Master's Thesis Behavioral Economics

Do different communication styles and promised returned amounts matter in the trust game?

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Date final version: 01-08-2022

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Abstract

This thesis investigates how communication and promises influence people's trusting behavior in a trust game. Both communication and promise making have been shown to improve the level of trust in the context of the trust game. However, the impacts of different communication styles and different promised returned amounts (proportions) are not clear, which become the research question of this thesis. We adopted a 2×2 experimental design where we varied the style of communication (friendly vs. dominant) and the proportion of received amount to be sent back by the trustee (1/2 vs. 2/3). Results of analysis show that (1) compared with a dominant communication style, a friendly style increases trust; (2) the promised returned level has no impact on the level of trust; (3) the effect of a communication style also differs per level of promised returned proportion, in particular, the positive effect of a friendly communication style on enhancing trust only works when the trustee promises to send 2/3 of the money back; (4) when the promised amount of 2/3 is communicated in a dominant manner, it decreases the possibilities of trust.

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1. Introduction

Trust is vital to today's society. Ample evidence exists to support the view that social capital influences a wide range of significant economic (Knack & Keefer, 1997), political (La Porta et al., 1997) and educational (Coleman, 1988) phenomena. Through a review of literature, Bracht and Feltovich (2009) find almost all definitions of social capital posit that two of its primary components are trust (the belief that other people act in the interest of some measure of social welfare such as fairness rather than their own self-interest) and trustworthiness (the extent to which trust in a person is warranted). Therefore, the positive role that trust and trustworthiness play in the development of society is clear and undeniable, which can also be established by previous research. For example, Arrow (1972) and Fukuyama (1995) indicate that the level of trust in a society strongly predicts its financial success.

Therefore, trust and people's trusting behavior have always been a welcomed topic for researchers in many areas especially in economics. For economists, the trust game raised by Berg et al. in 1995 has already become one of the most widely-used games when they intend to focus on individual's level of trust. The predictions of conventional economic theories under the assumptions that individuals are (1) rational; (2) only concerned with their own interests; (3) not guided by social preferences; (4) assume that other people are like them in these aspects serve as a very useful analytical benchmark. Under these conditions, the predicted outcome of trust game is quite simple: the allocator would always prefer to keep all proceeds rather than returning anything to the investor because of selfishness; predicting this, the investor would also keep all initial endowments. In another word, in the one-shot trust game without opportunities for reputation formation or contracting, traditional economic theories predict no trusting because there is no incentive for trustworthiness (Ben-Ner & Putterman, 2009). However, beginning with the investment game of Berg et al. (1995), experimental trust game studies, on the other hand, have found a common result that many individuals engage in trusting and trustworthy behaviors, which are at odds with the prediction of standard economic reasoning in the context of one-shot situations. Investors tend to exhibit trust by investing, and allocators tend to return a positive amount with a non-negligible frequency. Then, this thesis is interested in which factors can determine people's level of trust, in another word, which elements can affect people whether or not to split their money or how much to give as a trustor.

First, we consider the effect of communication as well as different communication styles. One of the most robust and consistent findings in the sociological literature is the positive effect of communication on trust and cooperation (Kollock, 1998). Trust and cooperation increase when there is an opportunity to communicate (Jensen et al., 2000). This phenomenon can also be observed in many research of economists: pre-game communication has been found to increase other-regarding behavior in various experimental games especially in the trust game (Dawes et al., 1977; Isaac & Walker, 1988; Sally, 1995; Charness & Dufwenberg, 2006; Ben-Ner & Putterman, 2009). Some of the explanations are that personalized communication could decrease social distance,

facilitate coordination, raise solidarity and provide cues of familiarity that are normally associated with trustworthy relationships (Orbell et al., 1988; Bohnet & Frey, 1999; Ridings et al., 2002; Zheng et al., 2002; Buchan et al., 2006).

However, since communication is a particularly wide and vague concept, it is not accurate and precise to summarize its effect in a general way. The impact of communication on the level of trust seems to depend greatly on its form, content, direction and so on (Isaac & Walker, 1988; Wilson & Sell, 1997; Duffy & Feltovich, 2002; Bochet et al., 2006; Charness & Dufwenberg, 2006; Ben-Ner & Putterman, 2009). Therefore, it is a reasonable inference and assumption that different types of communication style also have different degrees of influence on people's trusting behavior, which has received scant attention in the research literature. Moreover, another argument of this hypothesis is that different communication styles have already been shown to have different or even opposite effects in many other areas such as doctor-patient relationship (Buller & Buller, 1987), team knowledge sharing behavior (De Vries et al., 2006), leadership styles and outcomes (De Vries et al., 2010), student's self-esteem and achievement (Ogunyemi & Olagbaju, 2020) and so on.

In addition, according to Sally (1995), promise-related communication is the most influential factor in fostering trust in economic decision-making games such as the trust game. Then, if the trustee promises to return a certain proportion of money to the trustor, does the promised amount to be returned matter? Imagine two of the most extreme scenarios in the setting of a trust game: if the trustee claims that he or she will keep all the money and give nothing, the trustor may not give anything, or at least not give most of the money; oppositely, if the trustee promises that he or she will send all money back to the trustor and keep nothing, the trustor may not give much either, as he or she may consider it as a relatively implausible promise. Based on these intuitions, we come up with the following guess very preliminarily: different returned levels claimed by trustee also affect trustor's belief and behavior differently. Therefore, we are also interested in what can different promised returned amounts be expected to do in this game.

To sum up, the aim of this thesis is twofold. First, while a considerable body of studies has been carried out on the effect of communication and its form, content, direction, etc. on the level of trust, much less is known about the influence of different communication styles. Also, despite the maturity of the research on the role of promise from trustee to trustor, there is yet to find a clear answer to the possible different effects of different promised returned amount in the trust game. Therefore, this thesis is going to address these two questions by conducting an economic experiment.

This article is organized as follows. First, current literature about these two topics is discussed in Chapter 2. After the literature review, Chapter 3 presents the experimental design and proposes several predictions. Afterwards, Chapter 4 shows the results of the experiment as well as tests the hypotheses proposed. Finally, Chapter 5 and 6 discuss and conclude.

2. Literature Review
2.1 Trust Measurement

Trust can be measured in many different ways. Prior to the 1980s, researchers usually used the form of mental scale to measure people's level of trust (He, 2014). The National Opinion Research Center's General Social Survey, which is the primary source of evidence on trust and social capital in the United States, for example, focus on people's attitudes to the statement "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?" While these survey questions are vivid and easy to understand for respondents, some researchers criticize this approach as being too abstract and people may interpret in different ways. Putnam (1995) laments this question: "since trust is so central to the theory of social capital, it would be desirable to have strong behavioral indicators of trends in social trust or misanthropy. I have discovered no such behavioral measures." Glaeser et al. (2000) also argues that the reasons for the variation in people's responses are ambiguous: e.g., differences in interpretation of who comprises "most people", differences in interpretation of what it means to be able to trust someone and so on.

Until 1980s, along with the development of game theory, since measuring attributes such as trust is inherently open to some subjectivity, recent work has utilized individual's behavior in simple games to construct such measures (Bracht & Feltovich, 2009). Among them, the most classic game is the trust game raised by Berg et al. in 1995, which can be viewed as an extension form of the dictator game. It is played in an investment setting. Firstly, subjects will be matched randomly in groups of two in which player 1 (investor) is the trustor and player 2 (allocator) is the trustee. This game is a sequential game. Player 1 will first decide how much of his or her initial endowments (usually 10 euros) to send to an anonymous counterpart, and each euro sent will triple in value (for example, as a successful investment), which is common knowledge to all participants. It is player 2 who has complete discretion over the proceeds. He or she will then decide how much of the tripled money to keep and how much to send back to player 1. According to Bracht and Feltovich (2009), from the standpoint of game theory, a choice by player 1 to split the money is usually interpreted as trust rather than self-interest. The greater amount allocated to player 2, the higher level of trust of player 1.

In fact, previous research has shown that trust and trustworthiness measured according to observed behavior in the trust game are positively correlated with those measured by the responses to attitudinal survey questions (Bracht & Feltovich, 2009). For example, by analyzing the results from the scales and from the experiment, Glaeser et al. (2000) find positive associations between choices of both investors and allocators and self-reported past trusting behavior, which is measured by the responses to questions like "How often do you lend money to your friends?". These evidence suggests that investment by investors and returns by allocators in a trust game have some external validity as general measurements of trust and trustworthiness; therefore, in this thesis, the trust game is also chosen as the measurement of subject's level of trust and the basis of the experiment methodology.

2.2 Effect of Communication on Trusting Behavior

According to Schniter et al. (2013), it has been well established that pre-play communication, even if "irrelevant" to the game strategy, can induce higher contributions in public goods games and more cooperation in dyadic social dilemmas. For example, in an eight-person commons dilemma of group gain versus individual gain, Dawes et al. (1977) find that the defection rates are significantly higher in the no-communication than in relevant-communication and relevant-communication plus roll call conditions. Isaac and Walker's study (1988) focus on communication and free-riding behavior, finding that pre-play communication could lead their experimental subjects to contribute considerably more to the group good in the variety of conditions when compare with the base condition of no communication. Their research is one of 37 that report 130 different experimental treatments whose results Sally (1995) enters in multivariate regressions to study which treatment variables best account for different levels of trust and cooperation. By analyzing the results of 35 years of public experiments testing decision-making in prisoner's dilemmas, Sally (1995) finds a model of pure self-interest is usually inconsistent with the results of experimental decision making, and this incongruity is the widest with respect to the role of language, implying communication, in encouraging trust and cooperation.

In terms of the trust game, there are also a series of recent studies that demonstrate the importance of pre-game communication to the outcome. Charness and Dufwenberg (2006) examine the impact of communication in a one-shot principal-agent game, which is based on the trust game, permitting either principal or agent, but not both, to send a single message. They find information sent from agents to principals engender trust, cooperation and efficiency. Ben-Ner and Putterman (2009) add a 1-minute communication in a chat room and find it significantly increases trusting and trustworthiness: on average, trustors send $9.21 of their $10 endowments as compared with $7.66 in the standard trust game without opportunities for communicating, and trustees return 56% vs. 45%.

However, the influence of communication on trusting behavior is moderated by a series of factors related to the attributes of communication such as form, content, direction and so on. For example, when participants can talk face-to-face with few or no restriction on content, trust and cooperation reach a very high level (Isaac & Walker, 1988); on the other hand, when communication takes place through a carrier like a computer screen and restricted to single letters or numbers, usually it only leads to a minor improvement (Duffy & Feltovich, 2002) rather than a systematic influence (Bochet et al., 2006), or even a backfired one (Wilson & Sell, 1997). According to Ben-Ner and Putterman (2009), one explanation here is that when subjects communicate face-to-face, anonymity is lost, which could introduce the possible influence of identity (one can learn his or her counterpart's gender, race, etc.) and strength the positive effect. In particular, Bochet et al. (2006) find more public good contribution in a chat room treatment (no limitation on messages) than when only numerical messages are available, with still more contribution in a face-to-face treatment. Last, in respect of

communication direction, Charness and Dufwenberg (2006) find that people behave differently under different conditions: communication are only meaningful when it come from the trustee to the trustor.

2.3 Different Communication Styles

According to De Vries et al. (2009), communication style can be defined as the characteristic way a person sends verbal, paraverbal, and nonverbal signals in social interactions, indicating who the person is or wants to (appears to) be, how he or she tends to relate to people with whom he or she interacts and in what way his or her messages should usually be interpreted. Researchers interested in communication styles may face a daunting task when studying their subject since they have to choose from many classification standards. However, although there are more than two main communication style dimensions in each criterion, so far, when investigating communication styles, the majority of researchers have focused on two styles that are most closely associated with the interpersonal relationship, i.e., friendliness and dominance (De Vries, 2010).

According to Norton (1978), friendly communication style ranges in meaning from simply being unhostile to deep intimacy, while the dominant communicator tends to take charge of social interactions. The two communication styles have already been shown to have different or even opposite communication effects and thus lead to different consequences (Buller & Buller, 1987; Prisbell, 1994; Bugental, 1999; Noels et al., 1999; De Vries et al., 2010). In this thesis, references to the characteristic of each communication style mainly come from CSM (Communicator Style Measure) proposed by Norton in 1978, which is one of the most well-known instruments to measure general communication styles. In his articles, Norton (1978) also identifies five strong items for each sub-construct. Table 1 and 2 summarize the five key items for friendly and dominant communication styles respectively, which will serve as a reference for the content of the communication in our experimental design.

