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How do different leadership styles of advice to
followers impact their levels of trust?

Author: Vasileios Karagiannis

Student Number: 613662

Supervisor: Julia Rose

Second assessor: Han Bleichrodt

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Abstract

This paper studies how the use of a directive and an empowering leadership style advice to followers would impact their levels of trust. To do that a hypothetical between-subjects design trust game was conducted, in order to compare a control, to a directive and an empowering leadership style treatment. As part of the directive and empowering leadership treatments, participants received leadership advice based on their treatment style, whereas those in the control group received no leadership input. Participants that were assigned to the leadership style treatments reported higher levels of trust, compared to the participants that were assigned to the control group. Therefore, both a directive and an empowering leadership advice style to followers positively impact their levels of trust. Furthermore, this study compared the directive to the empowering leadership style treatment to test which of the two approaches is more effective in affecting the trust levels of the followers. However, it appears that there is no statistically significant difference between them. Additionally, a final hypothesis was formed in order to determine whether followers' trust levels and their expectations of returns are positively correlated. The results were indeed in line with the last hypothesis and support a positive correlation between them.

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I. Introduction

The significance of trust in modern structured organizations has already been recognized, and trust is considered a key factor for a team's overall success and effectiveness (Costa & Anderson, 2012; Moe & Smite, 2008). Trust can be identified as an attitude or a state of mind that involves accepting vulnerability, based on positive expectations of another's intentions or behavior (Rousseau et al., 1998). Increasing trust within an organization increases the performance of its employees and its overall productivity (Zak, 2014). Additionally, in order for an organization to achieve the highest levels of success possible, high levels of trust need to be implemented in its working environment (Moe and Smite 2008). Given the abovementioned, someone can easily identify the importance of trust in several companies, organizations, and institutions nowadays. Therefore, elements that can positively influence the trust levels of the individuals can be crucial for organizations' productivity and overall success.

Leadership can be defined broadly, as the leader's ability to influence the choices of the followers (Hermalin, 1998). Prior leadership literature places a strong emphasis on how leaders can inspire followers to take actions that are beneficial to their organizations (Bass & Bass, 2009). Consequently, the importance of studying further how leadership can influence the trust levels of the followers is clear. In their study, Lorinkova et al. (2013) supported that both a directive and an empowering leadership style can influence the decision-making of the followers. A directive leadership style is a goal-driven style with the leader commanding and instructing the followers, in order to influence their behaviors. Leaders who share their power with their followers demonstrate an empowering leadership style. This style allows followers to operate more autonomously and motivate them on reaching their true potential. (Lorinkova et al., 2013; Sims et al., 2009; Pearce et al., 2003).

According to Lorinkova et al. (2013), when it comes to team performance, the directive and the empowering leadership styles have been showcased of special importance in the leadership literature compared to other styles. Furthermore, despite the extensive research and comparison of a variety of distinct leadership styles within the context of situational leadership theory, there is still much to be learned and discovered when it comes to comparing the directive and the empowering approaches (Bass & Bass, 2009; Boulu-Reshef et al., 2020). Adding to that, the trend in recent years in comparing the effects of the directive and empowering leadership

approaches cannot be overlooked (Boulu-Reshef et al., 2020; Lorinkova et al., 2013; Sims et al., 2009). A relevant and important question that arises taking everything into account is how the trust levels of the individuals can be influenced. Therefore, the given study aims to examine how these two different leadership styles of advice to followers can impact their levels of trust.

As part of this study, a hypothetical between-subject design experiment was conducted containing a control group and two leadership interventions, directive and empowering styles. This experiment was a one-shot hypothetical online trust game, and the participants had randomly been assigned either to the control or to one of the leadership treatment groups. The leadership treatment groups were containing a directive and an empowering leadership style advice message, which was nudging the participants in a specific direction, and was framed depending on the leadership treatment. Nudging had been previously used as a technique to influence the preferences of the individuals involved, hence nudge was also used in this study to influence the trust levels of its participants (Thaler & Sunstein, 2003). The control treatment subjects, participated in a trust game where they did not receive any advice (Berg et al., 1995), whereas the subjects of the two leadership treatments received either a directive or empowering leadership guidance with the aim of nudging them toward higher levels of trust compared to the control group.

This paper, extends the recent trend in the literature, by studying the impact of a directive and an empowering leadership style treatment group compared to a non-advised control group, in a between-subjects one-shot hypothetical trust game design. The results indeed indicate that the trust levels of the participants increased. This study, as well compared the directive to the empowering leadership style treatment, in order to determine which of the two approaches is the most effective in influencing the trust levels of the followers. However, no conclusions can be presented since the results were not statistically significant. Finally, a hypothesis was formed about whether the participants' trust levels positively correlated with their belief in the expected returns of the trustees ("Methodology" part 4.1 for an explanation of "trustee"). A positive correlation between participants' trust levels and their beliefs about expected returns can be critical, because individuals' expectations and beliefs can be asked and reported easily in a variety of ways, such as through surveys and questionnaires. These data can then be collected and used by third parties, and provide them with important insights in order to develop alternative strategies or conclusions that may increase the trust levels of the participants. The

findings confirmed this last hypothesis and supported this positive correlation between the participants' trust levels and their belief in the expected returns.

