The coefficient demonstrates the fact that, for player A, the opinion about the behavior of the other players A is even more important than the belief in the trustworthiness of recipients. This illustrates that player A's main consideration is not strategic, but rather rests on the normative expectation.

However, the treatment effect is still not significant in the regression.⁵ At this moment, it is necessary to ask whether the bracketing condition does not influence player A's behavior in any situation. In order to answer this question, the first step is to see how the beliefs are distributed which is shown in Figure 4 (for more details, see appendix IV).

5 I also run regressions on other possible variables' combinations, e.g., with interaction items included, but none of them have a significant treatment effect.

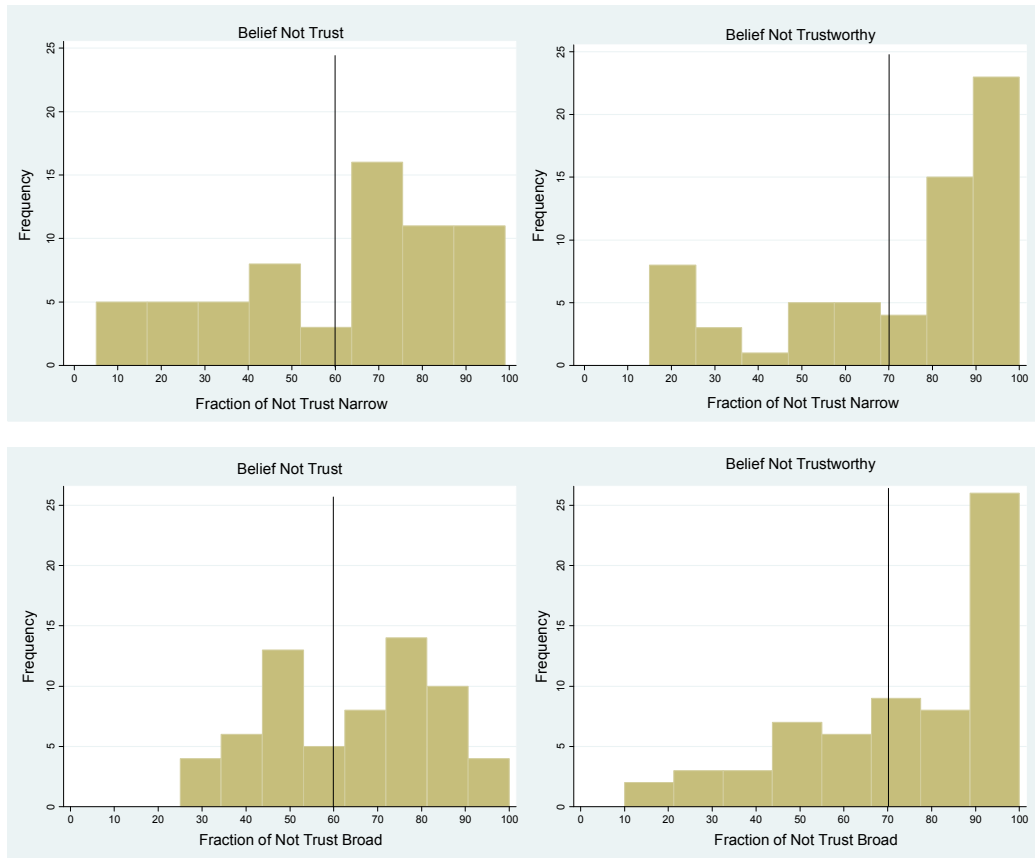
Table 1 Determinant for Decision to Place Trust

| | Dependent Variable: <i>Place Trust</i> |
|-----------------------------------|--|
| <i>Treatment</i> | -0.518 (0.459) |
| <i>Belief Not Trust (%)</i> | -0.0397*** (0.0118) |
| <i>Belief Not Trustworthy (%)</i> | -0.0182* (0.00981) |
| <i>Sequence</i> | 0.218 (0.439) |
| <i>Constant</i> | 3.294*** (0.988) |
| Observations | 128 |
| Number of Obs. | 64 |

Notes: Logit regression (random effect model) on determinants of player A 's decisions to place trust. *Treatment* is a dummy which equals 1 for the broad bracketing treatment and 0 for the narrow bracketing treatment. *Belief Not Trust* is player A's belief in the percentage of the other players A choosing not to place trust. *Belief Not Trustworthy* is player A's belief in the percentage of players B choosing not to be trustworthy. *Sequence* is a dummy which equals 1 for the blue game and 0 for the green game. Absolute value of z statistics in parentheses. * stands for significant at 10%; ** stands for significant at 5%; *** stands for significant at 1%.

In the Figure 4, it is obvious to see that beliefs vary widely, especially beliefs on what the other players A behave.⁶ It has been proved previously that the belief in how the other players A behave is an important factor that has been taken into account by player A. Therefore, it is reasonable to suspect whether, for players A who hold different levels of belief, the bracketing conditions have different influences on the decision to trust. In other words, the wide distribution of the beliefs is the reason for the invisibility of the treatment effect.

6 The variance of *Belief Not Trustworthy* is not significantly different between treatments (variance-comparison tests, $p=0.443$). The variance of *Belief Not Trust* is significantly different between treatments (variance-comparison tests, $p=0.034$).



Note: *Belief Not Trust* stands for player A's belief in the fraction of the other players A who will not place trust. *Belief Not Trustworthy* stands for player A's belief in the fraction of players B who will not fulfill the trust. The vertical line is the reference line for the treatment effect.

Figure 4 Distribution of Player A's Beliefs

To examine this possibility, I run the Logit regression (random effect model) on the determinants with all possible interaction items and test the marginal effect conditional on the levels of belief (see Figure 5). In the figure, each slot presents the treatment effect on a unique value of *Belief Not Trustworthy*. The x-axis in each slot is player A's prediction on the percentage of the other players A who will not place trust. The y-axis is the average marginal effect.

The four slots in Figure 5 display that the treatment effect reverses for those players A who perceive high percentage of the other players A will choose not to place trust versus those players A who perceives low percentage of the other players A will choose not to place trust. Specifically speaking, for those players A who simultaneously forecast that there will be more than 60% of the other players A who will not trust their co-players and more than 70% of players B who will choose not to be trustworthy, the treatment effect significantly differs from 0 (more details, see Appendix V). And the probability of those players A choosing to place their trust is lower in the broad bracketing condition than in the narrow bracketing condition.

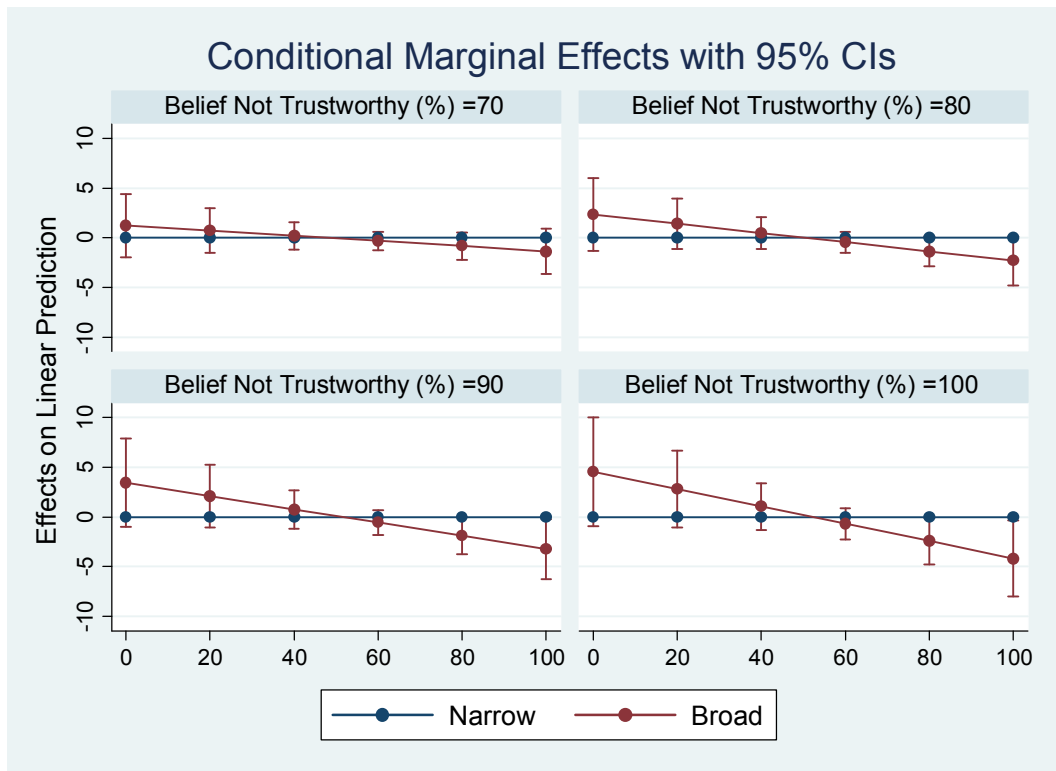


Figure 5 Average Marginal Effects (Player A)