Table 1

No.	Item
FCS1	I always prefer to be tactful.
FCS2	Most of the time I tend to be very encouraging to people.
FCS3	Often I express admiration to a person even if I do not strongly feel it.
FCS4	I am an extremely friendly communicator.
FCS5	I habitually acknowledge verbally other's contributions.

Table 2

No.	Item
DCS1	In most social situations I generally speak very frequently.
DCS2	In most social situations I tend to come on strong.
DCS3	I have a tendency to dominate informal conversions with other people.
DCS4	I try to take charge of things when I am with people.
DCS5	I am dominant in social situations.

2.4 Effect of Promises on Trusting Behavior

Promise is one of the oldest and most common forms of communication in trust-related social interactions (Baumgartner et al., 2009; Schniter et al., 2013). A promise can improve the level of trust in the person being promised and improve trustworthiness in the person giving the promise (Charness & Dufwenberg, 2006) at the same time. Again, according to the hypothesis of rational man, if the only one thing that people care about is themselves, then promises will be ineffective as breaking them usually leads to a higher payoff (Chen & Zhang, 2021). However, prior research has provided evidence that promises work, and they are more than cheap talk. Promises and promise keeping play the important roles in the real world as well as in various economic situations. Numerous experimental results show that nonbinding promises (or statements of intent) has the effect of building and enhancing trust among individuals and increasing the likelihood of cooperation behavior (Sally, 1995; Malhotra & Murnighan, 2002; Elingsen & Johannesson, 2004; Charness & Dufwenberg, 2006; Belot et al., 2010). For example, Charness and Dufwenberg (2006) classify all messages from their subjects into three rough categories: promises, empty talk and no message. In the great majority of situations, they find indicators related to trust and cooperation perform much better following a promise than otherwise. More interestingly, by investigating the effects of the use and removal of binding and non-binding contracts, Malhotra and Murnighan (2002) find non-binding contracts lead to considerable cooperation, which can be approximated as the effect of promises, while binding contracts have been found to reduce the likelihood of trust developing.

Given the importance of promises in fostering trust, promises research spans a wide range of fields such as economics, psychology, sociology, law and so on. So far, however, people's reactions to different promises has not received attention in the literature. There has only been a discussion of the situation in which trustors could suggest amounts to be returned by their trustee counterparts and in some conditions threaten punishment should they not do so (Fehr & Rockenbach, 2003; Houser et al., 2005; Rigdon, 2005). Therefore, this thesis contributes to the current literature new insights on different impacts of different levels of promised returned amount.

3. Experimental Design and Predictions
3.1 Experimental Design
In this thesis, we mainly focus on the impact of different communication styles and different promised returned amounts (proportion) from trustee to trustor in a trust game by performing an economic experiment. This experiment is conducted in the form of an online questionnaire in Qualtrics (see Appendix A), consisting of an introduction, an economic game with instructions, several mental scales and general sociodemographic questions. For the reasons mentioned previously, we decided to use the trust game (Berg et al., 1995). In the game part, we also set a screener to ensure that all subjects are fully aware of the rules of the game. If the subject selects the wrong answer, he or she will be returned to the instructions page and be asked to read the rules again. By the end of any part, subjects do not know anything about the following questions.

First of all, as Roth (1995) points out, there may be many confounding and uncontrolled influence in face-to-face interaction. Due to this reason, in this experimental design, we have to have the system posing as a counterpart (Malhotra & Murnighan, 2002) but with no deception and provide the content of pre-game communication directly to all subjects rather than pairing them in twos and letting them talk freely in order to control for the effects of other irrelevant variables such as communication form, content and gender mentioned before. Therefore, all participants in this game only play the role of trustor and their choices reflect their levels of trust. In the game part, before giving their answers, they see the following message on their screen:

> *"Imagine that you receive a message from your counterpart before you start the game: ..."*

The detailed content of these messages will be elaborated later. The provided content varies from group to group. All subjects are asked to give an amount (from 0 to 10 euros, in unit of 1 euro) which will be allocated to their counterparts and then multiplied by three. Also, they are clearly informed that the other player has full discretion over the tripled money. The exact amount of the money returned will not be provided in this game.

For different communication styles shown by messages, we choose the friendly communication style and the dominant communication style from CSM proposed by Norton in 1978, which are introduced in the literature review. On the other hand, for the promised amount (proportion) to be returned from trustee to trustor, we also use two different plausible levels.

1/2: In this level, if the trustee keeps his or her words, both players will share the tripled money (not all money) equally.

2/3: In this level, if the trustee keeps his or her words, the trustor will take two third of the tripled money, which means he or she will gain from the tripled money twice as

much as the trustee.

As there are two chosen levels in both communication style and promised amount, we determine to use a 2×2 design in this thesis. Subjects are randomly assigned to one of four treatment groups (see Table 3). This experiment uses a between-subject design, which means a subject participates only once in one of four treatments, to weaken demand effect, according to which participants in experiments interpret the experimenter's intentions and modify their behavior accordingly, either consciously or unconsciously (Rosenthal, 1976; White, 1977).

Table 3

Group	Communication Style	Promised Amount
Treatment 1	Friendly communication style	1/2
Treatment 2	Friendly communication style	2/3
Treatment 3	Dominant communication style	1/2
Treatment 4	Dominant communication style	2/3

Based on the five summarized characteristics of friendly and dominant communication styles (see Table 1 and 2) respectively, given a specific promised level to be returned, the content of messages under four different treatments are as follows.

Treatment 1:

"Dear trustor, I know it is a little difficult for you to trust me because we hardly know each other. Nevertheless, I would like to say that trusting is the better option for us and I would be grateful for whatever you give me. I know you contribute a lot in this game and I respect your trust. So I wonder would it be an idea to share the tripled money equally. I promise I will send 1/2 of what I get back to you so that both of us will benefit from it."

Treatment 2:

"Dear trustor, I know it is a little difficult for you to trust me because we hardly know each other. Nevertheless, I would like to say that trusting is the better option for us and I would be grateful for whatever you give me. I know you contribute a lot in this game and I respect your trust. So I think you can gain more in this game. I wonder would it be an idea that you get the majority of the tripled money and I get the rest. I promise I will send 2/3 of what I get back to you so that both of us will benefit from it."

Treatment 3:

"Dear trustor, I know it is a little difficult for you to trust me because we hardly know each other. Nevertheless, I would like to say that trusting is the better option

for us because the more money you give me, the more extra payoff we can get from this game. So I suggest sharing the tripled money equally. I promise I will send 1/2 of what I get back to you so that both of us will benefit from it."

Treatment 4:

"Dear trustor, I know it is a little difficult for you to trust me because we hardly know each other. Nevertheless, I would like to say that trusting is the better option for us because the more money you give me, the more extra payoff we can get from this game. So I suggest that you get the majority of the tripled money and I get the rest. I promise I will send 2/3 of what I get back to you so that both of us will benefit from it."

These statements are not binding, however. That is, the trustee does not have the obligation to transfer back the amount promised to trustor and both trustee and investor know this. In order to control for other irrelevant variables, we also emphasize this before letting subjects make their choices.

Also, before providing these statements, subjects are also asked to think about the money they tend to give in the situation of no pre-game communication, which will be compared with their choices after reading the message in our analysis in order to see the general effects of communication and promise.

In addition to the possible differences in trusting behavior under different treatment conditions, this thesis also aims to figure out the reasons behind. One of the perspectives is related to the information and emotions that the message conveys to people. For example, in respect of different communication styles, they also include intrapersonal communication behaviors such as inferring meaning, which contains items reflecting cognitive-affective interpretations of another's thoughts and emotion (Gudykunst et al., 1996). Therefore, different information content and emotion content conveyed by different messages will result in various perceptions and beliefs as reactions to other people's utterances. Subjects answer questions about their attitudes to the emotive quality of the message, the authenticity of the commitment and so on directly or by Likert scales. By analyzing them, we can get some information about what type of interpretations are changed by different messages, which could be part of the reasons why subjects behave differently in four treatment groups.

In the last part of the questionnaire, we have the control variables part in which we are interested in other factors that may influence people's trusting behavior including age, gender, level of education, major, altruism propensity, inequality aversion propensity, social welfare-maximizing propensity, familiarity with the trust game. Many researchers point out that people with certain sociodemographic characteristics are more prone to trust others (Haselhuhn et al., 2015; Zeffane, 2018; Van Den Akker et al., 2020). Moreover, altruism, inequality aversion and social welfare-maximizing are three

main elements of social preferences which means participants in experiments frequently choose actions that do not maximize their own monetary payoffs when those actions can affect payoffs of other people (Charness & Rabin, 2002). The three factors have already been proven to have an impact on individual's trusting behavior. For example, other-regarding preferences such as altruism play an important role in trust situations (Dufwenberg & Gneezy, 2000; Cox, 2004). Some subjects are found to have a preference to behave in a fair manner (Ellingsen & Johannesson, 2004; Vanberg, 2008). Reciprocal subjects trust significantly more than selfish ones (Altmann et al., 2008). We measure these propensities by asking their degrees of agreement towards the following statements:

- *"generally speaking, I am willing to benefit other people as much as possible;",*
- *"generally speaking, I prefer a fair distribution with others;",*
- *"generally speaking, I am willing to maximize the total payoffs of me and other people.".*

Last, we ask participants whether they are familiar with the trust game, which could also have an impact on the results of the experiment. These questions are placed in the end of the questionnaire since we are aware that people have a limited attention time span and we want participants to focus on the most important questions first.

3.2 Predictions

As discussed before, people's trusting behavior are not in line with the predictions of conventional economic theories. According to Ben-Ner and Putterman (2009), under the traditional hypothesis of rational man, it follows that (1) sending a signal or communicating; (2) making a proposal, no matter how many; (3) concurring on the same proposal; (4) entering a contract-without-penalties would make no difference. Only opportunities for reputation formation or a binding contract can lead to positive sending by trustors and positive returning by trustees in the trust game. However, the results of ample economic experiments have already shown contradictions with these predictions. An explanation that can complement traditional economic theories is provided by behavioral economics. Although neither theoretical nor experimental behavioral economics provides as specific a set of predictions as do conventional theories, they do supply observations that permit some broad hypotheses to be stated (Ben-Ner & Putterman, 2009). These observed behaviors include (1) people often display trust and trustworthiness and have done so in past economic experiments including the trust game; (2) communication is helpful in enhancing trust and cooperation; (3) nonbinding promises is also important for trust among individuals. Based on these main observations, we propose the following research hypotheses for this thesis.

First of all, we consider people's baseline trusting behavior that takes place without pre-game communication.

Hypothesis 1 In the trust game, a substantial proportion of subjects acting the role of

trustor will send part or all of their initial endowments in the situation of no pre-game communication.

We test this hypothesis according to the results of descriptive statistics. If the proportion of subjects who send a positive amount is higher enough (e.g. higher than 90%), we tend to believe this hypothesis is valid.

In this thesis, we focus on the effects of different communication styles and promised returned amounts (proportion), but we start with the impact of communication and promise in a general way, which has been supported by previous experimental evidence (Dawes et al., 1977; Isaac & Walker, 1988; Sally, 1995; Malhotra & Murnighan, 2002; Charness & Dufwenberg, 2006; Ben-Ner & Putterman, 2009).

Hypothesis 2 Communication and promise positively influence individual's trusting behavior, which means regardless of which communication style and promised amount subjects are treated with, they increase the money paid to their counterparts compared with the situation of no message received.

To test this, we choose to use one-sided t-tests for paired samples. If the p-values are lower enough (e.g. lower than 0.01) both in total and in each treatment level, we tend to argue that the message has the effect of increasing giving in the trust game, which means communication and promise improve people's level of trust.