The present study's goal is to combine concepts of experimental economics with leadership literature in order to increase the trust levels of the participants. There are still some literature gaps to be investigated due to the leadership literature is not frequently employed in experimental economic designs. This experiment investigates one of those gaps. Interventions of the directive and empowering leadership styles, as well as leadership in general, have been used before in a public goods game design (Boulu-Reshef et al., 2020; Rivas & Sutter, 2011). Studies have also been conducted to compare the effectiveness of directive and empowering leadership in different environments (Lorinkova et al., 2013; Sims et al., 2009). However, this is the first time that the effect of the directive and empowering leadership approaches is tested in a trust game design as far as I am concerned.

II. Related Literature

2.1 The importance of Trust

Because of the diversity of its definition, trust is often viewed by researchers as a very difficult aspect to be handled in research (Misztal, 1996). Rousseau et al. (1998), claimed that scholars do not universally accept a definition of trust. However, they suggested that trust is an attitude or a state of mind that involves accepting vulnerability based on positive expectations of others' intentions or behavior. Through previous studies, when it comes to effective cooperation between groups, individuals, and organizations, it is widely known that trust is one of the most important factors (Kramer & Tyler, 1995; Handy, 1995; D.M. Rousseau et al., 1998). Focusing on global teams, Jarvenpaa, et al. (1998) observed that the teams with the highest performance are also the teams that have the highest trust levels among their members. Furthermore, Moe and Smite (2008) also experienced that a lack of trust in a team environment will decrease the quality and the productivity of this team. In line with these results, Zak's (2014) study supported that a trusting culture inside an organization directly increases the overall performance of its employees. More productivity, energy at work, and less stress have also been observed in high-trust companies compared to low-trust companies. Team trust is also perceived as a key factor when it comes to successful and effective cooperation in modern

structured organizations (Costa & Anderson, 2012). Evidence for lower levels of trust in more diverse teams, such as different departments of the same organization, or different organizations with common goals, that need to cooperate in order to fulfill a common goal, has been supported through previous literature (Ashleigh & Nandhakumar, 2007). In similar team environments, trust is viewed as a very useful tool to improve cooperation and the success of the team (Aulakh, et al., 1996; Krishnan et al., 2006; Kumar, 1996; Hosmer, 1995; Kasper-Fuehrer & Ashkanasy, 2001).

2.2 The importance of Leadership

According to Hermalin (1998), a leader is an individual whom people willingly follow, thus following should be a voluntary action. Therefore, leadership focuses on the actions that leaders need to undertake in order to persuade individuals to follow them. In this paper, leadership is defined broadly, as the leader's ability to influence the choices of the followers. In work environments leadership has been argued as one of the most important factors, while insufficient individual performances within a team, have also been linked with poor leadership (Chen & Kanfer, 2006). Based on the studies of the situational leadership theory, a leadership style should always depend on the given situation and taking always into account the context and the factors that change in these situations (Hersey et al., 1979; Hersey & Blanchard, 1984). Consequently, different leadership styles are effective in different situations. The focus of previous leadership research has been on how leaders can motivate their teams to adopt initiatives that will benefit their organizations (Bass & Bass, 2009). Therefore, leadership styles had been used before in order to influence the behavior and the decisions of the followers (Boulu-Reshef et al., 2020; Lorinkova et al., 2013; Sims et al., 2009).

2.3 Leadership and Trust

Bligh (2016) in his study about leadership and trust concluded that trust contributes a critical role in leadership and argued that "great leadership" is attributed to trust. The author identifies the significance of the role of trust in the core of the leadership theories and also indicates trust, as an essential component in developing relationships between leaders and followers (Bligh, 2016). Other studies have as well concluded that there is a positive association between trust in leadership, organizational performance, and profits (Davis et al., 2000; Simons et al., 2001). A meta-analysis conducted by Dirks and Ferrin (2002), supported that trust in leadership is a very important factor when it comes to job performance. This led them to conclude that a higher

trust in leadership increases organizational functioning. Additionally, the authors referred to empirical articles and books from 1959, to discuss the crucial role of trust in leadership, in applied psychology, and in related fields. They also mentioned studies that were focused on the importance of trust in many leadership theories, and on the leader's effectiveness (Dirks & Ferrin, 2002). Dirks in 2000 tried to find how to trust in leadership will be related to the overall performance of a team. In order to find this effect, he studied NCAA basketball teams by using survey data collected earlier in the season and by observing in which place each team finished the year. The team with the highest trust rating reached the finals this year, contrary to the team with the lowest trust score, which lost most of their remaining games. That made him conclude that trust in the coach (leader) is a very important predictor of overall team success (Dirks, 2000). Dirks and Skarlicki (2000) also suggested that group performance can be increased by individual performance, which can be impacted by the levels of trust in leadership. They also argued that in a team environment where the members trust their leader, individual motives and interests were suspended and the teams' focus was directed only to the common group goal.