Although not all the players A are influenced by the bracketing conditions, the subpopulation that is affected is the majority of the whole population, which could be deduced from Figure 4. So it is time to question why people behave differently in two bracketing conditions. My explanation is that two groups player A solve the games via different mental procedures in two treatments. In the narrow bracketing condition, player A deals with two problems one by one, as in the repeated game without feedback. She tries to figure out the solution for each single case when faces with it. But, in the broad bracketing condition, when faces with two games at the same time, player A treats the problems as a package instead of two single games and reflects more intensely about what is a good policy in such a situation. This makes her, besides other things, think more about whether it is wise to place trust. One way of finding this out is predicting what others who are in the same role would choose to do. So, not only the *Belief Not Trustworthy*, but also the *Belief Not Trust* significantly influence the decisions. And the latter belief is a more important consideration than the former one.

Besides, another way of interpreting beliefs provides support to the explanation mentioned above. In the experiment, player A answered two belief elicitation questions concerning the behavior of the other players A. One is the belief in what the other players A will choose in the blue game. The other one is the belief in what the other players A will choose in green game. I set two variables for these beliefs. The variable *Belief Not Trust* is the belief elicited in the game player A is playing now and the variable *OBelief Not Trust* is the belief elicited in the other game that player A will play or has already played. For example, in blue game (green game), the *Belief Not Trust* is player A's belief in the fraction of the other players A who will choose not to place

trust in blue game (green game). And the *OBelief Not Trust* is the player A's belief in the fraction of the other players A who will choose not to place trust in the green game (blue game). The *OBelief Not Trust* in one game equals the *Belief Not Trust* in the other game. The aim of this setting is to test whether people form a general belief in the broad bracketing condition. If the answer is yes, the two beliefs would interact with each other and jointly result in the treatment effect. By running a regression on the determinants for the decisions to place trust with this newly-set variable, the possibility mentioned above gets confirmed (see Table 2). For player A, the significance of the interaction item *Belief*OBelief Not Trust* shows that players A, especially those in the broad bracketing, behave in a way that formulates an overall belief about how the other players A will behave. This indicates that, other than showing a merely strategic reaction, player A has a stronger tendency to imitate people who are in the same role in the broad bracketing condition than in the narrow bracketing condition.

In sum, I find a weakly significant main effect for the broad bracketing treatment in the expected direction. According to the paper by Bicchieri et al. (2011), it is predictable that changing behavior on placing trust is not an easy job which will be discussed after player B's behavior is reported.

Result 1: For those players A who simultaneously hold the beliefs that more than 60% of the other players A will not place trust and more than 70% of players B will not fulfill the trust, the probability that they will choose to place trust is lower in the broad bracketing condition than in the narrow bracketing condition.

Table 2 Determinants for Decision to Trust

| | Dependent Variable: <i>Trust</i> |
|---------------------------------|----------------------------------|
| <i>Treatment</i> | -0.808* (0.480) |
| <i>Belief Not Trust (%)</i> | 0.00465 (0.0254) |
| <i>OBelief Not Trust (%)</i> | 0.0405 (0.0256) |
| <i>Belief*OBelief Not Trust</i> | -0.000847** (0.000429) |
| <i>Constant</i> | 0.548 (1.101) |
| Observations | 128 |
| Number of id | 64 |

Notes: Logit regression (random effect model) on determinants for player A's decisions to place trust. *Treatment* is a dummy which equals 1 for the broad bracketing treatment, 0 for the narrow bracketing treatment. *Belief Not Trust* is player A's belief in the percentage of the other players A choose not to place trust in the current game. *OBelief Not Trust* is player A's belief in the percentage of the other players A to choose not to place trust in the other game. Absolute value of z statistics in parentheses. * stands for significant at 10%; ** stands for significant at 5%; *** stands for significant at 1%.

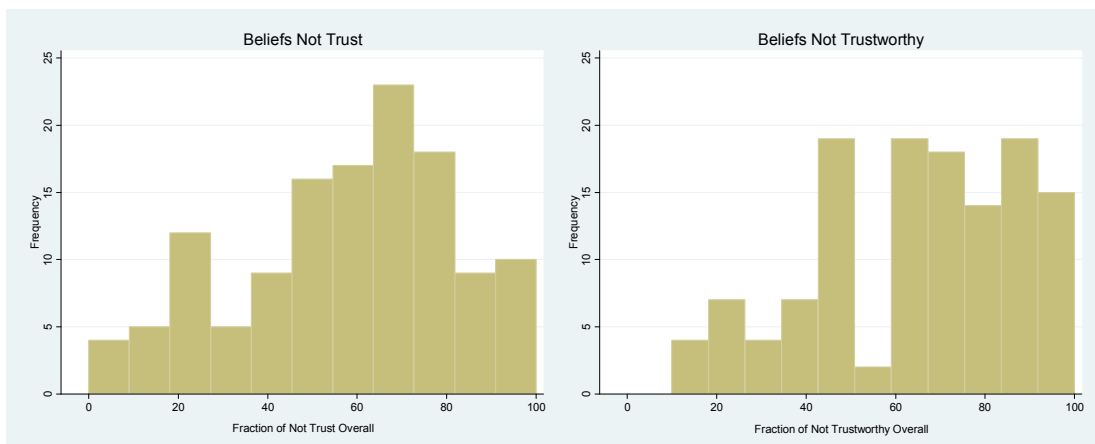
3.2. The Behavior of Player B (Receiver)

In this part, I switch the attention to player B's behavior. Player B's decisions are elicited by a strategy method, i.e., "suppose the player A who is matched with you in the blue game (green game) has chosen option A2, as player B what do you want to choose- option B1 or B2".⁷ There were 32 players B in each treatment. Each player B made two decisions. Therefore, in each bracketing condition, 64 decisions were made. The behavioral result is option B1 (not to be trustworthy) was chosen 36 times in the broad bracketing condition and was chosen 45 times in the narrow bracketing condition.

From the numbers reported above, it could be found that player B picks the trustworthy option more often in the broad bracketing condition than in the narrow bracketing condition, although the treatment effect is not statistically significant with either the parametric or the non-parametric

⁷ The behavior is elicited with strategy method for two reasons: first, if player A chose option A1, the game is over. Player B cannot react to such situation. Then her behavior is not observable without strategy method. Second, if player B gets feedback of player A's behavior, it is difficult to distinguish the influence of bracketing conditions and feedback.

test. The Logit regression (random effect model) with a *Treatment* dummy produces the same result.



Note: Belief Not Trust stands for player B's belief in the fraction of players A who will not place trust. *Belief Not Trustworthy* stands for player B's belief in the fraction of the other players B who will not fulfill the trust.

Figure 6 Distribution of Player B's Beliefs

In the section of investigating player A's behavior reported above, it has been proved that beliefs in what others will choose influence player A's decision-making. Hence, I propose that player B's beliefs (see Figure 6) in others' choices and bracketing conditions jointly affect her behavior, which results in the treatment difference. Table 3 supplies the regression results with both the bracketing conditions and the elicited beliefs as independent variables.

In Table 3, the coefficient of the *Treatment* dummy indicates that the probability that player B decides to be trustworthy is significantly higher in the broad bracketing condition than in the narrow bracketing condition. The effect is the strongest one among all. It proves the idea that subjects process games differently in the two bracketing conditions. Moreover, the significance of three interaction items which include the *Treatment* dummy shows the fact that not merely the bracketing settings influence the decision to be trustworthy, but the bracketing setting also interacts with beliefs which enhances the difference of the probabilities to fulfill the trust between treatments. First, the significance of the interaction between *Treatment* and *Belief Not Trust* indicates that player B solves the problem strategically. Especially in the broad bracketing condition, she uses the prediction on what players A will do as a cue for tackling the problems. The negative coefficient of the interaction items tells that player B views the trustworthy decision as a chance of reciprocity. If she forecasts that most players A will place trust in the first step, she would like to be trustworthy to reciprocate her co-player positively. Otherwise, she will negatively reciprocate by choosing not to fulfill the trust. Second, when player B is in the narrow bracketing condition, she has the tendency to handle the problems sequentially and independently, while when player B needs to handle two tasks simultaneously, as in the broad bracketing condition, she regards the two games as a general social interaction rather than a simple game and tries to generate a rule for such cases. So, besides thinking about the problems strategically, player B reflects deeply whether it is socially acceptable if she fails to fulfill player A's trust.