Different communication styles are expected to serve different purposes in the trust game. From previous communication styles research, results of doctor-patient relationship studies show that affiliative communication styles have a positive relationship with patient's satisfaction while dominant and active communication styles related negatively to satisfaction (Buller & Buller, 1987). Also, results of classroom studies suggest that supportive styles are associated with greater satisfaction among students (Prisbell, 1994) while dominant (controlling) styles contribute to less intrinsic motivation (Noels et al., 1999). Results of family studies, however, show an opposite result: children are found to perform more concentrated and task-oriented when their parents use a dominant and unambiguous communication style (Bugental, 1999). By analyzing existing conclusions, De Vries et al. (2010) find that satisfaction is more often related to a friendly communication style, while a dominant communicator may be associated with performance but only in some extreme instances (e.g., strong dependence situations). Based on these conclusions, we propose the third sub-hypothesis.

Hypothesis 3 Different communication styles lead to different trusting behavior in a trust game. In particular, subjects under the friendly communication style treatment show a higher level of trust compared with those under the dominant communication style treatment.

On the other hand, we argue that different promised returned proportions also matter. However, since there has been very little discussion about the effects of different promised levels for reference, we will not certainly assume the result in the comparison between different treatments. We propose the last sub-hypothesis.

Hypothesis 4 Different promised returned amounts also lead to different trusting behavior in a trust game, which means subjects under 1/2 promised level treatment perform differently from those under 2/3 promised level treatment.

Several statistical tests are used to test hypothesis 3 and 4. First of all, the Kruskal-Wallis test is used to determine whether there exist differences among four different treatment groups and if so, we can continue with t-tests and regressions for further analysis. We test the effects of different communication styles and promised amounts mainly according to the results of regression. When the variable of interest is statistically significant with p-value of at most 0.10, then different treatments impact the level of trust.

4. Results

In terms of data collection, we utilized three sampling methods to reach people. First, we posted the link of the survey on social media such as WhatsApp student groups, WeChat student groups and so on. Second, we used snowball sampling by asking respondents to distribute the link to their friends and family. Third, we approached students on EUR campus to motivate them to fill out the questionnaire by using a QR code that can be easily scanned via their phone. Finally, 176 complete questionnaires were recycled in total and can be used for the analysis of this thesis.

4.1 Descriptive Statistics
### 4.1.1 Sample Descriptions

Appendix B presents the summary statistics of all variables collected in this survey. In total, 176 respondents participated in the experiment. Participants had an average age of about 23.2 years, with a minimum of nineteen years and a maximum of thirty-three years. This could be because of the channels within which the survey was distributed. In the sample, 67.61% of the subjects were female, 23.30% were male, and other 9.09% of the subjects were self-identified as the non-binary gender or did not want to reveal their gender information. We must acknowledge that the sex ratio of the sample was not very balanced, which may lead to a systemic effect compared with a gender-balanced sample. This is because it seems that women are more likely to trust others than men (Bohnet & Zeckhauser, 2004). The majority of subjects (56.25%) had a master degree or would get their master degree in this academic year of 2022, and there was also a significant number of subjects (42.05%) with a bachelor degree. In terms of the major, there were 32.95% of the participants who had an economics background, followed by business administration (18.18%) and social science (13.64%). In addition, more than half of the respondents (56.25%) had heard of trust game before, which may be due to the academic background of the subject. Lastly, to quantity the opinions on social preference, we created an indicator for each kind of propensity that gave a score that depended on the degree in which subjects agreed or disagreed to the statement on the Likert scale. For example, 1 was given if the subject strongly disagreed with the corresponding description, while 7 was given if the subject strongly agreed with the corresponding description. The results show that people had a somewhat neutral attitude towards the statement "generally speaking, I am willing to benefit other people as much as possible" with an average score of 4.30. For inequality aversion propensity and social welfare-maximizing propensity, people had higher scores on average (5.32 and 5.19 respectively), which means they were more willing to distribute fairly with others and maximize the total payoffs of themselves and other people. These distributions matter to understand our sample and to better interpret the external validity as well as limitations.

4.1.2 Baseline Trust

Figure 1 summarizes the trusting behaviors of 176 subjects that took place without pre-game communication, i.e., they did not receive any message from their counterparts before giving their choices. In this simple trust interaction, 169 (96.02%) subjects acting

the role of investor sent a positive amount to their counterparts, while only 7 (3.98%) subjects chose to keep all money themselves and gave nothing. On average, subjects gave 4.39 euros of their initial endowments. More than 80% of subjects gave money in the range of 3 to 6 euros, and the most subjects gave half of their money, with the proportion of about 30%. There were also 6 subjects exhibiting quite high level of trust by sending all 10 euros to the other player. The prediction of conventional economic theories thus does very poorly, only correctly anticipating the choice of less than 4% of trustors in our sample. Therefore, hypothesis 1 holds, which is consistent with most findings of economists such as Ben-Ner and Putterman (2009).

Figure 1
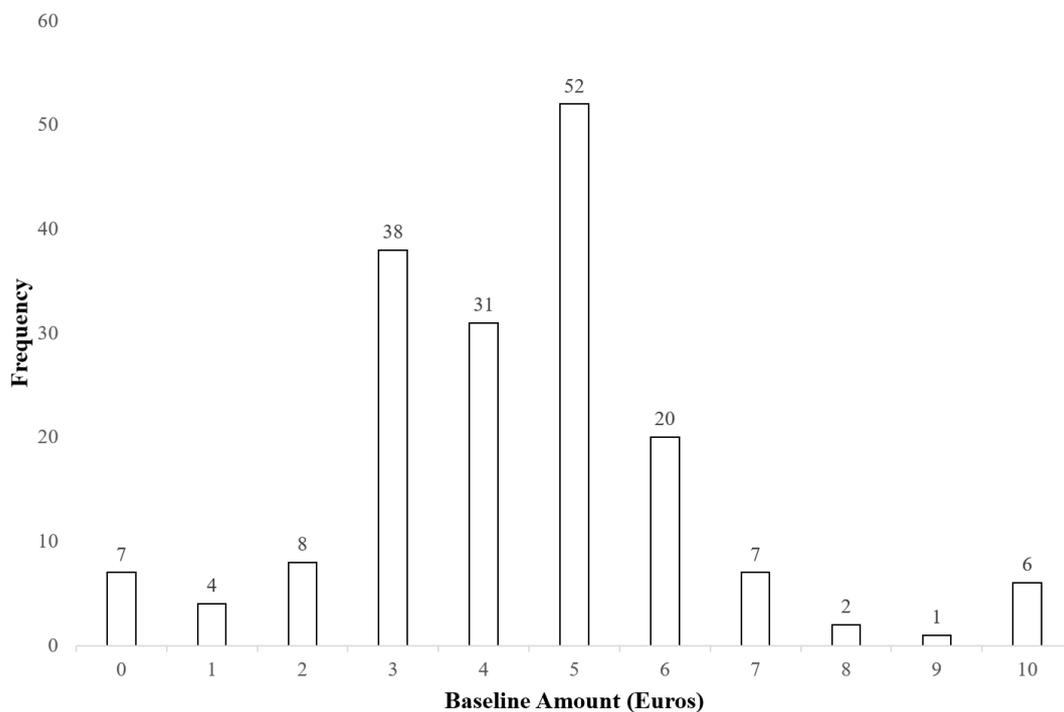
4.1.3 Trust under Different Treatments

The survey was somewhat evenly distributed among four treatment groups. 22.16% of the sample were exposed to a friendly communication style with a promised returned amount (proportion) of 1/2, 22.73% were exposed to a friendly communication style with a promised amount of 2/3, 23.86% were exposed to a dominant communication style with a promised amount of 1/2, and the remaining 31.25% were exposed to a dominant communication style with a promised amount of 2/3. The distribution of amount given that took place with pre-game communication under four different treatments are summarized in Figure 2.

Figure 2
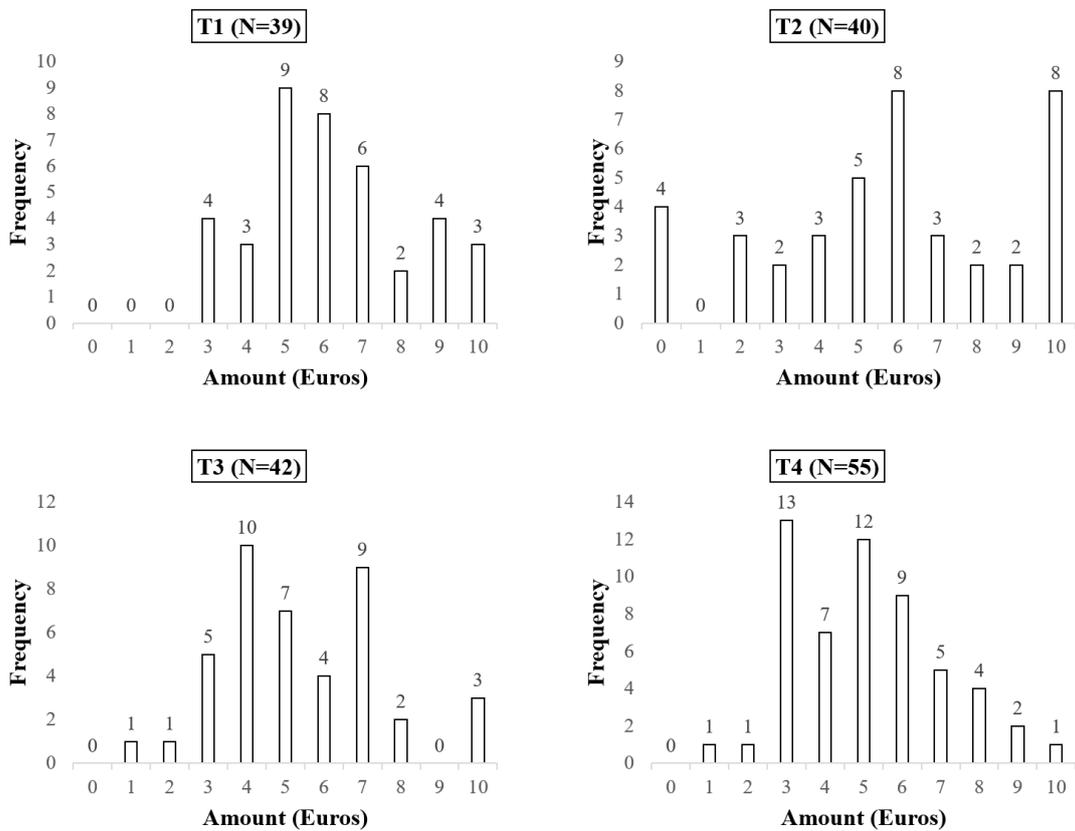
Figure 3 displays the means as well as the 90% confidence intervals of the amount given to the other player after reading the message in the population and each treatment group. In the total level, subjects sent 5.56 euros of their initial endowments on average, higher than the situation of no communication (4.39 euros), which provides initially support for hypothesis 2. On the other hand, for different treatment groups, we come up with the following guesses very preliminarily: a friendly communication style can better improve level of trust than a dominant one and people are more willing to give more money when receiving an offer of equal share compared with an offer that gives 2/3 of the money.