III. Hypotheses Formulation

3.1 Control vs Directive Leadership Group

When it comes to directive leadership, is a leadership style that focuses more on the conformity of the follower to the leader's directives in order to reach a specific goal. Hence, these types of leaders are focusing more on giving guidance, monitoring performance, and advocating for goals, while the primary decision-making authority is the leaders themselves (Boulu-Reshef et al., 2020; Lorinkova et al., 2013). In order to influence followers' behavior, commands, directions, and assigned goals are commonly used instruments. These methods are expected to be adhered to without fail (Pearce et al., 2003). An analysis of surgeons in a trauma center was conducted by Sims et al. (2009), in order to determine the circumstances in which a directive leadership approach would be appropriate. In this case, the surgeon was the leader, the other team members were the followers, and the patients were the subjects. They suggested that a directive leadership style is appropriate to be used in situations where the team members are less experienced compared to the leader, and when there are short-term goals. They also supported that their findings can be applied in other everyday organizations, such as companies

and firms. Consequently, the initial performance of a team is higher when using a directive leadership style (Sims et al., 2009). Words like “I”, “must”, and “you”, are frequently used in directive leadership messages and their role is to instruct and guide the followers as clearer as the leader is able to, in order to reach their goal (Boulu-Reshef et al., 2020). Additionally, the directive leadership style advice message acts as a nudging technique to lead participants to higher levels of trust. Consequently, the directive leadership treatment is expected to positively affect the trust levels of the individuals compared to the control treatment.

Hypothesis 1 (H1): *Directive leadership advice will positively affect the trust levels of the individuals compared to the control treatment.*

3.2 Control vs Empowering Leadership Group

Empowering leaders are commonly focusing on building the confidence of their followers. In order to manage that, they support their ideas, providing them with authority and power in decision-making. This also provides them a feeling of responsibility and makes them feel they belong in a more autonomous environment (Arnold et al., 2000). By providing knowledge and information, empowering leaders try to motivate their followers on developing their skills and reaching their true potential (Sims et al., 2009). Empowering leaders are also known as “super leaders” according to Manz and Sims (2001). Words like, “we” and “together”, are usually used in messages of empowering leaders. These words indicate that they divide their power and responsibilities with their followers and show them support. (Boulu-Reshef et al., 2020). Empowering leadership also increases the trust and the motivation between individuals in a team (Huang et al., 2009; Lorinkova et al., 2013). In addition, the empowering leadership style advice acts as a nudging technique to lead participants to higher levels of trust. Therefore, the empowering leadership style treatment is expected to positively affect the levels of trust of the individuals compared to the control treatment.

Hypothesis 2 (H2): *Empowering leadership advice will positively affect the trust levels of the individuals compared to the control treatment.*

3.3 Directive vs Empowering Leadership Group

Lorinkova et al. (2013) studied the effectiveness of directive and empowering leadership. They hypothesized that directive leadership was more effective in the initial performance of a team

and empowering leadership was more effective in the member's improvement over time. Their hypotheses were based on previous findings, and their results were in line with their hypotheses. Additional evidence to support the previous findings was presented by Sims et al. (2009), who concluded that in short-term goals a directive leadership approach will be more effective on performance compared to an empowered one. Hence, in this experiment, considering the absence of two-way communication, and due to the one-shot game structure, the more short-term-focused and initially task-effective directive leadership style will be more effective compared to the more long-term-focused empowering leadership style.

Hypothesis 3 (H3): Directive leadership advice will increase the trust levels of the individuals more compared to empowering leadership advice.

3.4 Expectations to Return and Trust

Ashraf et al. (2006) conducted a trust game experiment and supported that individuals' expectation of return is a positive and important indicator in a decision involving trust. In other words, before making an important trust decision, an individual determines the expected return on this decision. Sapienza et al. (2013), argued that the trustors' beliefs about the amount the trustees will return to them, positively influence their levels of trust (information about "trustee" and "trustor" meaning in the "Methodology" part 4.1). Additionally, Bolle (1998) conducted a trust game experiment and supported that the individuals with higher levels of trust were also expecting higher rewards compared to people with lower levels of trust. Notable studies that previously asked trustors hypothetical questions about the expectations of the return from the trustees are Fetchenhauer and Dunning (2009), and Buchan and Croson (2004). These studies were used in order to support the hypothetical nature of the trustees in this design. According to the above-mentioned, the expectation in this experiment is that there will be a positive correlation between the trust levels of individuals and their expectations for return.

Hypothesis 4 (H4): Higher return expectations correlate positively with higher levels of trust in individuals.

IV. Methodology

4.1 Experimental Design

This study aims to find how directive and empowering leadership style advice to followers would impact their levels of trust. A hypothetical online trust game was conducted in order to measure and compare the trust levels of the participants depending on the treatment, and to find out if their trust levels correlate with their beliefs for return. To accomplish this, participants were given a text explaining the rules of this hypothetical online trust game (Appendix A) in a between-subjects design, which means that each subject was assigned to only one treatment condition. Therefore, each participant equals one observation and there are no learning confounds in this experiment.

In the original design of the game (Appendix B), a trust game is a game between two players, Player 1, which takes the role of the trustor, and Player 2, which takes the role of the trustee. Both the trustor and the trustee are receiving an initial endowment and then the trustor can choose an amount of the endowment to transfer to the trustee, this is considered the trust part of the game. Hence, that is how the levels of trust of the trustor can be measured. Initially, the amount the trustor wants to transfer to the trustee will be tripled, and then the now tripled amount will be given to the trustee. After that, the trustee chooses how much money to give back to the trustor. Thus, measuring the levels of reciprocity for the trustee. However, the trustees and the money in this study's experimental design are hypothetical, that is why the subjects were asked to answer the questions while imagining what they would have done if they were playing this trust game with real trustees and money. A hypothetical initial endowment of 400€ was given to both trustors and trustees while all of the participants were assigned to the experiment as trustors. Hence, only the trustors' moves were measured in this thesis, since the findings needed to be relevant to trust and not about the second part of the game, which is the reciprocity of the trustee. That means that the subjects were asked questions about how they would have reacted as the trustors, but always given the concept of the original trust game, imagining that the trustee will then can keep the money or decide how to split the amount between the two Players.