The solution to the question is to predict the size of the subpopulation of the other players B who plan not to fulfill the trust. The bigger the subgroup is, the less possible that player B takes the trustworthy option. This can be referred from the negative coefficient of the interaction between *Treatment* and *Belief Not Trustworthy*.

Table 3 Determinants for Decision to be Trustworthy

| | Dependent Variable: <i>Trust- worthy</i> |
|---|--|
| <i>Treatment</i> | 13.11** (5.977) |
| <i>Belief Not Trust (%)</i> | 0.0417 (0.0572) |
| <i>Belief Not Trustworthy (%)</i> | 0.00972 (0.0474) |
| <i>Treatment*Belief Not Trust</i> | -0.182* (0.0935) |
| <i>Treatment*Belief Not Trustworthy</i> | -0.156* (0.0872) |
| <i>Belief Not Trust * Belief Not Trust- worthy</i> | -0.000569 (0.000817) |
| <i>Treatment*Belief Not Trust* Belief Not Trustworthy</i> | 0.00220* (0.00128) |
| <i>Constant</i> | -2.096 (2.800) |
| Observations | 128 |
| Number of id | 64 |

Notes: Logit regression (random effect model) on determinants for player B's decisions to be trustworthy. *Treatment* is a dummy which equals 1 for the broad bracketing treatment, 0 for the narrow bracketing treatment. *Belief Not Trust* is player B's belief in the percentage of players A choose not to place trust. *Belief Not Trustworthy* is player B's belief in the percentage of the other players B choose not to be trustworthy. Absolute value of z statistics in parentheses. * stands for significant at 10%; ** stands for significant at 5%; *** stands for significant at 1%.

Result 2: The probability that player B fulfills the trust is higher in the broad bracketing condition than in the narrow bracketing condition.

When analyzing player A’s behavior, I got the result that, on different levels of belief, the treatment effect varies. I think it worth investigating the treatment effect more in depth, conditional on the various belief values of the players B as well (see Figure 7). The figure shows that if player B predicts that less than 60% of the players A will not trust him, the treatment effect is more salient (more details, see Appendix VI). This makes sense from the structure of the game. If player B conjectures that most of players A will not place trust, the game is more likely to be over by the time player A confirms the decision and player B has no chance to change anything. It is not necessary for player B to think further about how to react. Therefore, the bracketing conditions do not have influential effect on the decisions. Besides, it is worth noticing that player B is reluctant to reciprocate positively (71.43% in narrow bracketing and 65.63% in broad bracketing) if they think with high probability the game is over on player A’s side. This could be interpreted as a type of hypothetical punishment. More specifically, if player B perceives that player A will not trust her, she has nothing to do with the zero income. But she still needs find a way to express the negative emotion and hypothetically choosing not to be trustworthy the trust is exactly the way out.⁸

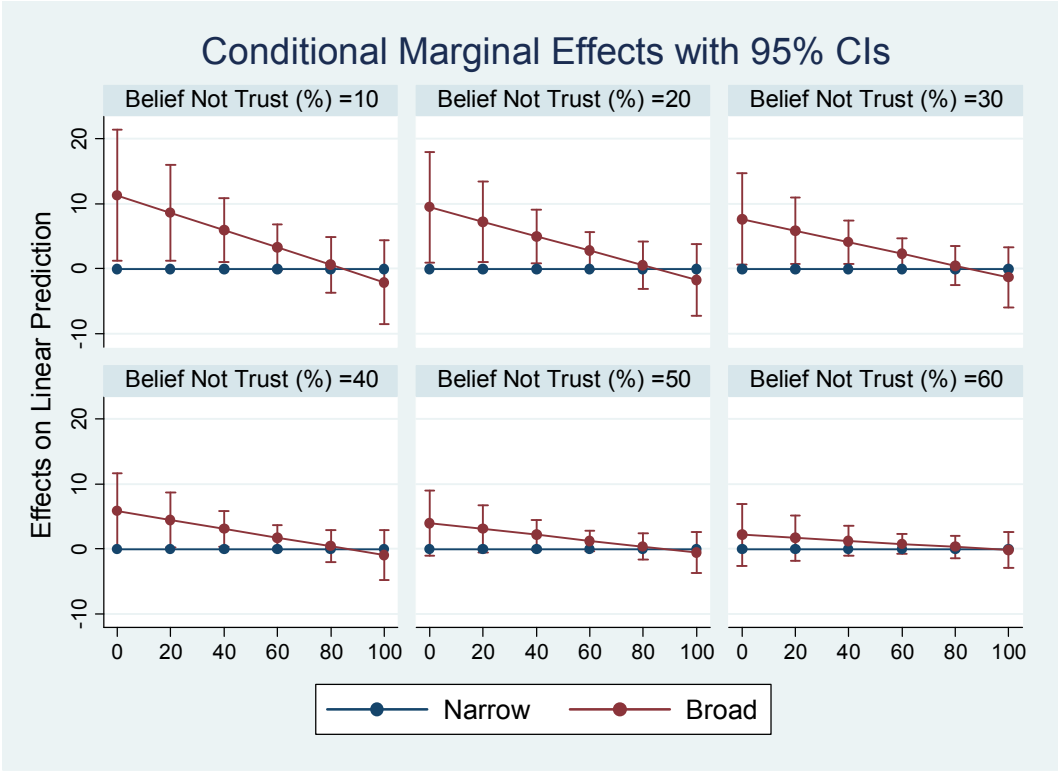


Figure 7 Average Marginal Effects (Player B)

8 The influence of emotion could be found in research, e.g., Houser & Xiao (2003).

Besides, player B treats the prediction of the other B players' behavior as a reference and considers whether it is wise to be trustworthy, especially for those who think that not too many the other players B will fulfill the trust. Although the prediction is that only a relatively small proportion of the other players B will choose to be trustworthy, player B still would like to fulfill the trust, especially in the broad bracketing. From the distribution of beliefs elicited from player B (Figure 6), it could be found that this kind of player B is the majority of the whole population (more details, see appendix IV). For policy makers, it would be good news from both the pro-social behavior of player B and the size of the subpopulations that are subject to the bracketing manipulation. If policy makers could make people have the impression that at least a few the others decide to be trustworthy, it would not be too difficult to get people to behave in the same way especially when people consider the decisions as a social interaction as the mental procedure in the broad bracketing condition.

From the behavior reported above, it could be inferred that more B players are subject to the influence of bracketing settings than the A players. And this could partly be explained by the nature of trust and trustworthiness. In their 2011 paper, Bicchieri et al. experimentally test the reason why people trust others in a trust game. The finding is people believe trustworthy is a norm but trust is not. In my experiment, this is a similar case. In games, although both player A and player B make their decisions based on their beliefs in what others will do, especially the belief in the behavior of the people who are in the same role, the effect is more salient on player B. In the broad bracketing condition, subjects deal with the two tasks at the same time and try to find out a policy for such circumstance. Under this situation, the influence of the bracketing setting is stronger for players B because trustworthiness is a norm for them. They need to take the behavior of the other players B as a hint and figure out what is a socially acceptable decision. Most of the players A are subject to the influence as well, but the effect is weaker because trust is not a norm for players A. Even though players A consider how the other players A behave, this does not always play a role on their decisions.

4. Discussion

In this part, I discuss some other possibilities that could lead to the treatment effect.

4.1. Cognitive Complexity

One possibility that could cause the treatment difference is the complexity of the tasks. By intuition, it makes sense to suppose that when people deal with two games at the same time, the calibration is more complicated than when they handle the two games separately. As suggested in last section, the participants in the broad bracketing condition need to generate a good policy since they reflect the games more general and this is more difficult than simply solving two separate games as in the narrow bracketing condition. Since the experiment is computer-based, I recorded the time each player spent on the decision tasks and set the time that participants spent on

the tasks as a proxy for the level of cognitive complexity. There were three time records obtained from the program: 1, the total time each player spent on making decisions in the broad bracketing treatment; 2, the time players spent on the blue game in the narrow bracketing treatment and 3, the time players spent on the green game in the narrow bracketing treatment. First, I compared the total time players used in two treatments. (In the broad bracketing condition, the total time a player used equals the time record 1. In the narrow bracketing condition, the total time a player used is the sum of time record 2 and time record 3.) The statistic test indicates that the total amounts of time that player spent on the tasks has no significant difference between treatments for both player A and player B. The idea that the aggregated complexities of the mental process are different between treatments is rejected. Therefore the cognitive concept is not the reason for the observed difference between treatments.