Figure 3
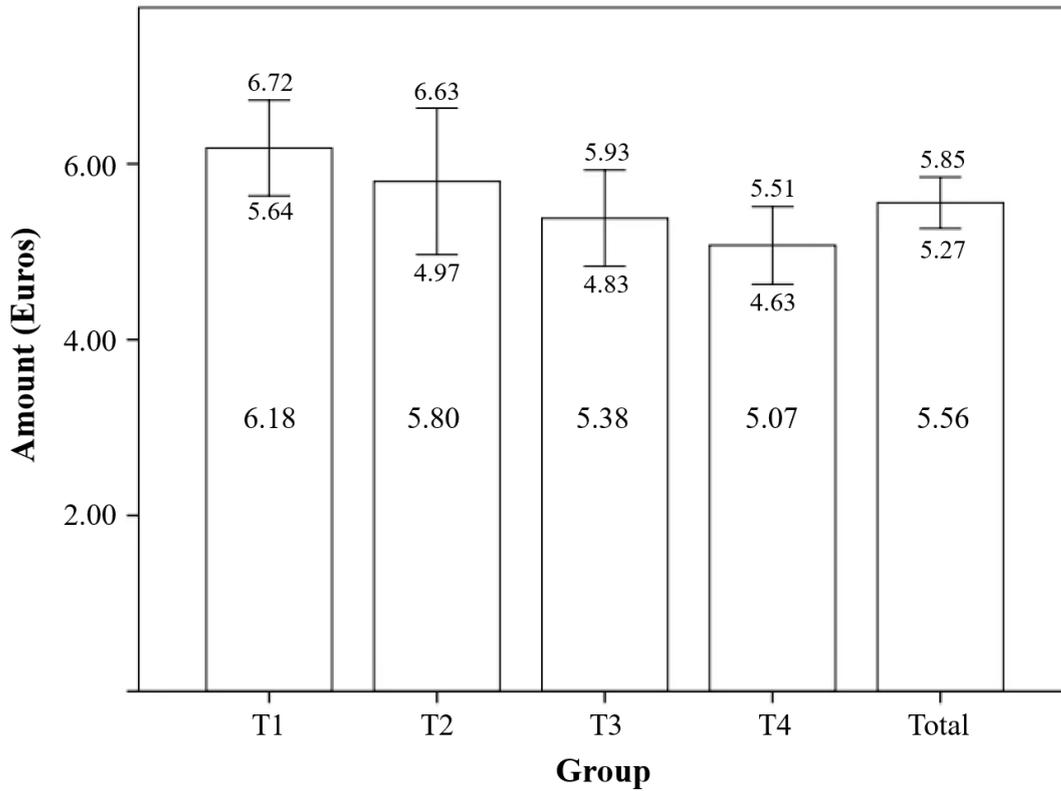
4.2 Randomization

Before analyzing data from four different treatment groups, the suitability of the raw data needs to be determined, which means we should first confirm the grouping is randomized in the experiment. We mainly want to know whether the distributions of sociodemographic variables (age, gender, education, major and familiarity), the baseline trusting behavior that occur in the absence of pre-game communication and three kinds of social preference propensity are different from each other or not. If these variables are similarly distributed across four sub-groups, we tend to believe that the randomization is successful in the experiment and it is possible to continue with these sub-samples in further analysis.

Two types of statistical tests are available: parametric tests and nonparametric tests. Parametric tests have the following four strict assumptions: the observations are independent; the observations must be drawn from a normally distributed population; in case two groups are analyzed, they must have the same variance; variables must be measured in an interval scale, in order to interpret results. Since data cannot satisfy all conditions of the parameter tests, we choose to use nonparametric tests here as they need far fewer assumptions: for nonparametric tests, only the observations need to be independent, which means the value or selection of one observation must not influence the value or selection of another observation. Although independence cannot be known for sure, we assume that every subject filled in the questionnaire individually. Moreover,

as there are more than two treatment groups in total, we choose the Kruskal-Wallis test to test whether the four samples come from the same population. We use the following hypotheses of the Kruskal-Wallis test.

$H_0: \theta_1 = \theta_2 = \theta_3 = \theta_4$

$H_a: \theta_i \neq \theta_j$ for some groups i and j

With θ_i being the median of the values in group i.

In the Kruskal-Wallis test, the data to be tested have to be at least at the ordinal scale. Table 4 summarizes the number and proportion of the categorical data, that cannot be tested by Kruskal-Wallis test, within each sociodemographic sub-group of the sample. The data is displayed in the total level and classified by different treatment groups. As visible from Table 4, the sample profile is similar across four treatment groups with a similar distribution of gender, major and familiarity.

Table 4

Statistic	Total N	Total %	T1 N	T1 %	T2 N	T2 %	T3 N	T3 %	T4 N	T4 %
Gender										
Male	41	23.30	6	15.38	11	27.50	9	21.43	15	27.27
Female	119	67.61	30	76.92	25	62.50	31	73.81	33	60.00
Non-binary	5	2.84	0	0	1	2.50	0	0	4	7.27
Prefer not to say	11	6.25	3	7.69	3	7.50	2	4.76	3	5.45
Major										
Art	12	6.82	4	10.26	2	5.00	4	9.52	2	3.64
Business Administration	32	18.18	7	17.95	5	12.50	11	26.19	9	16.36
Computer Science	3	1.70	0	0	1	2.50	0	0	2	3.64
Economics	58	32.95	16	41.03	14	35.00	16	38.10	12	21.82
Education	12	6.82	1	2.56	2	5.00	2	4.76	7	12.73
Engineering	2	1.14	1	2.56	0	0	1	2.38	0	0
History	1	0.57	0	0	0	0	0	0	1	1.82
Law	3	1.70	0	0	1	2.50	1	2.38	1	1.82
Literature	7	3.98	0	0	2	5.00	1	2.38	4	7.27
Medicine	3	1.70	0	0	0	0	1	2.38	2	3.64
Natural Sciences	5	2.84	1	2.56	1	2.50	0	0	3	5.45
Social Sciences	24	13.64	6	15.38	5	12.50	2	4.76	11	20.00
Other	14	7.95	3	7.69	7	17.50	3	7.14	1	1.82
Familiarity										
Yes	99	56.25	24	61.54	22	55.00	23	54.76	30	54.55
No	77	43.75	15	38.46	18	45.00	19	45.24	25	45.45

Table 5 summarizes the means and medians of the rest variables, that all at the ordinal, interval or ratio scale, in the population and each sub-sample. To conduct this test, the variable of education is converted to numeric variables since this is the only one

variable with an ordinal relation between categories and then the median score is generated. The final column contains the obtained p-values of the Kruskal-Wallis tests that show the statistical significance of the differences between four sub-samples. Taking a significance level of 1%, if the p-value is above 1%, we fail to reject the null hypothesis that the treatment groups do not significantly differ from each other. The results show that all p-values are above the chosen significance level (1%), indicating that all samples are drawn from the same population. Therefore, the results in Table 4 and 5 solidify the claim that randomization is successfully achieved with no clear evidence of selection bias.

Table 5

	Total		T1		T2		T3		T4		K-W Test
Statistic	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	p-value
Baseline Amount	4.39	4.5	4.69	5	4.28	4.5	4.17	4	4.42	4	0.4977
Age	23.20	23	23.23	23	23.43	23	23.17	23	23.04	23	0.7891
Education		Master		Master		Master		Master		Master	0.9759
Altruism Propensity	4.30	4	4.85	5	4.05	4.5	4.17	4	4.18	4	0.0488
Inequality Aversion Propensity	5.32	6	5.67	6	5.35	6	5.17	6	5.18	5	0.3743
Social Welfare-Maximizing Propensity	5.19	5	5.36	5	5.03	5	5.31	6	5.11	5	0.8271

Note: As an ordinal data, the mean of the variable education cannot be calculated.

4.3 Hypotheses Testing
4.3.1 Hypothesis 2 Testing
Before looking at the possible different effects of different communication styles and promised returned amounts (proportion), we first consider the general impacts of communication and promise in people's trusting behavior, which have already been supported by previous studies in many fields including economics. Based on the conclusions of previous literatures that communication and promises can build and enhance trust among individuals, we assume that regardless of the treatment group to which subjects are assigned to, they give higher amount of money to their counterparts compared with the situation of no message received. It is worth mentioning that although the whole experiment uses a between-subject design in which a subject participates only once in one of four treatments, we approximate it as a within-subject design in this part as we ask respondents for their choices in the situations of both with message received and without in the questionnaire.

Therefore, we choose to use one-sided t-tests for paired samples here and test whether

or not the mean of amount given with message is statistically larger than that of amount given without message (baseline amount). We use the following hypotheses of the t-test.

H_0: $\mu_1 >= \mu_2$

H_a: $\mu_1 < \mu_2$

With μ_1 being the mean of the amount given without message and μ_2 the mean of the amount given with message.

Figure 4 displays the means in both situations as well as the p-values of one-sided t-tests in total and each treatment level. As shown in Figure 4, all means of amount given with message are larger than those of amount without. Also, the results of the t-tests indicate that we have enough evidence to reject the null hypothesis that the mean is the same in two situations and accept the alternative one: there exist statistical differences between two data sets, which means communication and promise do increase giving in the trust game both in general and in each treatment level. These differences are statistically significant at a 1% significance level as all obtained p-values are below 0.01; therefore, hypothesis 2 holds. However, we cannot be sure whether this change is because of the effect of communication or of commitment or both now.

Figure 4
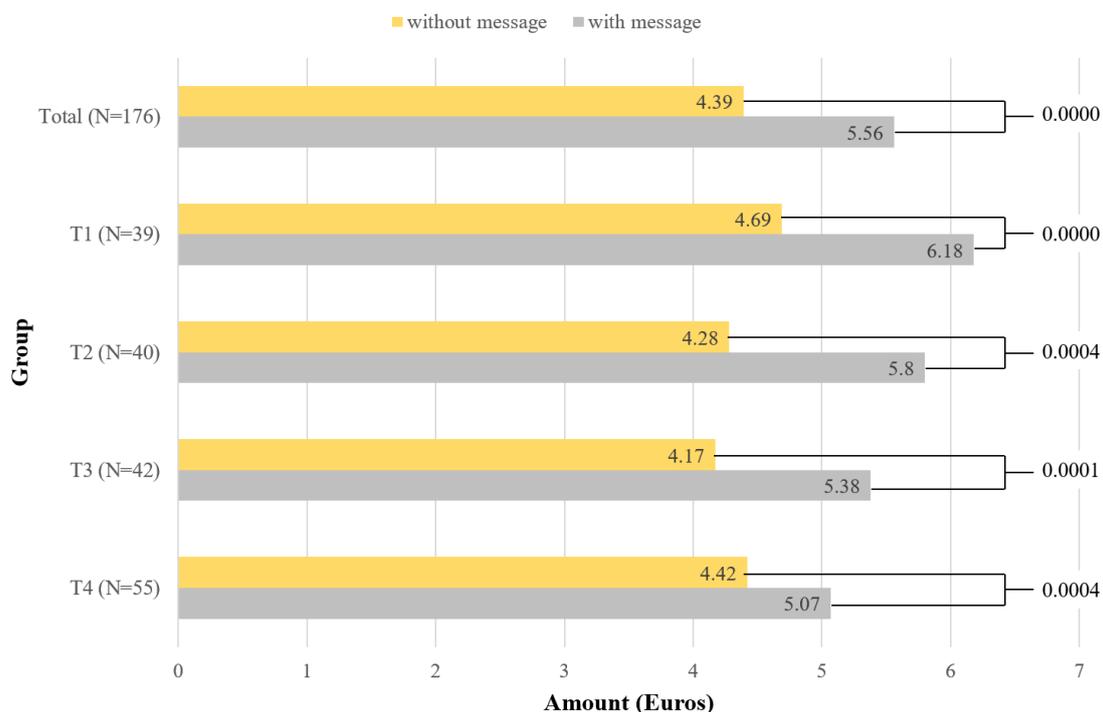
4.3.2 Hypotheses 3 and 4 Testing

In this section, we will test hypothesis 3 and 4: different communication styles and different promised amounts lead to different behavior in the trust game. First of all, Figure 5 shows the distribution of amount increased, which can be regarded as the effect

of the message within a specific combination of a communication style and a promised proportion, under four different treatments. The yellow bar means that the median of this set of data falls here. We also test here whether the four sub-samples are drawn from the same population or not using the Kruskal-Wallis test. If this variable is similarly distributed across four sub-groups, we can conclude that different combinations do not play the role on trusting behavior and there is no need to continue the analysis. As shown in Figure 5, the result of Kruskal-Wallis test illustrates that there are statistical differences in the performance among four treatment groups at a significance level of 10% with p-value of 0.0593.