The experimental design of this study was influenced by Thielmann et al. (2016), whom they conducted a hypothetical trust game, similarly to this paper, and Berg et al. (1995), who initially

designed the original trust game (see Appendix B for a detailed explanation). The unique subgame perfect Nash equilibrium solution in the original trust game is for every trustor to give nothing to the trustees, hence in this game a self-interested (rational) behavior is for every trustor to give nothing to the trustee. However, previous studies provided evidence that trustors do not always choose the selfish option (Berg et al., 1995; Sapienza et al., 2013; Asanov & Vannuccini, 2015). The non-selfish actions of the trustors in a trust game can be explained by factors such as the trustors' beliefs, preferences, or treatment interventions that can encourage trust as mentioned above.

After the game was explained to the subjects (Appendix A), each of them was randomly assigned to one of the three treatments. Subjects who were assigned to the control treatment did not receive additional advice on how to proceed with the game as the trustors. Hence, they reported the amount of money that they trust to the trustee without getting affected by nudging, like in the leadership treatment interventions. Participants in the directive leadership treatment received the following message: “Imagine a situation where you receive the following advice: You should act in a way to generate high earnings for both of you. It is a clear strategy to act fair so that you all achieve a better outcome. Player 2 has received the same message.”. Finally, the participants who were allocated to the empowering leadership treatment received a message framed as: “Imagine a situation where you receive the following advice: Working together, you can generate high earnings for both of you. To act fair is supporting each other so that you all benefit from achieving a better outcome. Player 2 has received the same message.”. It was extremely important to structure the leadership messages carefully, with only the leadership style varying from one message to another. Consequently, when comparing the effect of the treatments, the leadership interventions would be responsible for each difference in results between them. Looking closely at the messages, the specific framing of different words in the sentences indicates the leadership style.

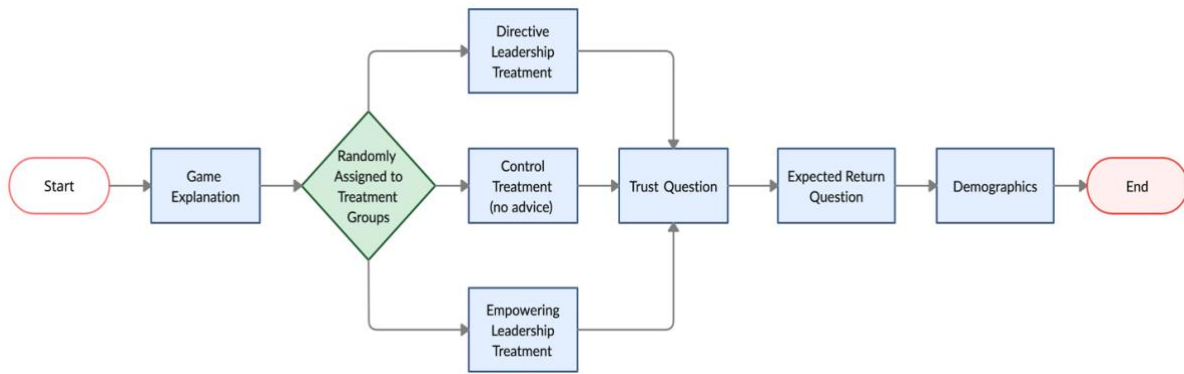
More specifically, “you should” was also used by Boulu-Reshef et al. (2020) for their directive leadership messages, and similar wording such as “you must” or “you need to” was used in Lorinkova et al. (2013) study. “Clear strategy” and “you should” are some other framing of words that were used by Boulu-Reshef et al. (2020) and also strongly indicate instructions and commands, which is a common style for directive leadership. In contrast, “working together” is a way to indicate empowering leadership and has been previously used as framing empowering leadership messages in the studies of Lorinkova et al. (2013) and Boulu-Reshef

et al. (2020). Structuring the message by using “supporting each other” gives the trustor the perception of “we”, which according to Boulu-Reshef et al. (2020), such as “together” is a commonly used word in empowering leadership and also has been used in other studies (Lorinkova et al., 2013; Boulu-Reshef et al., 2020). “Benefit”, is a word that was repeatedly used by Lorinkova et al. (2013) in their empowering messages and also provides knowledge and information to the subjects, which is a common method to motivate them to reach their true potential (Sims et al., 2009). In both messages “Player 2 has received the same message”, was used to make it clear that the same message was hypothetically sent to the trustee and set expectations for the trustor about the trustee’s behavior.