4.2. Consistency

Another possibility in doubt which could induce the treatment difference is the consistency consideration. If a subject chose the same option in games, it is said she had made *consistent choices*. This may, in fact, reflect her preference, for example, preference for variety (L McAlister, 1982; I Simonson, 1990). In the broad bracketing treatment, subjects indicate their two choices on the same screen, while in the narrow bracketing treatment they input each of the answers on two separate screens. Hence, one may speculate that more people will make two same choices in the broad bracketing treatment. The statistic test rejects this conjecture. No evidence supports that the treatment effect is caused by the difference of consistency preference.

5. Conclusion

The paper experimentally tests whether narrow and broad bracketing conditions affect social preference in a mini-trust game, e.g., decisions on whether to place trust (player A) or decisions on whether to be trustworthy (player B). In the narrow bracketing condition, subjects face two identical games sequentially. In the broad bracketing condition, subjects face the games on the same screen, which is a creative and decisive visual setting. And it is just this small manipulation that proves the fact that bracketing conditions do have effects on individual behavior, but the consequences are different depending on the decision situations and conditional on the beliefs in how others behave.

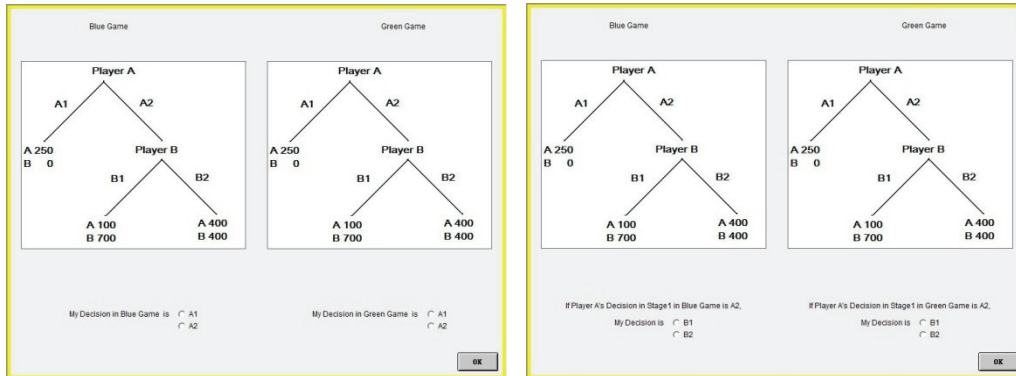
On the one hand, the probability an investor (player A) chooses to place trust is lower in the broad bracketing condition than in the narrow bracketing condition. The beliefs data supply an explanation to the behavioral difference between two bracketing conditions. That is, in games, player A not only solves the problems strategically by conjecturing how her co-player (player B) will behave, but also include consideration of how the other players A decide. Such effect which could be termed as social imitation is more influential than the effect of strategic thinking. From the perspective of player B's final choices, it is more reasonable for players A in the broad

bracketing condition to place trust because trustworthiness is more likely, but actually few players A do this. Apparently, in one of the two treatments, players A are poorly calibrated. Either they overestimate positive reciprocity with the narrow bracketing – then the broad bracketing setting would be a subtle, but effective technology for instilling justified mistrust. Or, alternatively, they place too little trust with the broad bracketing. Then the narrow bracketing setting is a technology for overcoming excessive distrust.

On the other hand, receivers (players B) tend to be more trustworthy in the broad bracketing condition than in the narrow bracketing condition, especially for those players B who predict that at least there are a few players B will behave pro-socially. In the games, player B does not only care about what players A will choose in the first step, but also tries to perceive what the other players B will reply. This is an indication of imitating others who are in the same situation. For player B, it is wiser to be trustworthy in the narrow bracketing condition than in the broad bracketing condition, because more players A place trust in such a situation. However, in fact, most players B fail to do so. Obviously, in one of the treatments, players B do not calibrate properly. In one case, it could be that they overestimate the trust in the broad bracketing – then the narrow bracketing setting could be an efficient instrument for instilling perceived trust. Or, in the other case, they tend not to fulfill the trust more with the narrow bracketing condition. Then the broad bracketing setting is an effective tool aimed at discouraging socially undesirable behavior.

In conclusion, choice bracketing is an influential instrument for inducing people to behave pro-socially, especially when the decision is considered as a norm. When people face several tasks all at once, they tend to solve the problem as a social situation rather than as some independent tasks. The prediction about the behavior of the population that is in the same situation plays a crucial role, especially for the decision to be trustworthy, and the reflection leads to social imitation. Therefore, the social image is an indication of which the bracketing condition is better for inducing pro-social behavior. If policy makers could use the bracketing settings properly, it is possible to direct people behave more pro-socially which is a social-desirable consequence.

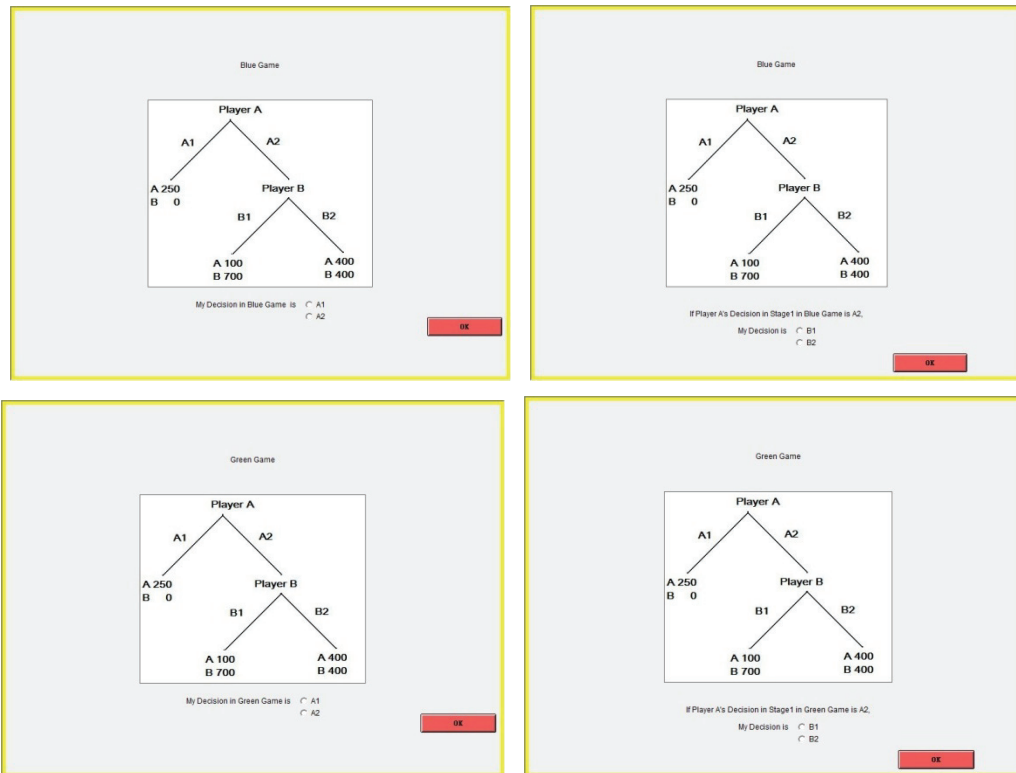
Appendix I Screenshots in the Game



a. Player A

b. Player B

Panel A. Broad Bracketing Treatment



a. Player A

b. Player B

Panel B. Narrow Bracketing Treatment

Appendix II: Instruction

Welcome to our experimental study on decision-making. Please read the instructions very carefully. It is very important that you do not talk to other participants during the whole experiment. In case you do not understand some parts of the experiment, please read through these instructions again. If you still have questions, please give us a sign by raising your hand out of your cubicle. We will come to you and answer your questions personally.

Please note that everybody in the lab receives the same instruction as you.

In the experiment, your decisions will be anonymous, which means other participants will not be able to link your decisions with your identity.

During the experiment, the payoff will be calculated in points. At the end of the experiment, all the points you earn in the experiment will be converted into Euros with the following exchange rate:

$$1 \text{ point} = 1\text{€}$$

Therefore your total earning will be:

The money you earn in the experiment + 4 Euros show-up fee

The amount of money you get from the experiment will depend on both your own decision and the decision of other participants.