Figure 5
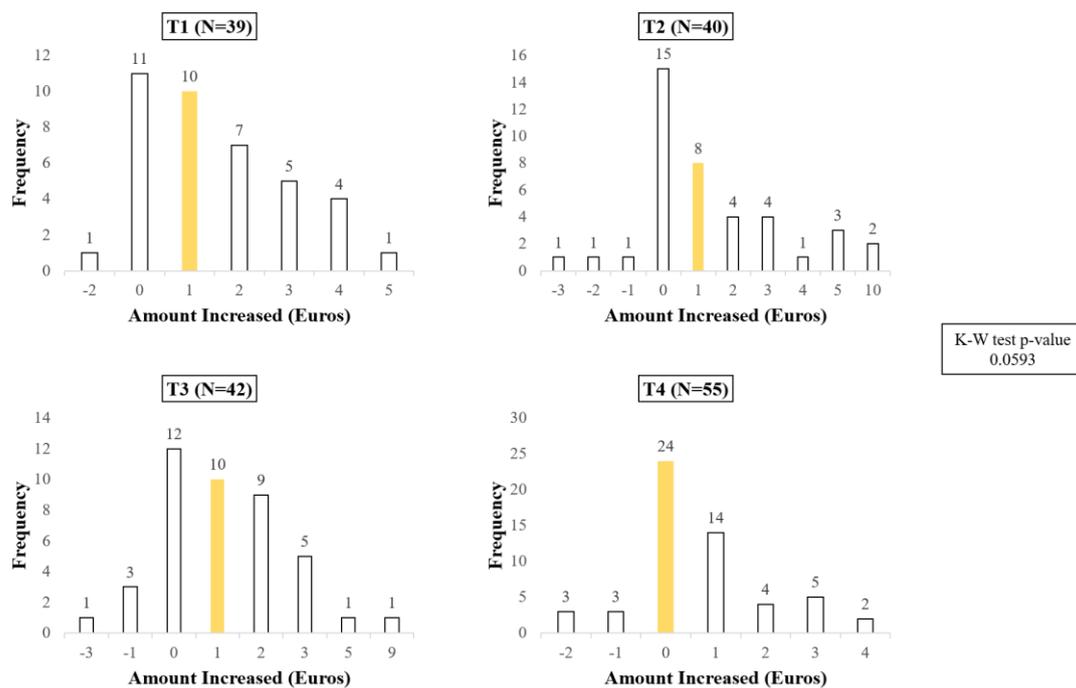
We then concern whether there exist significant differences in the impacts of different communication styles and promised amount. We use the following hypotheses of the t-test.

H_0: $\mu_1 = \mu_2$

H_a: $\mu_1 \neq \mu_2$

With μ_1 being the mean of the difference between amount given with message and amount without under the first treatment and μ_2 the mean of the difference under the second treatment. If we have enough evidence to reject the null hypothesis and accept the alternative one with a relatively low p-value, we tend to argue that different treatment levels will influence people's trusting behavior variously.

Figure 6 shows that different communication styles do matter in the trust game. Keeping other factors including promised amount fixed, the difference between a friendly communication style and a dominant one is statistically significant at a 5% significance

level with p-value of 0.0338. On the other hand, although the mean of the increment in the promised returned level of 1/2 is 0.33 higher than that in the promised returned level of 2/3, this difference is not statistically at a 10% significance level with p-value of 0.2594, which means different promised amount would not affect people's trusting behavior.

Figure 6
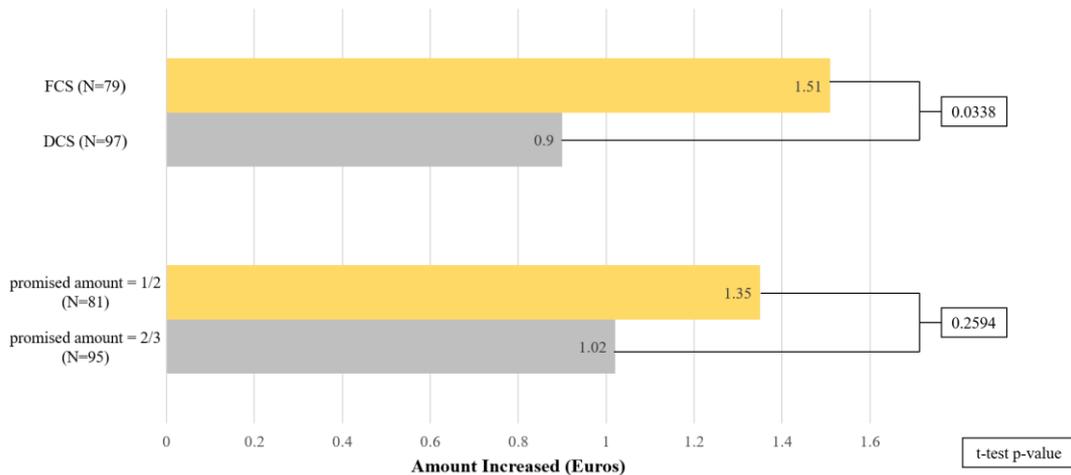
In addition to nonparametric and parametric tests, we also ran regressions to investigate different effects of different dummy treatments. According to four treatment groups in the experiment, two dummy variables are created first: style (1 if the subject is in the treatment of a friendly communication style, 0 otherwise) and level (1 if the subject's counterpart promises to return 1/2 of the tripled money, 0 otherwise). In all regression. the dependent variable will be the increment of amount given after they receive the message. If the subject gives less after reading the message compared with the baseline amount, the value of the dependent variable will be negative. The independent variables are style, level and the interaction term style#level. Since the sample is not evenly distributed across majors, we create a new category variable here: 1 if the subject majors in Economics, 2 if the subject majors in Business Administration, 3 if the subject majors in Social Sciences, 4 otherwise. Similarly, gender is also created as a new category variable: 1 if the subject is self-identified as a male, 2 if the subject is self-identified as a female, 3 otherwise. These conditions give three regressions in total (see Amount (1) ~ (3) in Table 6).

When the variable of interest is statistically significant with p-value of at most 0.10, then different treatments impact the amount increased, ceteris paribus. Table 6 gives the information on the influences of three treatment dummies and the significant control variable (age only). For the full regressions please refer to Appendix C. Regression (1) shows that being in the treatment of a friendly communication style increases amount given than being in a dominant communicator, ceteris paribus. On average, the increment of money for those in the friendly communication style treatment is about

0.48 euros higher than that for those in the dominant communication style treatment. This difference is statistically significant at a 10% significance level with p-value of 0.096. Regression (2) shows that there is no significant effect of dummy level on the level of trust with p-value larger than 0.10, i.e., being in different treatments of promised returned level gives no effect on the choices in the trust game. The results from Regression (1) and (2) are consistent with the findings of t-tests (see Figure 6). The results of regression (3) show that for subjects in treatment 4, changing the promised returned proportion has no effect, while changing the communication style of the message does improve the level of trust, regardless of the promise made in the message. The differences between any other two treatment groups are found to be insignificant by changing the baseline group of the interaction term. Therefore, we draw the following two conclusions. First, communication styles play the role only when the promise returned level remains at 2/3. Given promised returned level equal to 2/3, compared with a message under the dominant communication style treatment, a message under the friendly communication style treatment will add extra 0.72 euros in the increment on average, keeping other factors fixed. This difference is statistically significant at a 10% significance level. Second, the single treatment of communication style has no significant effect keeping promised returned level equal to 1/2, and the single treatment of promised amount has no significant effect keeping a dominant communication style either. However, when the two treatments are combined, it becomes statistically significant at a 10% significance level. On average, the increment of amount given for those in treatment 1 (friendly communication style, promised returned proportion = 1/2) is about 0.67 euros higher than that for those in treatment 4 (dominant communication style, promised returned proportion = 2/3), ceteris paribus. This can also by proven by creating a new category variable for four treatments and including it in the regression (see Appendix D).

Additionally, the regression results also show that age can affect people's trusting behavior: on average, one year of age will add about 0.2 euros in the increment of money with message compared with without, ceteris paribus. This effect is statistically significant at a 1% significance level in all three regressions. One of the possible explanations could be that people with a higher age are more likely to trust a communicative person.

Table 6

Variables	Amount (1)	Amount (2)	Amount (3)
β (style)	0.4823*		
β (level)		0.2570	
β (style#level)			
relative to 0 0			
0 1			0.4856
1 0			0.7201*
1 1			0.6662*
β (age)	0.2234***	0.2309***	0.2186***

Notes: For the model of Amount (1), only the style dummy enters the regression; for the model of Amount (2), only the level dummy enters the regression; for the model of Amount (3), both style dummy and level dummy enter the regression as an interaction term style#level. Control variables: age, gender, major, familiarity, altruism propensity, inequality aversion propensity, social welfare-maximizing propensity. Control variable education is removed as the values of VIF are higher than 40. ***p-value<0.01, **p-value<0.05, *p-value<0.10, no asterisk: p-value>0.10.

4.4 Interpretations under Different Treatments

In the last section of this chapter, we will analyze the answers to people's attitudes about the emotive quality of the message, the authenticity of the commitment and so on from one probability question and six mental scales, in order to see what type of perceptions and interpretations are changed by different messages, which could be the reasons why subjects behave differently across four treatment groups. We mainly use t-test here to determine whether there exists a difference between any two treatment groups. Figure 7 to 13 display all significant differences in one-sided t-test. For all results of t-tests please refer to Appendix E.

Figure 7 gives information on subject's guesses about the likelihood that his or her counterpart will keep the promise under four different treatments. It shows (1) in most cases, people believe that those counterparts proposing an equal share are more likely to keep their commitment compared with counterparts who promise to return 2/3 of the money; (2) one exception here is that there is no significant difference between the two different offers when both of them are communicated in a friendly manner.

Figure 7

Figure 8 shows subject's attitudes towards the description "I think this message was very warm." as well as all significant differences between any two treatments. Higher scores imply higher level of consent and score of 4 means people feel neutral towards this statement. As visible from Figure 8, subjects in the last treatment score the lowest in this question, which means the combination of a dominant communication style and a promise amount of 2/3 will lead to a significantly colder feeling compared with the other three treatments.

Figure 8
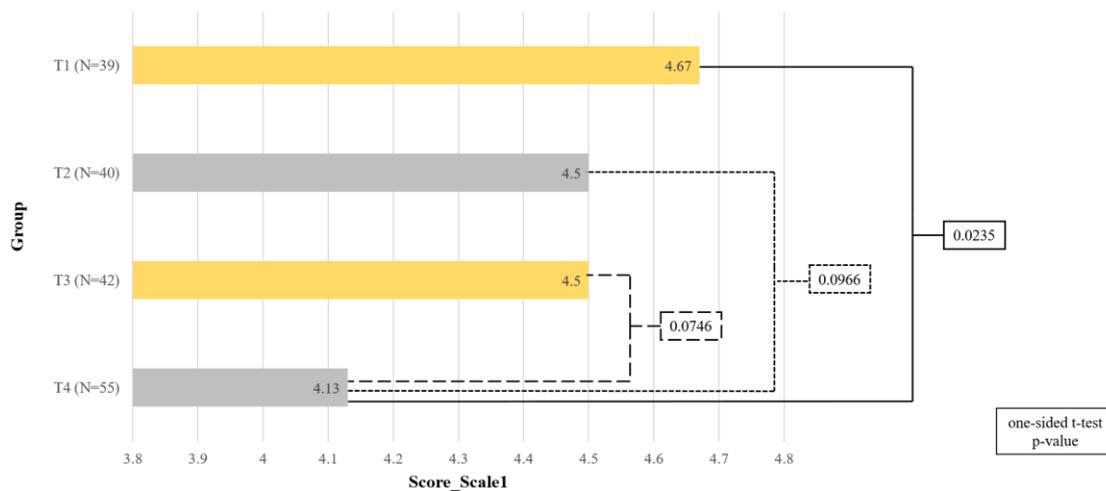
Figure 9 shows subject's attitudes towards the description "I think this message was very encouraging." as well as all significant differences between any two treatments. It shows (1) in most cases, people feel more encouraged to accept an offer of equal share than an offer that gives 2/3 of the money; (2) one exception here is that there is no significant difference between the two proposals when the proposal of even split is written in a dominant communication style while the other is written in a friendly
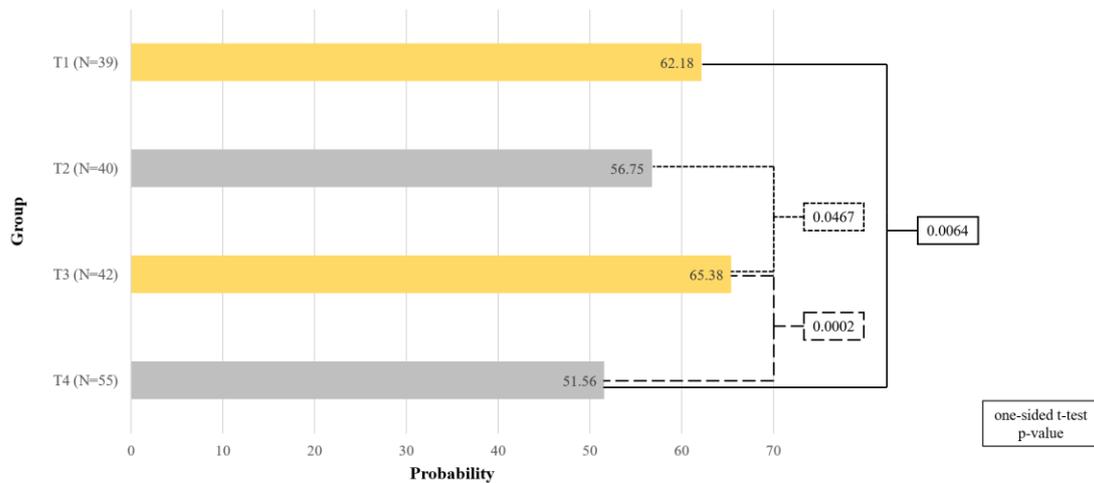
communication style.