Following that, in the next stage of the game, all the participants were asked two same questions independently of the treatment. The first question was intended to measure the trust levels of the participants: “In the described situation, how much of the 400€ that you received would you be willing to give to the other player?”, and the second question helped me find the subject’s beliefs on trustees expected returns: “In the described situation, how much money do you expect to receive back from the other player? Remember, the other player receives three times the amount you gave to them (the amount in €)”. After that, the subjects were asked some demographic questions, plus a question on where they received the link for the experiment, and then the experiment was finished. A graphic representation of the experimental design of the study is presented in Figure 1. The first question was answered by the subjects by using a slider that contained values from 0€ up to 400€ as possible answers. The choice of measuring the trust levels in the continuous scale compared to a Likert scale was made in order to prevent loss of information through the subjects’ answers. A continuous scale is also more detailed and gives the option to the subjects to express their specific amount of money preferences that they would want to trust. In the second question, the expected return amount was measured on the continuous scale, due to the reasons abovementioned. However, this time the slider was containing values from 0€ up to the maximum of 1,200€. This was done in order to place a manipulation check on the second question of the experiment. Therefore, subjects were able to expect money from the trustees that were not feasible to be asked taking into account the rules of the game. Participants that did not pass the manipulation check were dropped. When participants were answering the trust and the expected return questions a simple but helpful graphic explanation of the game was also presented to them in order to remind them how the game was supposed to be played (Appendix C). Using the slider provided the experiment with

some form of continuous interactivity, and the use of the slider plus explanations of the game (Appendix C) was used as a way to make the rules of the game clearer to the participants.

Figure 1: *Graphic illustration of the experiment*



The experimental design of this study was influenced by Thielmann et al. (2016), whom they conducted a hypothetical trust game, similarly to this paper, and Berg et al. (1995), who initially designed the original trust game (see Appendix B for a detailed explanation). The unique subgame perfect Nash equilibrium solution in the original trust game is for every trustor to give nothing to the trustees, hence, the self-interested (rational) behavior is for every trustor to give nothing to the trustee. However, previous studies provided evidence that trustors do not always choose the selfish option (Berg et al., 1995; Sapienza et al., 2013; Asanov & Vannuccini, 2015). The non-selfish actions of the trustors in a trust game can be explained by factors such as the trustors' beliefs, preferences, or treatment interventions that can encourage trust as mentioned above.

This research was conducted to study if the use of nudging leadership style advice treatments (directive and empowering) influences the trust levels of the followers compared to a control treatment. During the experiment the participants played a one-shot trust game in a between-subjects design, to eliminate all mechanisms that sustained investment without trust, including repeated interaction, precommitments, potential punishments, reputations, etc. (Berg et al., 1995). In the treatments, there is no communication neither between the leader and the Players, nor between the players. However, in the leadership treatment groups, there is a message that advises the followers/trustors in the hypothetical scenario. Depending on the answers of the

followers/trustors the effect on trust of the leaders' interventions (directive, empowering) was revealed.

4.2 Hypothetical vs Incentivized trust games

Economic games, similar to the trust game are well-established methods of measuring individuals' prosocial behavior and actions like trust (Thielmann et al., 2016). Modeling situations in which the participants of the games need to make choices and state preferences, Economic games create the opportunity for the experimenters to observe the "actual behavior" of the subjects (Baumeister et al., 2007). Incentives and more specifically, monetary incentives are used in Experimental Economics to motivate the subjects to act as they would have behaved in a real-life situation. Previous studies support according to Thielmann et al. (2016), that people in reality usually act more selfishly and less prosocial. In absence of incentives and motives, there is a tendency to over-reporting prosocial behavior according to Balci and Dunning (2008). However, the studies of Thielmann et al. (2016) and Buchan and Croson (2004), found that the subjects who participate in either hypothetical or incentivized trust games, report almost similar levels of trust. The incentivized games in both of these studies, where games took place with real money at stake, contrary to the hypothetical games in which hypothetical money was at stake. More specifically Buchan and Croson (2004), compared the trustor's level of trust in a hypothetical trust game with their levels of trust in an incentivized trust game. The levels of trust in the hypothetical and the actual game were almost similar. Hence, they concluded that their results suggested that using a hypothetical trust game is a good measure of actual behavior. In the case of Thielmann et al. (2016), they also formed a hypothetical and incentivized trust game in order to test their effect on the trust behavior of their subjects. Again, the trust levels of the trustee are identical in the hypothetical and the actual trust game, when the anonymity of the participants is held constant. Concluding, previous studies have compared hypothetical with incentivized trust games and found similar effects on the trust levels of their subjects. Therefore, the validation of the hypothetical nature of the current game has previously been supported by other studies.

4.3 Choice of Demographic variables

For the choice of the demographic questions, I was initially motivated by the study of Thielmann et al. (2016) that had previously conducted a hypothetical trust game experiment. The demographic data, which were used as controls in their study were: age, gender,

educational level, and occupation/employment (student, working, etc.). For the final choice on which of them will be used in the current experiment, literature relevant to trust and the previously mentioned variables were used to detect potential correlations. More specifically, previous literature suggests that age, gender, educational level, and occupation are all variables that can affect trust levels (Van den Akker et al., 2020; Sapienza et al., 2013; Buchan et al., 2008; Leigh, 2006; Holm & Nystedt, 2005; Camerer, 2003). Consequently, demographic questions about, age, gender, educational level, and occupation were asked to the subjects of this experiment.

4.5 Sample

The implementation of leadership treatments (empowering, directive) in a trust game is an unknown ground, and no previous studies have been conducted to find their effects. The effect size (d), the power ($1-\beta$), and the significance level (α) are the factors that determine the sample size calculation and the power analysis (Kang, 2021). In order to find an acceptable effect size (Cohen's d) for a priori power analysis in G*Power, logic and prior expectations while forming the hypothesis were used to determine it.