We will privately pay this amount to you in cash at the end of the experiment.

=====

The Game

In the experiment, you will play the following game twice. In each game, you will be randomly and anonymously matched with another participant. You will never be matched with the same participant twice, i.e., you will be matched with a new participant in each game. In order to distinguish the games, we call one the "Blue Game" and the other the "Green Game".

There are two roles of player in the game, Player A and Player B. The computer will randomly assign your role at the beginning of the experiment. Once your role is assigned, it will be fixed for both games. For each game, you will receive no feedback on what the other player has chosen.

The game has two stages.

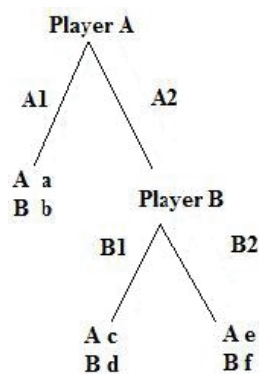
Stage 1

Player A chooses between A1 and A2. If Player A chooses A1, Player A's payoff is a points and Player B's payoff is b points. If player A chooses A2, then the payoff of the players will be determined by player B in stage 2.

Stage 2

Player B needs to specify what he/she will choose between B1 and B2 if Player A chooses A2. Notice that Player B makes the choices without knowing what player A has chosen. Thus player B's choice will be implemented only when Player A has chosen A2 in stage 1.

The payoff is determined by the following table. (You will see numbers instead of characters on the screen later. The numbers will be identical for both games).



If Player A chooses A1, Player A's payoff is a points and Player B's payoff is b points.

If Player A chooses A2, and Player B chooses B1, then Player A's payoff is c points and Player B's payoff is d points.

If Player A chooses A2, and Player B chooses B2, then Player A's payoff is e points and Player B's payoff is f points.

Your Payoff:

At the end of the experiment, the program will randomly draw *one game* out of the two to determine your payoff. Your payoff from the experiment will be the points from the selected game.

Computer

You need to indicate your choices by clicking on the corresponding button shown on the screen. Player A will choose to click on either A1 or A2, while Player B will choose to click on either B1 or B2.

If you have any questions, please raise your hand now.

Appendix III: Belief Elicitation:

Player A:

1, In your estimation, how many percent of the other players A have chosen A1 in the Blue Game?

Please input a number between 0 and 100: _

2, In your estimation, how many percent of the other players A have chosen A1 in the Green Game?

Please input a number between 0 and 100: _

3, In your estimation, how many percent of the players B have chosen B1 in the Blue Game?

Please input a number between 0 and 100: _

4, In your estimation, how many percent of the players B have in the Green Game?

Please input a number between 0 and 100: _

Player B:

1, In your estimation, how many percent of the players A have chosen A1 in the Blue Game?

Please input a number between 0 and 100: _

2, In your estimation, how many percent of the players A have chosen A1 in the Green Game?

Please input a number between 0 and 100: _

3, In your estimation, how many percent of the other players B have chosen B1 in Blue Game?

Please input a number between 0 and 100: _

4, In your estimation, how many percent of the other players B have chosen B1 in Green Game?

Please input a number between 0 and 100: _

Appendix IV

Table 1: Beliefs (Players A)

Panel A: Belief in the Percentage of Players B Choose Not to Be Trustworthy

| Belief in Percentage of Player B Choose not to be trustworthy | Obs. | Mean (Std. Dev) | | Mean Difference | <i>p</i> - value |
|---|------|--------------------|------------------|---------------------|---------------------|
| | | Narrow | Broad | (Narrow – Broad) | |
| All Observations | 64 | 70.16 (26.43) | 74.14 (23.98) | -3.98 | 0.37 |
| Blue Game | 32 | 70.16 (27.72) | 75.31 (23.93) | -5.16 | 0.43 |
| Green Game | 32 | 70.16 (25.51) | 72.97 (24.36) | -2.81 | 0.65 |

Panel B: Belief in the Percentage of The other players A Choose Not to Place Trust

| Belief in Percentage of Other Player A Choos- es to not Trust | Obs. | Mean (Std. Dev) | | Mean Difference | <i>p</i> - value |
|---|------|--------------------|------------------|---------------------|---------------------|
| | | Narrow | Broad | (Narrow – Broad) | |
| All Observations | 64 | 60.86 (26.20) | 66.48 (19.99) | -5.62 | 0.17 |
| Blue Game | 32 | 58.06 (24.19) | 63.28 (20.85) | -5.22 | 0.32 |
| Green Game | 32 | 63.66 (28.17) | 69.69 (18.88) | 6.03 | 0.36 |

Table 2: Beliefs (Player B)

Panel A: Belief in the Percentage of Players A Choose Not to Place Trust

| Belief in Percentage of Other Player A Chooses to not Trust | Obs. | Mean | | Mean Difference (Narrow – Broad) | <i>p</i> -value |
|---|------|------------------|------------------|--|-----------------|
| | | (Std. Dev) | | | |
| | | Narrow | Broad | | |
| All Observations | 64 | 57.05 (23.14) | 59.38 (27.87) | -2.33 | 0.61 |
| Blue Game | 32 | 60.41 (23.02) | 60.94 (27.07) | -0.53 | 0.93 |
| Green Game | 32 | 53.69 (23.13) | 57.81 (28.99) | -4.12 | 0.53 |

Panel B: Belief in the Percentage of The other players B Choose Not to Be Trustworthy

| Belief in Percentage of Player B Choose Not to Be Trustworthy | Obs. | Mean | | Mean Difference (Narrow -Broad) | <i>p</i> -value |
|---|------|------------------|------------------|------------------------------------|-----------------|
| | | (Std. Dev) | | | |
| | | Narrow | Broad | | |
| All Observations | 64 | 65.55 (23.57) | 65.20 (24.31) | 0.34 | 0.94 |
| Blue Game | 32 | 67.00 (24.41) | 66.38 (24.82) | 0.63 | 0.92 |
| Green Game | 32 | 64.09 (22.99) | 64.03 (24.13) | 0.06 | 0.99 |

Appendix V Conditional Marginal Effects (Player A)

Table 1 Average Marginal Effect (*Belief Not Trustworthy* (%) =70)

| | | Delta-method | | | | | |
|-------------------------|-----------|--------------|-------|-------|----------------------|----------|--|
| | dy/dx | Std. Err. | z | P> z | [95% Conf. Interval] | | |
| <i>Broad</i> | | | | | | | |
| <i>Belief Not Trust</i> | | | | | | | |
| 5 | 1.104648 | 1.507037 | 0.73 | 0.464 | -1.849091 | 4.058387 | |
| 10 | .9753195 | 1.384611 | 0.70 | 0.481 | -1.738468 | 3.689107 | |
| 20 | .7166624 | 1.144809 | 0.63 | 0.531 | -1.527122 | 2.960447 | |
| 25 | .5873339 | 1.028613 | 0.57 | 0.568 | -1.42871 | 2.603377 | |
| 30 | .4580053 | .9161458 | 0.50 | 0.617 | -1.337607 | 2.253618 | |
| 33 | .3804082 | .8510735 | 0.45 | 0.655 | -1.287665 | 2.048482 | |
| 40 | .1993483 | .7094736 | 0.28 | 0.779 | -1.191194 | 1.589891 | |
| 45 | .0700197 | .6213718 | 0.11 | 0.910 | -1.147847 | 1.287886 | |
| 50 | -.0593088 | .5501608 | -0.11 | 0.914 | -1.137604 | 1.018987 | |
| 55 | -.1886373 | .5030647 | -0.37 | 0.708 | -1.174626 | .7973514 | |
| 60 | -.3179659 | .4871294 | -0.65 | 0.514 | -1.272722 | .6367903 | |
| 70 | -.5766229 | .5542633 | -1.04 | 0.298 | -1.662959 | .5097131 | |
| 75 | -.7059515 | .6268169 | -1.13 | 0.260 | -1.93449 | .5225872 | |
| 80 | -.83528 | .7158315 | -1.17 | 0.243 | -2.238284 | .567724 | |
| 85 | -.9646085 | .8159373 | -1.18 | 0.237 | -2.563816 | .6345992 | |
| 90 | -1.093937 | .9235346 | -1.18 | 0.236 | -2.904032 | .7161575 | |
| 95 | -1.223266 | 1.036293 | -1.18 | 0.238 | -3.254362 | .8078305 | |
| 99 | -1.326728 | 1.129179 | -1.17 | 0.240 | -3.539878 | .8864208 | |
| 100 | -1.352594 | 1.152698 | -1.17 | 0.241 | -3.61184 | .9066518 | |

Note: dy/dx for factor levels is the discrete change from the base level.