Figure 9
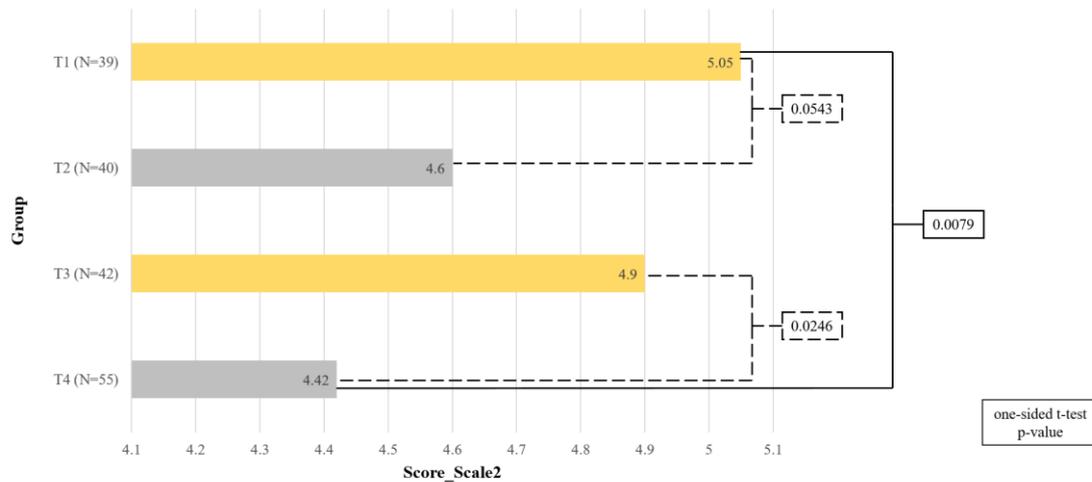
Figure 10 shows subject's attitudes towards the description "I think this message was very persuasive." as well as all significant differences between any two treatments. It indicates that regardless of the communication style of the messages, subjects find the proposal of an equal share more convincing than the proposal that gives 2/3 of the money all the time, even though they may get less money in this situation, which again goes against the prediction of conventional economic theories.

Figure 10
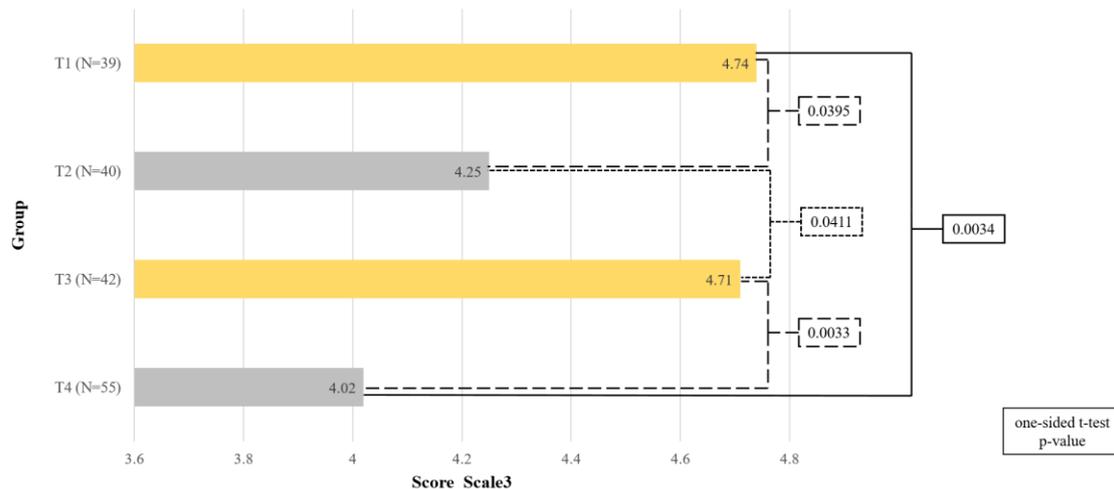
Figure 11 shows subject's attitudes towards the description "I think the person sent the message was trustworthy." as well as all significant differences between any two treatments. It shows (1) subjects in treatment 1 have a higher score than the other three treatments on average, and these differences are statistically significant at a 5% significance level, indicating that such a message will give the most credibility; (2) the

difference between treatment 3 and 4 is also statistically significant with p-value lower than 0.10, which means an offer of even split is more likely to convince people of the sincerity of the person sending the message than the offer proposing to return 2/3 even though the communication style of both messages is dominant.

Figure 11
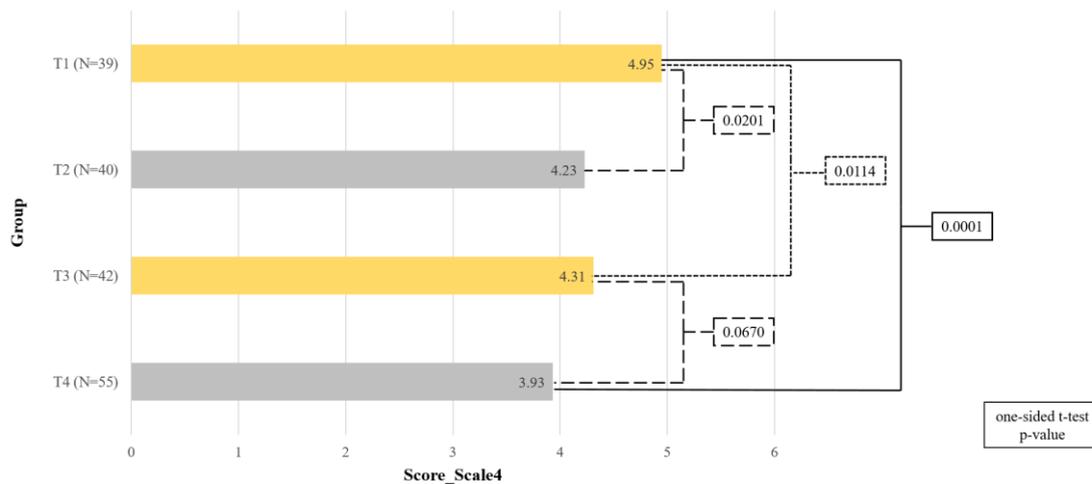
Figure 12 shows subject's attitudes towards the description "This message influenced my choice when considering how much to give." as well as all significant differences between any two treatments. It shows that subjects in the first treatment have the highest score in this question, which means message written in a friendly communication style with a promise proportion of 1/2 is more likely to be taken into account compared with the other three treatments.

Figure 12
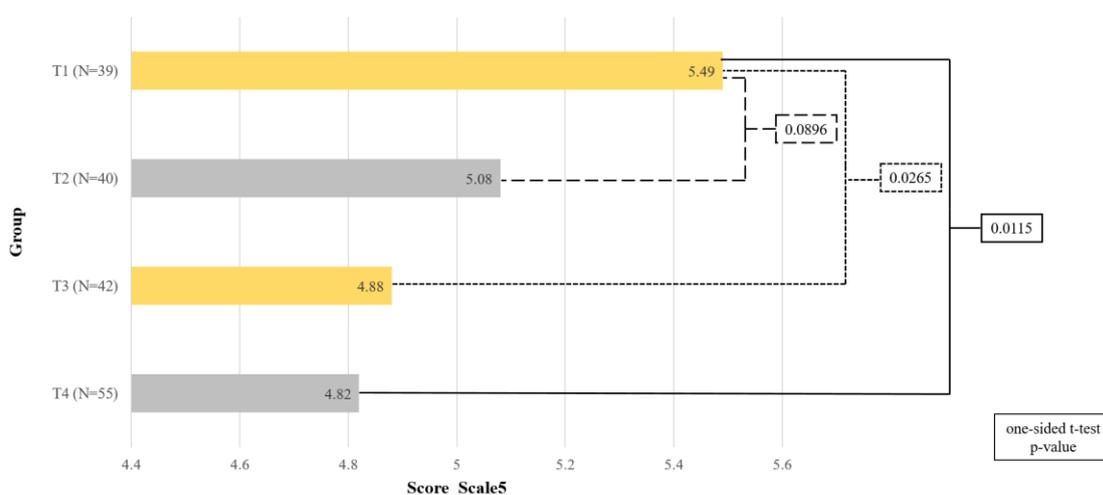
Figure 13 shows subject's attitudes towards the description "I was thinking more about what was suggested in the message than what I initially thought." as well as all

significant differences between any two treatments. On the basis of the previous one, this question includes a comparison between other people's suggestion and their own idea in the situation of no communication. Same as the previous one, subjects in the first treatment also score the highest in this question, which means message expressed in a friendly communication style with a promise proportion of 1/2 is more likely to make subjects consider the suggestion itself rather than their initial thoughts.

Figure 13
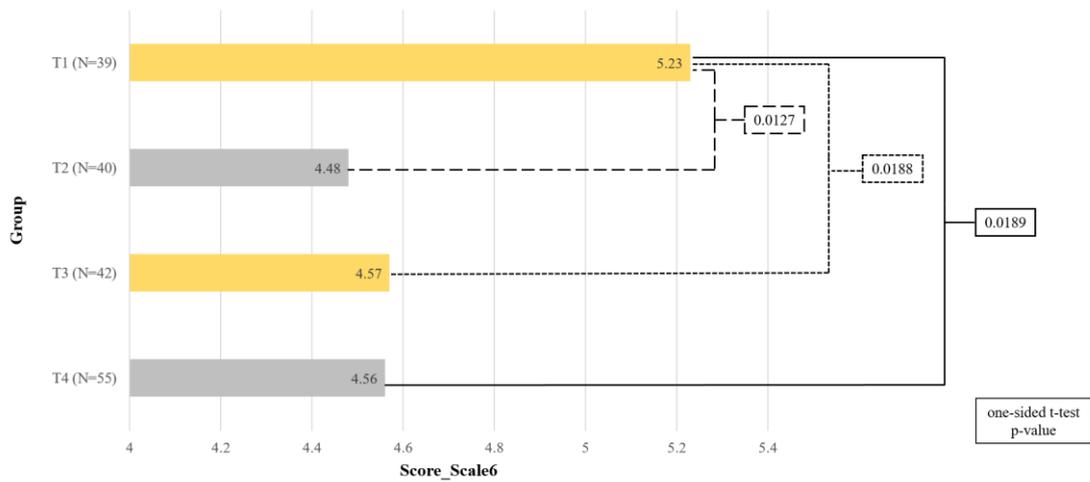
5. Discussion
5.1 Baseline Trust
First of all, the first sub hypothesis states that most trustors in the trust game will give at least part of their initial endowments even though there is no opportunity for communication. The results of descriptive statistics show indicate that the vast majority (over 96%) of the subjects acting the role of trustor send a positive amount to their counterparts. Therefore, we find supporting evidence for hypothesis 1.

5.2 Communication and Promises
The second sub hypothesis concerns whether subjects give more money to their counterparts or not after receiving their message. The results of parametric test (one-sided t-test) show that we have enough evidence to reject the null hypothesis and accept the alternative one that there exist statistical differences in given amount with and without pre-game communication with p-values lower than 0.01 both in total and in each treatment level. Therefore, we find supporting evidence for hypothesis 2 that communication and promise do have the impact of increasing giving in the trust game.