According to Cohen (1988), a generally accepted minimum level of power and Type 1 error is 0.80 and 0.05 respectively. Using Cohen's study (1988) as a benchmark, an effect size of $d = 0.2$ is considered "small", $d = 0.5$ is considered "medium", and finally $d = 0.8$ is considered "large". Effect size indicates the strength or difference between two relationships and represents the minimum clinically meaningful difference between them (Kang, 2021). For example, a large effect size indicates a large difference in means in case the standard deviation is not very low or a very low standard deviation in case there is not such a large difference in means.

For the comparison between the control with the directive leadership group, and the control with the empowering leadership group respectively, due to the nudging leadership advice, both the leadership treatments' mean trust levels are expected to have a large difference compared to the mean of the control group. Hence, a large effect size ($d = 0.8$) was used for these two comparisons. More specifically, a power analysis using the G*Power tool suggests a sample size of 27 participants for the control group and 27 for each of the two leadership treatment groups respectively (Figure D1). These results were proposed by adding in the input parameters

of the power analysis an effect size (Cohen's d) of 0.8, 80% power, $\alpha = 0.05$, and two-tailed.

For the comparison between the directive with the empowering leadership treatments, the fact that the directive leadership advice is expected to be more effective in increasing the trust levels of the participants, compared to the empowering leadership advice was taken into account. However, since both the treatments are expected to positively influence the control treatment the difference in means is expected to be small, and large sample size is expected to be needed. Therefore, a small effect size ($d = 0.2$) was used for the second power analysis. More specifically, the power analysis was conducted again using the G*Power tool, which suggested a sample size of 412 participants for each of the directive and the empowering leadership group (Figure D2). These results were proposed by adding in the input parameters of the power analysis an effect size (Cohen's d) of 0.2, 80% power, $\alpha = 0.05$, and two-tailed.

4.4 Participants

The subjects participated in an online hypothetical trust game experiment that took place in Qualtrics XM and were informed through online platforms (LinkedIn, Instagram, etc.), friends, or Survey Swap. This experiment was conducted over a period of almost a month, from the 10th of May 2022 to the 9th of June 2022, and could be answered by using a mobile phone, tablet, or PC device. In order to check for potential impact on the results and data, a question was asked about how the participants were informed and received the link for the experiment. Everyone could be eligible to participate in this experiment, and subjects who wanted to participate needed to first consent before taking part in it. Reading and understanding the rules of the game, as well as answering the questions, should have taken approximately 4 to 5 minutes for the subjects.

The initial number of people who clicked the link to participate in the experiment was 244. However, 3 of them did not consent to continue, hence 241 agreed to participate. After that, 4 observations from participants were younger than 18 and were dropped due to ethical reasons, 41 were dropped because their demographic questions were unanswered, or they did not answer the "trust" or "expected return" questions related to their treatment. Hence, they did not finish the experiment. Finally, 30 participants were dropped due to their failure to pass the manipulation check. Consequently, the final sample that was used for the analysis was 166

observations. In addition to that, a robustness test was also conducted. To conduct the robustness test, 38 observations were dropped, which were the participants that did not answer the “trust” and the “expected return” question. Therefore, their trust levels and their expectation for return cannot be analyzed. The robustness test was conducted with 206 participants, in order to observe if similar results would be indicated in absence of the dropping observations.

Taking into account gender, 52.41% of the total participants were females, 46.39% were males, 0.6% were non-binary gender, and 0.6% did not want to answer this question¹ (Table E1). When it comes to the completed educational level, 42.77% of the participants had completed tertiary education, 31.93% had completed a Master’s or Ph.D. degree, 24.77% had completed secondary education, and none of the participants had only completed primary education (Table E2). For their occupation, 53.01% of the subjects were students, 23.49% had a job, 20.48% were working students, and 3.01% were unemployed (Table E3). 46.99% of the subjects received the link to the experiment through Survey Swap, 46.99% of the subjects received it through a friend, and 6.02% received it through a social media platform (Table E4). The mean age of the participants was 25.81 years old, with a minimum age of 18 years old, a maximum of 61 years old, and a standard deviation of 7.24 (Table E5).

4.5 Trust and Expected Return Variables

As part of the experiment, participants answered a “trust” question, which measured their trust levels, and an “expected return” question, which assessed their expectations regarding the trustee's return. Based on the three treatments used in this experiment, six variables were generated, one for each type of treatment, three measuring the trust levels of the participants, and three measuring the participants’ expectations regarding the trustee's return. These variables were generated in order to make comparisons between the treatments when it comes to the participants' trust levels and their expectations regarding the trustee's return.

¹ In the variable “gender”, one subject identified as non-binary and another subject did not want to answer the question. The observations were excluded for both answers to examine if the results would be affected. However, no difference was observed in the result prior and following the exclusion of the observations.

Table 1

Variable	Obs	Mean	Std. Dev.	Min	Max
directive	55	195.91	113.78	0.00	400.00
empowering	60	223.27	110.32	0.00	400.00
control	51	140.57	99.52	0.00	400.00
directiveexp	55	378.40	295.18	0.00	1200.00
empoweringexp	60	408.18	291.93	0.00	1200.00
controlexp	51	223.63	199.70	0.00	900.00
trust	166	188.80	112.95	0.00	400.00
expreturn	166	341.61	278.28	0.00	1200.00

Notes: In the first three lines, this table provides the summary statistics of the “trust” question variables depending on the treatment. The next three lines follow the summary statistics of the “expected return” question variables depending on the treatment. The final two lines provide the summary statistics of the variable trust and expected return.