Table 2 Average Marginal Effect (*Belief Not Trustworthy* (%) =80)

| | | Delta-method | | | | |
|-------------------------|-----------|--------------|-------|-------|----------------------|----------|
| | dy/dx | Std. Err. | z | P> z | [95% Conf. Interval] | |
| <i>Broad</i> | | | | | | |
| <i>Belief Not Trust</i> | | | | | | |
| 5 | 2.109447 | 1.721839 | 1.23 | 0.221 | -1.265296 | 5.48419 |
| 10 | 1.877637 | 1.583558 | 1.19 | 0.236 | -1.22608 | 4.981355 |
| 20 | 1.414018 | 1.31211 | 1.08 | 0.281 | -1.15767 | 3.985706 |
| 25 | 1.182209 | 1.180119 | 1.00 | 0.316 | -1.130782 | 3.4952 |
| 30 | .950399 | 1.051874 | 0.90 | 0.366 | -1.111235 | 3.012033 |
| 33 | .8113132 | .9773393 | 0.83 | 0.406 | -1.104237 | 2.726863 |
| 40 | .4867798 | .8136802 | 0.60 | 0.550 | -1.108004 | 2.081564 |
| 45 | .2549702 | .7098984 | 0.36 | 0.719 | -1.136405 | 1.646345 |
| 50 | .0231606 | .6233328 | 0.04 | 0.970 | -1.198549 | 1.24487 |
| 55 | -.2086491 | .5619961 | -0.37 | 0.710 | -1.310141 | .8928431 |
| 60 | -.4404587 | .5346431 | -0.82 | 0.410 | -1.48834 | .6074226 |
| 70 | -.9040779 | .594957 | -1.52 | 0.129 | -2.070172 | .2620164 |
| 75 | -1.135888 | .6723844 | -1.69 | 0.091 | -2.453737 | .1819616 |
| 80 | -1.367697 | .770023 | -1.78 | 0.076 | -2.876914 | .1415203 |
| 85 | -1.599507 | .8811798 | -1.82 | 0.069 | -3.326587 | .127574 |
| 90 | -1.831316 | 1.001363 | -1.83 | 0.067 | -3.793952 | .1313194 |
| 95 | -2.063126 | 1.127691 | -1.83 | 0.067 | -4.273359 | .1471071 |
| 99 | -2.248574 | 1.23191 | -1.83 | 0.068 | -4.663073 | .1659255 |
| 100 | -2.294936 | 1.258313 | -1.82 | 0.068 | -4.761184 | .1713129 |

Note: dy/dx for factor levels is the discrete change from the base level.

Table 3 Average Marginal Effect (*Belief Not Trustworthy (%) =90*)

| | | Delta-method | | | | |
|-------------------------|-----------|--------------|-------|-------|----------------------|-----------|
| | dy/dx | Std. Err. | z | P> z | [95% Conf. Interval] | |
| <i>Broad</i> | | | | | | |
| <i>Belief Not Trust</i> | | | | | | |
| 5 | 3.114246 | 2.102661 | 1.48 | 0.139 | -1.006894 | 7.235386 |
| 10 | 2.779955 | 1.932751 | 1.44 | 0.150 | -1.008166 | 6.568077 |
| 20 | 2.111374 | 1.599202 | 1.32 | 0.187 | -1.023004 | 5.245752 |
| 25 | 1.777083 | 1.43702 | 1.24 | 0.216 | -1.039424 | 4.59359 |
| 30 | 1.442793 | 1.27946 | 1.13 | 0.259 | -1.064902 | 3.950488 |
| 33 | 1.242218 | 1.18791 | 1.05 | 0.296 | -1.086043 | 3.570479 |
| 40 | .7742113 | .9870354 | 0.78 | 0.433 | -1.160342 | 2.708765 |
| 45 | .4399206 | .8599235 | 0.51 | 0.609 | -1.245499 | 2.12534 |
| 50 | .1056299 | .7543942 | 0.14 | 0.889 | -1.372956 | 1.584215 |
| 55 | -.2286608 | .6805626 | -0.34 | 0.737 | -1.562539 | 1.105217 |
| 60 | -.5629515 | .6493327 | -0.87 | 0.386 | -1.83562 | .7097171 |
| 70 | -1.231533 | .72925 | -1.69 | 0.091 | -2.660837 | .1977708 |
| 75 | -1.565824 | .8267471 | -1.89 | 0.058 | -3.186218 | .0545709 |
| 80 | -1.900114 | .9484875 | -2.00 | 0.045 | -3.759116 | -.0411129 |
| 85 | -2.234405 | 1.086351 | -2.06 | 0.040 | -4.363614 | -.1051957 |
| 90 | -2.568696 | 1.23495 | -2.08 | 0.038 | -4.989153 | -.1482378 |
| 95 | -2.902986 | 1.390848 | -2.09 | 0.037 | -5.628998 | -.1769748 |
| 99 | -3.170419 | 1.519315 | -2.09 | 0.037 | -6.148222 | -.1926156 |
| 100 | -3.237277 | 1.551846 | -2.09 | 0.037 | -6.278839 | -.195715 |

Note: dy/dx for factor levels is the discrete change from the base level.

Table 4 Average Marginal Effect (*Belief Not Trustworthy (%) =100*)

| | | Delta-method | | | | |
|-------------------------|-----------|--------------|-------|-------|----------------------|-----------|
| | dy/dx | Std. Err. | z | P> z | [95% Conf. Interval] | |
| <i>Broad</i> | | | | | | |
| <i>Belief Not Trust</i> | | | | | | |
| 5 | 4.119045 | 2.576921 | 1.60 | 0.110 | -0.9316272 | 9.169717 |
| 10 | 3.682273 | 2.366591 | 1.56 | 0.120 | -0.9561599 | 8.320707 |
| 20 | 2.80873 | 1.953978 | 1.44 | 0.151 | -1.020997 | 6.638457 |
| 25 | 2.371958 | 1.75359 | 1.35 | 0.176 | -1.065015 | 5.808931 |
| 30 | 1.935186 | 1.559186 | 1.24 | 0.215 | -1.120762 | 4.991135 |
| 33 | 1.673123 | 1.446424 | 1.16 | 0.247 | -1.161815 | 4.508062 |
| 40 | 1.061643 | 1.199935 | 0.88 | 0.376 | -1.290186 | 3.413471 |
| 45 | .624871 | 1.045295 | 0.60 | 0.550 | -1.42387 | 2.673612 |
| 50 | .1880992 | .9189001 | 0.20 | 0.838 | -1.612912 | 1.98911 |
| 55 | -.2486725 | .8336976 | -0.30 | 0.765 | -1.88269 | 1.385345 |
| 60 | -.6854443 | .8029097 | -0.85 | 0.393 | -2.259118 | .8882298 |
| 70 | -1.558988 | .9168985 | -1.70 | 0.089 | -3.356076 | .2381002 |
| 75 | -1.99576 | 1.042655 | -1.91 | 0.056 | -4.039326 | .0478066 |
| 80 | -2.432531 | 1.196868 | -2.03 | 0.042 | -4.77835 | -.0867124 |
| 85 | -2.869303 | 1.369962 | -2.09 | 0.036 | -5.55438 | -.1842264 |
| 90 | -3.306075 | 1.555647 | -2.13 | 0.034 | -6.355087 | -.2570629 |
| 95 | -3.742847 | 1.749919 | -2.14 | 0.032 | -7.172625 | -.3130686 |
| 99 | -4.092264 | 1.909763 | -2.14 | 0.032 | -7.835331 | -.3491974 |
| 100 | -4.179618 | 1.950214 | -2.14 | 0.032 | -8.001967 | -.35727 |

Note: dy/dx for factor levels is the discrete change from the base level.