5.3 Different Communication Styles
The third sub hypothesis comes to the effects of different communication styles on how much money to give as a trustor. The results of parametric test and regression analysis show that the increment of given amount for those in a friendly communication style treatment is about 0.48 euros higher than the other one, although the difference between is only significant when the promise returned proportion remains at 2/3; therefore, the analysis from our data suggests that the message written in a friendly communication style contributes to a higher level of trust compared with that in a dominant communication style. Therefore, hypothesis 3 holds. Moreover, we also consider the reasons why subjects perform differently across two treatment groups by analyzing what type of perceptions and interpretations are changed by different messages. The results of t-tests show the following conclusions. For one hand, subjects in a friendly communication style treatment are more likely to be influenced by the message when doing their choices and believe their counterparts are more trustworthy compared with the other style when the promised proportion is 1/2; for the other hand, when the promised proportion is 2/3, subjects feel the warmth more receiving the message expressed in a friendly communication style. These could be the reasons why different communication styles affect level of trust variously.

On the basis of the content of different effects of communication styles uncovered in this thesis, some similarities with what has been proposed by communication researchers in other fields can be noted. First of all, most communication styles used in research seem to contain the friendly and dominant ones and see the two styles as opposites. In addition, most findings believe that the difference in the impacts of the two is also evident (Buller & Buller, 1987; Prisbell, 1994; Noels et al., 1999). De Vries et al. (2010) summarize that a friendly communication style is more often associated with people's prosocial behavior in most situations while only in some extreme

situations a dominant communication style would bring a better performance, which fits with the view in our thesis since the trust game instance is closer to a regular case rather than an extreme one such as a family dependence case (Bugental, 1999). Therefore, our findings are consistent with theirs, confirming that different communication styles can also be shown to have different effects in the economic sphere and this difference is reflected in the trust game in the difference in how much money trustors give to their counterparts, i.e., people who are treated in a friendly communication style send more money compared with those treated in a dominant communicator on average.

5.4 Different Promised Amounts
The fourth sub hypothesis comes to the effects of different promised returned amounts (proportions) on people's trusting behavior. Existing studies have already shown that the function of promises is to foster trust and cooperation between two or more parties involved in the transmission of the promises (Friedrich & Southwood, 2011), while how different promises matter have not been explored yet. We hypothesized that different promised returned levels can also lead to different trusting behavior in a trust game; however, the results are contrary to the expectations. The results of parametric test and regression analysis demonstrate that although subjects under 1/2 promised level treatment show a higher increment of given amount, this difference between the two levels is not statistically significant at a 10% significance level. Therefore, hypothesis 4 does not hold.

However, from our data, while the analysis fails to draw a conclusion on the difference between the two levels, they do provide a directional proof that a suggestion of equal share could increase giving compared with a suggestion that gives more money, although this will result in a reduction in personal benefits. This finding may be due to people's preference for fairness (Ellingsen & Johannesson, 2004; Vanberg, 2008), one type of social preferences, which are one of the key differences between behavioral economics and traditional economics. Besides, it is also possible that a higher promised amount may seem less plausible, making the promise less trustworthy as being viewed by the trustors.

Furthermore, we also find some significant differences in people's perceptions and interpretations towards the message between two different levels (1/2 and 2/3), although these differences do not translate into significant effect. For example, subjects feel the message guaranteeing the return of half the money more encouraging and persuasive as well as the person sending this message more likely to keep his or her promise no matter which communication style is used in the message in most situations (see Figure 7, 9 and 10). This indicates that different promises result in different cognitive processes.

5.5 Interaction Effects
Another important finding from our results is that the returned amount promised in the

message has an effect on the contribution of the communication style to people's level of trust and vice versa. First, the positive impact of a friendly communication style on increasing trust does not mean that the impacts are significant at both promised returned levels since the two groups are pooled together in the regression. Actually, by splitting up the treatments for promised returned levels, we find that being in different treatments of communication style gives no effect on the choices in the trust game when the message suggests an equal split, which means the communication style cannot always play a role. This phenomenon can be observed in many studies. For example, in the research of Buller and Buller (1987), they discover that there are several other factors influencing the contribution of the physician's communication style to the patient's evaluation of health care such as the severity of the patient's illness, the physician's age, specialty, etc. To sum up, under some specific conditions, the communication style may become less salient as it is not critical to influence people's behaviors. One possible explanation is that the desire for an even share is greater. Once their counterparts propose to divide the money equally, the communication style used no longer matters. This pattern also emerged in studies by DiMatteo et al. (1979), Street and Wiemann (1987), West (1984), and so on.

Second, as mentioned before, although different promised amounts would not affect people's trusting behavior in general as well as in each communication style treatment, we do find that the difference in affect and cognition elicited by different levels of commitment are not the same at both communication style treatment level, implying that communication styles and promised amounts would influence each other in the trust game.

5.6 Joint Effects
Last, we also find an interesting result which is for subjects who receive the message proposing an equal share in a friendly communication style manner, separately changing the communication style or the promised amount does not lead to a significant change in their trusting behavior, but once both conditions are turned to the other level at the same time the level of trust drops. The results of regression analysis including an interaction term indicate that the increment of given amount for those in the treatment of a friendly communication style with 1/2 promised returned proportion is about 0.67 euros higher than that for those who differ in both treatments. In terms of the possible reasons behind it, the results of t-tests for the mental scales show that people are more likely to be influenced by message instead of their personal considerations in this situation as the message in treatment 4 is more likely to be heart-warming, encouraging, convincing, authentic and credible (see Figure 7 to 13), which contribute to a higher level of trust in the trust game. Consequently, the combination of the effects of one specific communication style and promised amount cannot be considered to be simply additive, which again indicates that there must exist an interaction between the two factors.

6. Conclusion

In one-shot trust games without opportunities for contract signing and reputation spreading, people always exhibit trusting behaviors, which go against the rational man hypothesis of conventional economic theories. Moreover, many factors have already been proven to improve the level of trust such as communication and promise. This thesis further investigates the impacts of these two factors with the following research question "What the effects are of different communication styles and promised returned amounts (proportion) on the level of trust in a trust game?" by conducting an experiment. The results of analysis show, for one hand, this thesis contributes to our understanding of the different effects of communication styles in the context of the trust game. It extends research on the impacts of different communication styles to the level of trust, with results similar to the findings in other fields. A friendly communication style is more likely to encourage people to give more money to their counterparts than a dominant communicator. For the other hand, this thesis also focuses on the different effects of promised returned amounts for the first time. Although the results fail to show a significant difference between the impacts of two proportions on people's trusting behavior, subjects feel, perceive and interpret the corresponding message in different ways under two levels. We speculate that a higher promised amount would make people feel more motivated to send more money, but this influence is compromised by people's preference for fairness and the trustworthiness of the higher promised amount. Future research is needed to disentangle the potential effects of different levels of the promised amounts, which must be considered a promising aspect. Finally, in terms of the interaction effects and joint effects, we find that one factor affects the contribution of the other one to people's trusting behavior and there exist joint effects of the two variables in the trust game: compared with a message written in a dominant communication style with promised level of 2/3, a message in a friendly communication style with promised level of 1/2 is more likely to enhance trust among individuals. However, it should be noted that this thesis concentrates only on two specific communication styles as well as two promised returned proportions. This issue can be better examined if the experiment considers more levels of commitment and make it a continuous variable then include an interaction term in regression in further studies.

However, the experiment of this thesis has several limitations in terms of design and conduction, which may have an implication on the generalizability and external validity. First of all, the most effective method of testing the hypotheses would have been to make the experiment environment as realistic as possible, which required us to truly pay participants 10 euros as their initial endowments. However, due to some financial limitations, the survey was distributed without any incentive for the participants. This violated the precepts of control that are required when conducting an economic experiment in microeconomic systems (Smith, 1982). As a consequence of this, subjects might not make their choices as seriously as they do in real life. In addition, the four treatments were instead tested through an external survey. In another word, they were displayed by messages directly provided to subjects and were asked to imagine themselves receiving the message form their counterparts before starting the

game. Since the experiment environment differed from the real communicating experience, results might not be as precise as what we desired.

In terms of the sample, the survey was mainly shared through the researcher's student network and peer groups, which led to an imbalance in sex ratio and a concentration of age, education level and academic background in our sample. Besides, the target sample was only limited to individuals who had a prior interest in this experiment. Last, although we chose to use a between-subject design in the experiment and paid attention to the expression to avoid demand effect, there could still be certain behavioral biases that subjects may have been inclined to provide answers that would positively reflect their perceived opinion of what the researchers desired. These limitations should be addressed in the future studies.

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Questionnaire

Dear participant,

Thank you for taking part in this survey!

My name is Jingwei Li. This survey is part of my master thesis in Behavioral Economics at Erasmus University Rotterdam. I would kindly ask you to answer each question as honestly as possible as your responses are important for me. This survey will take roughly 5 minutes to complete. The answers given will be collected anonymously and will only be used for this thesis. You can withdraw at any time and your answers will not be recorded. In case you have any questions or would like to reach me after the survey, please contact 612246jl@eur.nl.

I have read and understood the information above. I freely and voluntarily choose to participate in this survey.

☐ Yes, I consent.

☐ No, I do not consent.

First of all, you will play a classic economic game. Please read the following instruction carefully.

In this game, you will be matched randomly in groups of two in which you act the role of the investor and the other player is the allocator. You will get 10 euros first and then decide how much of the 10 euros you want to give to your counterpart, who will not get any money in the initial stage of this game. You can also choose to keep all money yourself or give them all. Each euro **given** will triple in value. Then, your counterpart will decide how much of the **tripled money** to keep and how much to send back to you, which means he or she has complete discretion over the proceeds.

For example, if you decide to give 7 euros, the 7 euros will become 21 euros first, then your counterpart may give you 0 to 21 euros. Your total income from this game is equal to the money you keep plus the money your counterpart gives back to you.

The rule of this game is common knowledge to all players. All players will remain anonymous.

Imagine the following scenario: you decided to send 3 euros to your counterpart. Which of the following amounts will you definitely NOT receive from him or her?

☐ 0

☐ 3 euros

☐ 9 euros

☐ 12 euros

If 12 euros is selected:

Unfortunately, your answer is wrong. Your possible income from your counterpart in this scenario ranges from 0 to 9 euros. Please read the instruction again carefully.

In this game, you will be matched randomly in groups of two in which you act the role of the investor and the other player is the allocator. You will get 10 euros first and then

decide how much of the 10 euros you want to give to your counterpart, who will not get any money in the initial stage of this game. You can also choose to keep all money yourself or give them all. Each euro **given** will triple in value. Then, your counterpart will decide how much of the **tripled money** to keep and how much to send back to you, which means he or she has complete discretion over the proceeds.

For example, if you decide to give 7 euros, the 7 euros will become 21 euros first, then your counterpart may give you 0 to 21 euros. Your total income from this game is equal to the money you keep plus the money your counterpart gives back to you.

The rule of this game is common knowledge to all players. All players will remain anonymous.

☐   How much are you willing to send to your counterpart?

Then, imagine that you receive a message from your counterpart **before** you start the game:

Treatment 1

Dear trustor, I know it is a little difficult for you to trust me because we hardly know each other. Nevertheless, I would like to say that trusting is the better option for us and I would be grateful for whatever you give me. I know you contribute a lot in this game and I respect your trust. So I wonder would it be an idea to share the tripled money equally. I promise I will send 1/2 of what I get back to you so that both of us will benefit from it.

Treatment 2

Dear trustor, I know it is a little difficult for you to trust me because we hardly know each other. Nevertheless, I would like to say that trusting is the better option for us and I would be grateful for whatever you give me. I know you contribute a lot in this game and I respect your trust. So I think you can gain more in this game. I wonder would it be an idea that you get the majority of the tripled money and I get the rest. I promise I will send 2/3 of what I get back to you so that both of us will benefit from it.

Treatment 3

Dear trustor, I know it is a little difficult for you to trust me because we hardly know each other. Nevertheless, I would like to say that trusting is the better option for us because the more money you give me, the more extra payoff we can get from this game. So I suggest sharing the tripled money equally. I promise I will send 1/2 of what I get back to you so that both of us will benefit from it.

Treatment 4

Dear trustor, I know it is a little difficult for you to trust me because we hardly know each other. Nevertheless, I would like to say that trusting is the better option for us because the more money you give me, the more extra payoff we can get from this game. So I suggest that you get the majority of the tripled money and I get the rest. I promise

I will send 2/3 of what I get back to you so that both of us will benefit from it.