Trust Questions: For the control treatment, a variable named “control” was generated in order to measure the trust levels of the participants who were assigned to the control group. This variable contains 51 observations with an average trust of 140.57€. Identically, two other variables named “directive” and “empowering” were generated to measure the trust levels of the participants that were assigned to the directive and empowering leadership treatment respectively. The “directive” variable contains 55 observations with an average trust of 195.91€, and the “empowering” variable contains 60 observations with an average trust of 223.27€. All these variables had a common minimum trust value of 0€, and a common maximum trust value of 400€. Finally, the trust levels of all participants were collected into a variable called "trust". 166 participants answered the “trust” question with a minimum trust value of 0€, a maximum of 400€, and an average trust value of 188.8€ (Table 1).

Expected Return Questions: For the control, the directive, and the empowering treatment, three variables named “controlexp”, “directiveexp”, and “empoweringexp” were generated. Each of these variables measures the participants' expectations to return from the trustees, depending on the treatments that the participants were assigned. “controlexp” contains 51 observations with an expected return mean of 223.63€, the minimum expected value of 0€ and a maximum of 900€. The “directiveexp” variable contains 55 observations with an average expected return of 378.4€, and the “empoweringexp” variable contains 60 observations and an average expected return of 408.18€. Both of the leadership variables have a minimum expected return value of 0€ and a maximum of 1200€. Afterward, a variable named "expreturn" was generated, which contained the participants' expectations regarding the return from the trustees regardless of the treatment. 166 participants answered the “expected return” question with a

minimum expected return of 0€, a maximum of 1,200€, and an average of 341.61€. This variable was designed to test whether participants' expectations of the trustee's return have a positive correlation with their trust levels (Table 1).

4.6 Analysis of the first 3 Hypotheses

In this experiment, to analyze the data, the STATA statistical software package was used. In order to test for the three first hypotheses (H1, H2, H3), a Mann-Whitney U test was conducted (Mann & Whitney, 1947). Known also as the Wilcoxon rank-sum test, the Mann-Whitney U test measures differences between two independent groups, using variables measured on at least an ordinal or continuous scale, without requiring that the samples be large or normally distributed (Mann & Whitney, 1947; Wilcoxon, 1945). By conducting a Shapiro-Wilk test (Table F1) it was observed that the dependent variable “trust”, which indicates the trust levels of the participants, is not normally distributed. Further graphic support was also provided by the Histogram (Figure F1). Taking into account the distribution, a non-parametric test needed to be conducted. The Mann-Whitney U test is a non-parametric test, and non-parametric tests are necessary to be used when there is an asymmetry in the distribution of the sample. The non-parametric tests do not imply that the tests are free of parameters, but rather that the parameters are flexible and not predetermined (Nachar, 2008). Finally, the Mann-Whitney U test is a commonly used test to detect whether two samples come from the same population. The test looks at differences in distributions but it very often has been used to detect differences in averages or medians (Nachar, 2008; Kasuya, 2001). A variable “treatment”, which indicated the two treatments that were used in each Mann-Whitney U test, was used as the dichotomous variable (Appendix G).