Appendix VI Conditional Marginal Effect (Player B)

Table 1 Average Marginal Effect (*Belief Not Trust (%) =10*)

| | | Delta-method | | | | | |
|--------------------|-----------|--------------|-------|-------|----------------------|----------|--|
| | dy/dx | Std. Err. | z | P> z | [95% Conf. Interval] | | |
| <i>Broad</i> | | | | | | | |
| <i>Belief Not-</i> | | | | | | | |
| <i>Trustworthy</i> | | | | | | | |
| 10 | 9.94854 | 4.43454 | 2.24 | 0.025 | 1.257003 | 18.64008 | |
| 20 | 8.611652 | 3.753031 | 2.29 | 0.022 | 1.255847 | 15.96746 | |
| 25 | 7.943208 | 3.424165 | 2.32 | 0.020 | 1.231968 | 14.65445 | |
| 30 | 7.274764 | 3.106603 | 2.34 | 0.019 | 1.185935 | 13.36359 | |
| 35 | 6.60632 | 2.804187 | 2.36 | 0.018 | 1.110215 | 12.10243 | |
| 40 | 5.937876 | 2.522371 | 2.35 | 0.019 | .9941202 | 10.88163 | |
| 50 | 4.600988 | 2.054109 | 2.24 | 0.025 | .5750079 | 8.626968 | |
| 54 | 4.066233 | 1.919101 | 2.12 | 0.034 | .3048648 | 7.827601 | |
| 55 | 3.932544 | 1.891424 | 2.08 | 0.038 | .2254217 | 7.639666 | |
| 60 | 3.2641 | 1.794996 | 1.82 | 0.069 | -.2540279 | 6.782228 | |
| 65 | 2.595656 | 1.775654 | 1.46 | 0.144 | -.8845625 | 6.075874 | |
| 70 | 1.927212 | 1.835836 | 1.05 | 0.294 | -1.670961 | 5.525384 | |
| 75 | 1.258768 | 1.96826 | 0.64 | 0.522 | -2.598952 | 5.116487 | |
| 80 | .5903238 | 2.159679 | 0.27 | 0.785 | -3.642569 | 4.823217 | |
| 83 | .1892574 | 2.296908 | 0.08 | 0.934 | -4.3126 | 4.691115 | |
| 85 | -.0781202 | 2.395994 | -0.03 | 0.974 | -4.774182 | 4.617941 | |
| 90 | -.7465643 | 2.665289 | -0.28 | 0.779 | -5.970436 | 4.477307 | |
| 95 | -1.415008 | 2.958574 | -0.48 | 0.632 | -7.213706 | 4.38369 | |
| 97 | -1.682386 | 3.081089 | -0.55 | 0.585 | -7.72121 | 4.356438 | |
| 98 | -1.816075 | 3.14329 | -0.58 | 0.563 | -7.976809 | 4.34466 | |
| 99 | -1.949764 | 3.20607 | -0.61 | 0.543 | -8.233546 | 4.334019 | |
| 100 | -2.083452 | 3.269397 | -0.64 | 0.524 | -8.491353 | 4.324449 | |

Note: dy/dx for factor levels is the discrete change from the base level.

Table 2 Average Marginal Effect (*Belief Not Trust (%) =20*)

| | | Delta-method | | | | |
|--------------------|--|--------------|-----------|-------|-------|----------------------|
| | | dy/dx | Std. Err. | z | P> z | [95% Conf. Interval] |
| <i>Broad</i> | | | | | | |
| <i>Belief Not-</i> | | | | | | |
| <i>Trustworthy</i> | | | | | | |
| 10 | | 8.348399 | 3.735341 | 2.23 | 0.025 | 1.027264 15.66953 |
| 20 | | 7.231877 | 3.152382 | 2.29 | 0.022 | 1.053322 13.41043 |
| 25 | | 6.673616 | 2.87104 | 2.32 | 0.020 | 1.046481 12.30075 |
| 30 | | 6.115355 | 2.599401 | 2.35 | 0.019 | 1.020622 11.21009 |
| 35 | | 5.557094 | 2.340847 | 2.37 | 0.018 | .969119 10.14507 |
| 40 | | 4.998834 | 2.100214 | 2.38 | 0.017 | .8824894 9.115178 |
| 50 | | 3.882312 | 1.702806 | 2.28 | 0.023 | .5448729 7.219751 |
| 54 | | 3.435703 | 1.590191 | 2.16 | 0.031 | .3189861 6.55242 |
| 55 | | 3.324051 | 1.567438 | 2.12 | 0.034 | .2519284 6.396174 |
| 60 | | 2.76579 | 1.490918 | 1.86 | 0.064 | -.156355 5.687936 |
| 65 | | 2.207529 | 1.482386 | 1.49 | 0.136 | -.6978938 5.112953 |
| 70 | | 1.649269 | 1.542971 | 1.07 | 0.285 | -1.374899 4.673437 |
| 75 | | 1.091008 | 1.665146 | 0.66 | 0.512 | -2.172618 4.354634 |
| 80 | | .532747 | 1.83666 | 0.29 | 0.772 | -3.067041 4.132535 |
| 83 | | .1977905 | 1.95802 | 0.10 | 0.920 | -3.639859 4.03544 |
| 85 | | -.0255139 | 2.045138 | -0.01 | 0.990 | -4.033911 3.982884 |
| 90 | | -.5837747 | 2.280465 | -0.26 | 0.798 | -5.053403 3.885854 |
| 95 | | -1.142036 | 2.535174 | -0.45 | 0.652 | -6.110885 3.826814 |
| 97 | | -1.36534 | 2.641244 | -0.52 | 0.605 | -6.542082 3.811402 |
| 98 | | -1.476992 | 2.695036 | -0.55 | 0.584 | -6.759165 3.805181 |
| 99 | | -1.588644 | 2.749293 | -0.58 | 0.563 | -6.97716 3.799871 |
| 100 | | -1.700296 | 2.803989 | -0.61 | 0.544 | -7.196014 3.795421 |

Note: dy/dx for factor levels is the discrete change from the base level.

Table 3 Average Marginal Effect (*Belief Not Trust (%) =30*)

| | | Delta-method | | | | | |
|--------------------|--|--------------|-----------|-------|-------|----------------------|----------|
| | | dy/dx | Std. Err. | z | P> z | [95% Conf. Interval] | |
| <i>Broad</i> | | | | | | | |
| <i>Belief Not-</i> | | | | | | | |
| <i>Trustworthy</i> | | | | | | | |
| 10 | | 6.748257 | 3.093826 | 2.18 | 0.029 | .6844699 | 12.81204 |
| 20 | | 5.852101 | 2.602082 | 2.25 | 0.025 | .7521145 | 10.95209 |
| 25 | | 5.404024 | 2.364601 | 2.29 | 0.022 | .769491 | 10.03856 |
| 30 | | 4.955946 | 2.135219 | 2.32 | 0.020 | .7709942 | 9.140898 |
| 35 | | 4.507869 | 1.916845 | 2.35 | 0.019 | .7509215 | 8.264816 |
| 40 | | 4.059791 | 1.713693 | 2.37 | 0.018 | .7010144 | 7.418568 |
| 50 | | 3.163636 | 1.379704 | 2.29 | 0.022 | .4594655 | 5.867806 |
| 54 | | 2.805174 | 1.286589 | 2.18 | 0.029 | .2835061 | 5.326841 |
| 55 | | 2.715558 | 1.268059 | 2.14 | 0.032 | .2302081 | 5.200908 |
| 60 | | 2.267481 | 1.208171 | 1.88 | 0.061 | -.1004919 | 4.635453 |
| 65 | | 1.819403 | 1.207765 | 1.51 | 0.132 | -.547773 | 4.186579 |
| 70 | | 1.371325 | 1.266897 | 1.08 | 0.279 | -1.111747 | 3.854398 |
| 75 | | .9232477 | 1.377924 | 0.67 | 0.503 | -1.777433 | 3.623929 |
| 80 | | .4751701 | 1.529586 | 0.31 | 0.756 | -2.522764 | 3.473104 |
| 83 | | .2063236 | 1.635518 | 0.13 | 0.900 | -2.999234 | 3.411881 |
| 85 | | .0270925 | 1.711113 | 0.02 | 0.987 | -3.326627 | 3.380812 |
| 90 | | -.4209851 | 1.914026 | -0.22 | 0.826 | -4.172407 | 3.330436 |
| 95 | | -.8690627 | 2.132228 | -0.41 | 0.684 | -5.048153 | 3.310027 |
| 97 | | -1.048294 | 2.222792 | -0.47 | 0.637 | -5.404886 | 3.308298 |
| 98 | | -1.137909 | 2.268666 | -0.50 | 0.616 | -5.584414 | 3.308595 |
| 99 | | -1.227525 | 2.314904 | -0.53 | 0.596 | -5.764654 | 3.309605 |
| 100 | | -1.31714 | 2.361485 | -0.56 | 0.577 | -5.945566 | 3.311285 |

Note: dy/dx for factor levels is the discrete change from the base level.