Note: we can only provide the message for you and cannot guarantee that your counterpart will keep his or her promise.

☐ How much are you willing to send to your counterpart?

☐ What do you think is the likelihood that your counterpart will keep his or her promise?

For the following descriptions of status and behavior, please select the option that can best fits your situation.
Strongly disagree, disagree, somewhat disagree, neutral, somewhat agree, agree, strongly agree
☐ I think this message was very warm.
☐ I think this message was very encouraging.
☐ I think this message was very persuasive.
☐ I think the person sent the message was trustworthy.
☐ This message influenced my choice when considering how much to give.
☐ I was thinking more about what was suggested in the message than what I initially thought.
☐ Generally speaking, I am willing to benefit other people as much as possible.
☐ Generally speaking, I prefer a fair distribution with others.
☐ Generally speaking, I am willing to maximize the total payoffs of me and other people.

How old are you?

What is your gender?
☐ Male
☐ Female
☐ Non-binary
☐ Prefer not to say

What is your highest level of education you have completed? (If you will finish your current degree in this academic year, please choose this one.)
☐ High school
☐ Bachelor
☐ Master
☐ PhD

What is your field of study?
☐ Art
☐ Business Administration

- ☐ Computer Science
- ☐ Economics
- ☐ Education
- ☐ Engineering
- ☐ History
- ☐ Law
- ☐ Literature
- ☐ Medicine
- ☐ Natural Sciences
- ☐ Social Sciences
- ☐ Other, _____

Have you heard of trust game before?
- ☐ Yes
- ☐ No

Appendix B

<div align="center">Summary Statistics</div>

Statistic	N	%
Screener Question		
0	25	14.20
3 euros	15	8.52
9 euros	3	1.70
12 euros	133	75.57
Baseline Amount		
0	7	3.98
1 euro	4	2.27
2 euros	8	4.55
3 euros	38	21.59
4 euros	31	17.61
5 euros	52	29.55
6 euros	20	11.36
7 euros	7	3.98
8 euros	2	1.14
9 euros	1	0.57
10 euros	6	3.41
Altruism Propensity		
Strongly disagree	3	1.70
Disagree	18	10.23
Somewhat disagree	30	17.05
Neutral	40	22.73
Somewhat agree	47	26.70
Agree	34	19.32
Strongly agree	4	2.27
Inequality Aversion Propensity		
Strongly disagree	2	1.14
Disagree	4	2.27
Somewhat disagree	14	7.95
Neutral	27	15.34
Somewhat agree	32	18.18
Agree	62	35.23
Strongly agree	35	19.89
Social Welfare-Maximizing Propensity		
Strongly disagree	3	1.70
Disagree	5	2.84
Somewhat disagree	10	5.68
Neutral	33	18.75
Somewhat agree	41	23.30
Agree	54	30.68
Strongly agree	30	17.05

Age

19	2	1.14
20	6	3.41
21	8	4.55
22	37	21.02
23	75	42.61
24	24	13.64
25	10	5.68
26	4	2.27
27	3	1.70
28	2	1.14
29	2	1.14
30	2	1.14
33	1	0.57

Gender

Male	41	23.30
Female	119	67.61
Non-binary	5	2.84
Prefer not to say	11	6.25

Education

High school	1	0.57
Bachelor	74	42.05
Master	99	56.25
PhD	2	1.14

Major

Art	12	6.82
Business Administration	32	18.18
Computer Science	3	1.70
Economics	58	32.95
Education	12	6.82
Engineering	2	1.14
History	1	0.57
Law	3	1.70
Literature	7	3.98
Medicine	3	1.70
Natural Sciences	5	2.84
Social Sciences	24	13.64
Other	14	7.95

Familiarity

Yes	99	56.25
No	77	43.75

Statistic	T1		T2		T3		T4	
	N (Mean)	%	N (Mean)	%	N (Mean)	%	N (Mean)	%
Amount								
0	0	0	4	10.00	0	0	0	0
1 euro	0	0	0	0	1	2.38	1	1.82
2 euros	0	0	3	7.50	1	2.38	1	1.82
3 euros	4	10.26	2	5.00	5	11.90	13	23.64
4 euros	3	7.69	3	7.50	10	23.81	7	12.73
5 euros	9	23.08	5	12.50	7	16.67	12	21.82
6 euros	8	20.51	8	20.00	4	9.52	9	16.36
7 euros	6	15.38	3	7.50	9	21.43	5	9.09
8 euros	2	5.13	2	5.00	2	4.76	4	7.27
9 euros	4	10.26	2	5.00	0	0	2	3.64
10 euros	3	7.69	8	20.00	3	7.14	1	1.82
Probability	62.18		56.75		65.38		51.56	
Scale1								
Strongly disagree	1	2.56	1	2.50	0	0	3	5.45
Disagree	0	0	2	5.00	1	2.38	3	5.45
Somewhat disagree	2	5.13	5	12.50	5	11.90	10	18.18
Neutral	14	35.90	11	27.50	15	35.71	18	32.73
Somewhat agree	14	35.90	11	27.50	15	35.71	12	21.82
Agree	7	17.95	9	22.50	5	11.90	7	12.73
Strongly agree	1	2.56	1	2.50	1	2.38	2	3.64
Scale2								
Strongly disagree	0	0	1	2.50	0	0	1	1.82
Disagree	1	2.56	2	5.00	1	2.38	5	9.09
Somewhat disagree	2	5.13	4	10.00	1	2.38	5	9.09
Neutral	8	20.51	10	25.00	12	28.57	13	23.64
Somewhat agree	14	35.90	13	32.50	18	42.86	24	43.64
Agree	11	28.21	8	20.00	7	16.67	4	7.27
Strongly agree	3	7.69	2	5.00	3	7.14	3	5.45
Scale3								
Strongly disagree	0	0	1	2.50	0	0	2	3.64
Disagree	0	0	5	12.50	0	0	6	10.91

Somewhat disagree	5	12.82	4	10.00	4	9.52	11	20.00
Neutral	11	28.21	11	27.50	14	33.33	15	27.27
Somewhat agree	12	30.77	13	32.50	14	33.33	14	25.45
Agree	11	28.21	4	10.00	10	23.81	5	9.09
Strongly agree	0	0	2	5.00	0	0	2	3.64
Scale4							
Strongly disagree	0	0	2	5.00	1	2.38	2	3.64
Disagree	0	0	5	12.50	2	4.76	5	9.09
Somewhat disagree	6	15.38	8	20.00	6	14.29	10	18.18
Neutral	9	23.08	8	20.00	15	35.71	22	40.00
Somewhat agree	9	23.08	8	20.00	10	23.81	11	20.00
Agree	11	28.21	2	5.00	8	19.05	4	7.27
Strongly agree	4	10.26	7	17.50	0	0	1	1.82
Scale5							
Strongly disagree	0	0	1	2.50	2	4.76	1	1.82
Disagree	0	0	1	2.50	1	2.38	5	9.09
Somewhat disagree	4	10.26	3	7.50	4	9.52	3	5.45
Neutral	5	12.82	7	17.50	6	14.29	12	21.82
Somewhat agree	7	17.95	11	27.50	13	30.95	9	16.36
Agree	14	35.90	11	27.50	12	28.57	23	41.82
Strongly agree	9	23.08	6	15.00	4	9.52	2	3.64
Scale6							
Strongly disagree	0	0	1	2.50	1	2.38	3	5.45
Disagree	2	5.13	6	15.00	4	9.52	6	10.91
Somewhat disagree	3	7.69	2	5.00	4	9.52	3	5.45
Neutral	6	15.38	9	22.50	8	19.05	9	16.36
Somewhat agree	6	15.38	11	27.50	12	28.57	16	29.09
Agree	17	43.59	8	20.00	12	28.57	15	27.27
Strongly agree	5	12.82	3	7.50	1	2.38	3	5.45

Appendix C

<div align="center">Full Regression Results</div>

Variables	Amount (1)
β (style)	0.4823*
	(0.2879)
β (age)	0.2234***
	(0.0764)
β (gender)	
relative to male	
female	0.0447
	(0.3439)
other	0.2173
	(0.5637)
β (major)	
relative to Economics	
Business Administration	-0.2060
	(0.4242)
Social Science	-0.5846
	(0.4740)
other	-0.1322
	(0.3700)
β (familiarity)	0.2243
	(0.3130)
β (altruism propensity)	-0.0073
	(0.1125)
β (inequality aversion propensity)	0.1632
	(0.1161)
β (social welfare-maximizing propensity)	0.0382
	(0.1220)

Notes: Standard errors in parentheses. ***p-value<0.01, **p-value<0.05, *p-value<0.10, no asterisk: p-value>0.10.

Variables	Amount (2)
β (level)	0.2570
	(0.2952)
β (age)	0.2309***
	(0.0767)
β (gender)	
relative to male	
female	0.0305
	(0.3491)
other	0.2161
	(0.5672)
β (major)	
relative to Economics	
Business Administration	-0.2723
	(0.4243)
Social Science	-0.5485
	(0.4835)
other	-0.1292
	(0.3774)
β (familiarity)	0.2512
	(0.3154)
β (altruism propensity)	0.0012
	(0.1134)
β (inequality aversion propensity)	0.1864
	(0.1160)
β (social welfare-maximizing propensity)	0.0145
	(0.1223)

Notes: Standard errors in parentheses. ***p-value<0.01, **p-value<0.05, *p-value<0.10, no asterisk: p-value>0.10.

Variables	Amount (3)
β (style#level)	
relative to 0 0	
0 1	0.4856
	(0.3941)
1 0	0.7201*
	(0.3907)
1 1	0.6662*
	(0.4083)
β (age)	0.2186***
	(0.0767)
β (gender)	
relative to male	
female	0.0075
	(0.3478)
other	0.2273
	(0.5648)
β (major)	
relative to Economics	
Business Administration	-0.1982
	(0.4251)
Social Science	-0.4670
	(0.4847)
other	-0.0683
	(0.3771)
β (familiarity)	0.2535
	(0.3144)
β (altruism propensity)	-0.0027
	(0.1148)
β (inequality aversion propensity)	0.1686
	(0.1164)
β (social welfare-maximizing propensity)	0.0280
	(0.1225)

Notes: Standard errors in parentheses. ***p-value<0.01, **p-value<0.05, *p-value<0.10, no asterisk: p-value>0.10.

Appendix D

<div align="center">Regression Results</div>

Variables	Amount (3)
β (treatment)	
relative to treatment 1	
treatment 2	0.0539
	(0.4319)
treatment 3	-0.1806
	(0.4274)
treatment 4	-0.6662*
	(0.4083)
β (age)	0.2186***
	(0.0767)
β (gender)	
relative to male	
female	0.0075
	(0.3478)
other	0.2273
	(0.5648)
β (major)	
relative to Economics	
Business Administration	-0.1982
	(0.4251)
Social Science	-0.4670
	(0.4847)
other	-0.0683
	(0.3771)
β (familiarity)	0.2535
	(0.3144)
β (altruism propensity)	-0.0027
	(0.1148)
β (inequality aversion propensity)	0.1686
	(0.1164)
β (social welfare-maximizing propensity)	0.0280
	(0.1225)

Notes: Treatments enter as a category variable. Standard errors in parentheses. ***p-value<0.01, **p-value<0.05, *p-value<0.10, no asterisk: p-value>0.10.

Appendix E

T-Tests Results

	P	S1	S2	S3	S4	S5	S6
T1 vs. T2	0.3372	0.5422	*0.0543*	*0.0395*	*0.0201*	*0.0896*	*0.0127*
T1 vs. T3	0.4517	0.4776	0.5422	0.8935	*0.0114*	*0.0265*	*0.0188*
T1 vs. T4	*0.0064*	*0.0235*	*0.0079*	*0.0034*	*0.0001*	*0.0115*	*0.0189*
T2 vs. T3	*0.0476*	1.0000	0.2497	*0.0411*	0.8015	0.5476	0.7720
T2 vs. T4	0.2887	*0.0966*	0.5077	0.4278	0.3390	0.3931	0.7893
T3 vs. T4	*0.0002*	*0.0746*	*0.0246*	*0.0033*	*0.0670*	0.8351	0.9803

Notes: Two-sided t-test in regular. One-sided t-test in italic.