Table 4 Average Marginal Effect (*Belief Not Trust (%) =40*)

| | | Delta-method | | | | | |
|--------------------|--|--------------|-----------|-------|-------|----------------------|----------|
| | | dy/dx | Std. Err. | z | P> z | [95% Conf. Interval] | |
| <i>Broad</i> | | | | | | | |
| <i>Belief Not-</i> | | | | | | | |
| <i>Trustworthy</i> | | | | | | | |
| 10 | | 5.148115 | 2.553838 | 2.02 | 0.044 | .1426836 | 10.15355 |
| 20 | | 4.472326 | 2.141308 | 2.09 | 0.037 | .27544 | 8.669212 |
| 25 | | 4.134432 | 1.941729 | 2.13 | 0.033 | .3287126 | 7.940151 |
| 30 | | 3.796537 | 1.748656 | 2.17 | 0.030 | .3692346 | 7.22384 |
| 35 | | 3.458643 | 1.564499 | 2.21 | 0.027 | .3922819 | 6.525004 |
| 40 | | 3.120748 | 1.392798 | 2.24 | 0.025 | .3909141 | 5.850583 |
| 50 | | 2.44496 | 1.109715 | 2.20 | 0.028 | .2699585 | 4.619961 |
| 54 | | 2.174644 | 1.030901 | 2.11 | 0.035 | .1541157 | 4.195173 |
| 55 | | 2.107065 | 1.015291 | 2.08 | 0.038 | .1171312 | 4.096999 |
| 60 | | 1.769171 | .9656799 | 1.83 | 0.067 | -.123527 | 3.661869 |
| 65 | | 1.431276 | .9677975 | 1.48 | 0.139 | -.4655719 | 3.328125 |
| 70 | | 1.093382 | 1.021322 | 1.07 | 0.284 | -.9083727 | 3.095137 |
| 75 | | .7554877 | 1.118901 | 0.68 | 0.500 | -1.437517 | 2.948493 |
| 80 | | .4175933 | 1.25026 | 0.33 | 0.738 | -2.032872 | 2.868059 |
| 83 | | .2148566 | 1.341275 | 0.16 | 0.873 | -2.413993 | 2.843706 |
| 85 | | .0796989 | 1.405964 | 0.06 | 0.955 | -2.675941 | 2.835339 |
| 90 | | -.2581955 | 1.578827 | -0.16 | 0.870 | -3.352639 | 2.836248 |
| 95 | | -.5960899 | 1.76381 | -0.34 | 0.735 | -4.053093 | 2.860913 |
| 97 | | -.7312477 | 1.840386 | -0.40 | 0.691 | -4.338338 | 2.875843 |
| 98 | | -.7988266 | 1.879138 | -0.43 | 0.671 | -4.48187 | 2.884217 |
| 99 | | -.8664054 | 1.918175 | -0.45 | 0.651 | -4.62596 | 2.893149 |
| 100 | | -.9339843 | 1.95748 | -0.48 | 0.633 | -4.770574 | 2.902605 |

Note: dy/dx for factor levels is the discrete change from the base level.

Table 5 Average Marginal Effect (*Belief Not Trust (%) =50*)

| | | Delta-method | | | | |
|--------------------|-----|--------------|-----------|-------|-------|----------------------|
| | | dy/dx | Std. Err. | z | P> z | [95% Conf. Interval] |
| <i>Broad</i> | | | | | | |
| <i>Belief Not-</i> | | | | | | |
| <i>Trustworthy</i> | | | | | | |
| | 10 | 3.547973 | 2.191751 | 1.62 | 0.105 | -.747781 7.843727 |
| | 20 | 3.092551 | 1.838645 | 1.68 | 0.093 | -.5111278 6.696229 |
| | 25 | 2.864839 | 1.66727 | 1.72 | 0.086 | -.4029507 6.13263 |
| | 30 | 2.637128 | 1.500933 | 1.76 | 0.079 | -.3046473 5.578904 |
| | 35 | 2.409417 | 1.341509 | 1.80 | 0.072 | -.219893 5.038727 |
| | 40 | 2.181706 | 1.191776 | 1.83 | 0.067 | -.1541315 4.517543 |
| | 50 | 1.726284 | .9397874 | 1.84 | 0.066 | -.115666 3.568233 |
| | 54 | 1.544115 | .8666285 | 1.78 | 0.075 | -.1544461 3.242675 |
| | 55 | 1.498572 | .8516981 | 1.76 | 0.078 | -.1707253 3.16787 |
| | 60 | 1.270861 | .8008837 | 1.59 | 0.113 | -.2988421 2.840564 |
| | 65 | 1.04315 | .7945285 | 1.31 | 0.189 | -.5140974 2.600397 |
| | 70 | .8154388 | .8336499 | 0.98 | 0.328 | -.8184851 2.449363 |
| | 75 | .5877276 | .9124169 | 0.64 | 0.519 | -1.200577 2.376032 |
| | 80 | .3600164 | 1.021701 | 0.35 | 0.725 | -1.642481 2.362513 |
| | 83 | .2233897 | 1.098242 | 0.20 | 0.839 | -1.929125 2.375904 |
| | 85 | .1323052 | 1.152856 | 0.11 | 0.909 | -2.127251 2.391861 |
| | 90 | -.0954059 | 1.299275 | -0.07 | 0.941 | -2.641939 2.451127 |
| | 95 | -.3231171 | 1.456363 | -0.22 | 0.824 | -3.177535 2.531301 |
| | 97 | -.4142016 | 1.521452 | -0.27 | 0.785 | -3.396193 2.56779 |
| | 98 | -.4597438 | 1.5544 | -0.30 | 0.767 | -3.506311 2.586824 |
| | 99 | -.5052861 | 1.587594 | -0.32 | 0.750 | -3.616913 2.606341 |
| | 100 | -.5508283 | 1.621019 | -0.34 | 0.734 | -3.727968 2.626311 |

Note: dy/dx for factor levels is the discrete change from the base level.

Table 6 Average Marginal Effect (*Belief Not Trust (%) =60*)

| | | Delta-method | | | | |
|--------------------|--|--------------|-----------|-------|-------|----------------------|
| | | dy/dx | Std. Err. | z | P> z | [95% Conf. Interval] |
| <i>Broad</i> | | | | | | |
| <i>Belief Not-</i> | | | | | | |
| <i>Trustworthy</i> | | | | | | |
| 10 | | 1.947831 | 2.101621 | 0.93 | 0.354 | -2.171269 6.066932 |
| 20 | | 1.712775 | 1.776818 | 0.96 | 0.335 | -1.769725 5.195275 |
| 25 | | 1.595247 | 1.618572 | 0.99 | 0.324 | -1.577096 4.76759 |
| 30 | | 1.477719 | 1.464299 | 1.01 | 0.313 | -1.392253 4.347692 |
| 35 | | 1.360191 | 1.315397 | 1.03 | 0.301 | -1.217939 3.938322 |
| 40 | | 1.242663 | 1.173913 | 1.06 | 0.290 | -1.058163 3.54349 |
| 50 | | 1.007607 | .9267058 | 1.09 | 0.277 | -.8087025 2.823917 |
| 54 | | .913585 | .8486318 | 1.08 | 0.282 | -.7497027 2.576873 |
| 55 | | .8900794 | .8316819 | 1.07 | 0.285 | -.7399872 2.520146 |
| 60 | | .7725514 | .7657083 | 1.01 | 0.313 | -.7282094 2.273312 |
| 65 | | .6550235 | .7366322 | 0.89 | 0.374 | -.788749 2.098796 |
| 70 | | .5374955 | .7487642 | 0.72 | 0.473 | -.9300553 2.005046 |
| 75 | | .4199675 | .8002324 | 0.52 | 0.600 | -1.148459 1.988394 |
| 80 | | .3024396 | .8841941 | 0.34 | 0.732 | -1.430549 2.035428 |
| 83 | | .2319228 | .946717 | 0.24 | 0.806 | -1.623608 2.087454 |
| 85 | | .1849116 | .9924362 | 0.19 | 0.852 | -1.760228 2.130051 |
| 90 | | .0673836 | 1.117928 | 0.06 | 0.952 | -2.123715 2.258482 |
| 95 | | -.0501443 | 1.255508 | -0.04 | 0.968 | -2.510895 2.410606 |
| 97 | | -.0971555 | 1.313085 | -0.07 | 0.941 | -2.670755 2.476443 |
| 98 | | -.1206611 | 1.342326 | -0.09 | 0.928 | -2.751572 2.51025 |
| 99 | | -.1441667 | 1.371844 | -0.11 | 0.916 | -2.832932 2.544598 |
| 100 | | -.1676723 | 1.401621 | -0.12 | 0.905 | -2.914798 2.579454 |

Note: dy/dx for factor levels is the discrete change from the base level.

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