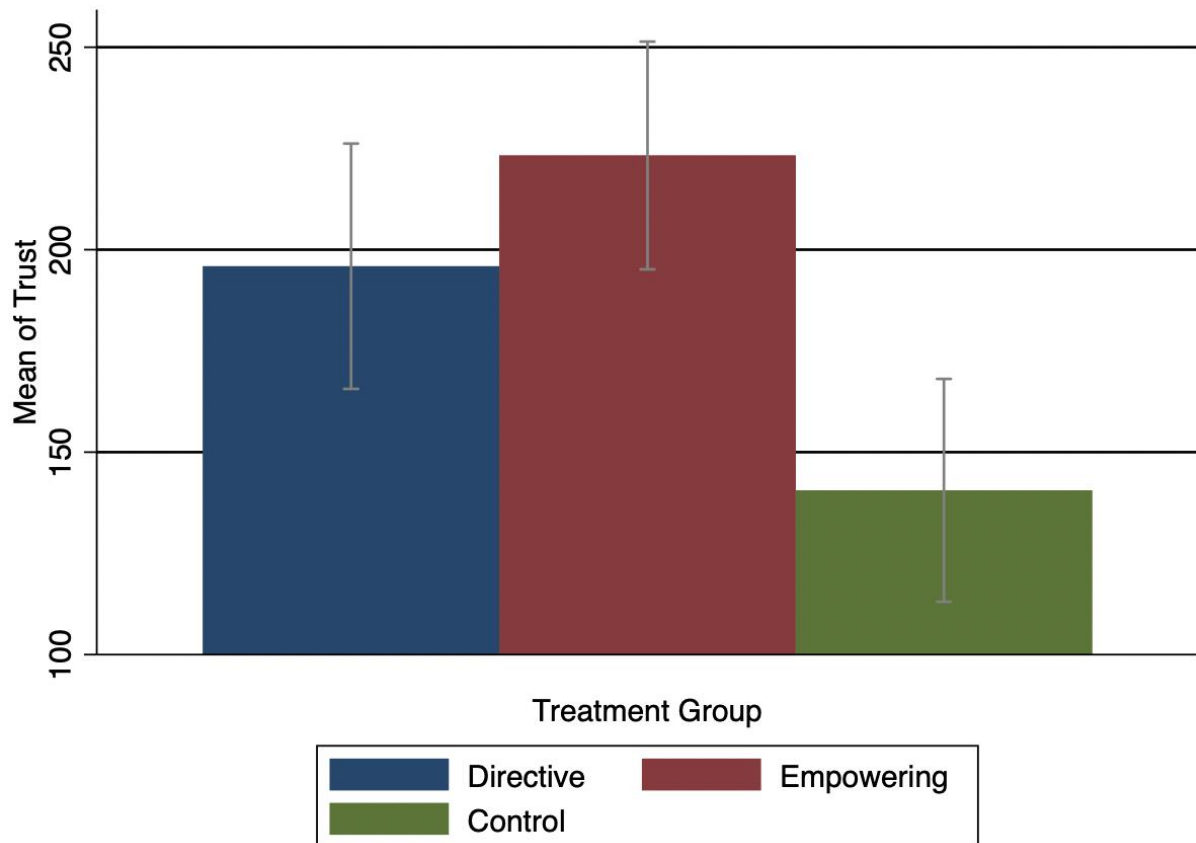
For the Mann-Whitney U test to be performed and to determine whether the two groups come from the same population and have the same distribution, three conditions must be met (Nachar, 2008; Mann & Whitney, 1947; Wilcoxon, 1945). Additionally, a fourth condition must also hold for the Mann-Whitney U test to be valid as a test for detecting differences in the medians between two groups (Divine et al., 2018). This study fulfills all these prerequisite conditions, consequently, the null (H0) and the alternative hypothesis (H1) were performed as a test for detecting differences in the medians of the groups. More detailed information about the conditions, arguments for using the Mann-Whitney U test, what this test detects, and an overview of the distributions can be found in Appendix H.

4.7 Analysis of the 4th Hypothesis

In order for the fourth hypothesis (H4) to be analyzed, Spearman's rank-order correlation method was conducted using the STATA statistical software package. Spearman's rank correlation coefficient is a non-parametric method that measures the strength and the direction of the monotonic correlation between two ranked variables (Spearman, 1904; Gauthier, 2001; Astivia & Zumbo, 2017). The variable "trust" is not normally distributed as mentioned before (Figure F1, Table F1) and the variable "expreturn" is not normally distributed either (Figure F2, Table F1). Hence, such a non-parametric method perfectly fits to be used in the given distribution. More detailed information about the requirements for using Spearman's rank-order correlation method is presented in Appendix I.

V. Results

Figure 2: *The mean of the trust levels depending on the treatment (Bar Graph)*



Notes: The Bar graph includes bars to visualize the difference in means between the trust levels depending on the treatment. The bar graph also includes the error bars that graphically show the confidence interval in each of the treatment groups.

In order to test the first three hypotheses, a separate Mann-Whitney U test was conducted for each of them, to compare the two treatment groups to the corresponding hypothesis. A graphic illustration of the difference in the average trust level in each treatment can be viewed in Figure 2. To further validate the findings for all the (four) hypotheses, a robustness check was included, where its results were compared to the original experimental design. The robustness check consisted of performing the same analysis as the original experiment, but also adding observations that were previously had been dropped for the original analysis (Methodology part 4.4 for a detailed explanation).

Initially, the first hypothesis (H1), on whether a directive leadership message will positively affect the levels of trust of the individuals compared to the control treatment was tested. This test was conducted on 106 individuals overall, with 55 observations in the directive leadership

group and 51 in the control group. The median of the trusted euros in the control treatment is 100€ compared to the directive leadership treatment, which is 200€ (Table J1). These medians are significantly different with a p-value = 0.006. Hence, the null hypothesis that the medians of the two respective samples are not different is rejected. The robustness check conducted is also in line with these findings (Table K1). Concluding, a directive leadership style of advice positively impacts the trust levels of participants compared to no advice at all.

Afterward, a test for the second hypothesis (H2), which supports that an empowering leadership message will positively affect the levels of trust of the individuals compared to the control treatment was conducted. The overall number of participants was 111, 60 subjects were assigned to the empowering leadership style treatment and 51 to the control treatment. The median of trusted euros in the control treatment is 100€ compared to the directive leadership treatment, which is 200€ (Table J2). The medians are significantly different, with a p-value = 0.000. Hence, the null hypothesis that implies that the medians of the two groups are not different is rejected again. The robustness check that was conducted also supports the previous findings (Table K2). Consequently, the second hypothesis is not rejected, and an empowering leadership style of advice positively affects the trust levels of individuals compared to no advice at all.

For the third hypothesis (H3), it was expected from the directive leadership messages to increase the trust of the individuals more compared to the empowering leadership messages. The overall participation for this hypothesis was 115 subjects, from them 60 were assigned to the empowering leadership style treatment and 55 to the directive leadership style treatment. The median of trusted euros in the empowering leadership treatment is 200€ compared to the directive leadership treatment, which is also 200€ (Table J3). However, the p-value = 0.283, hence, there is not sufficient evidence to support a difference between the medians of the two treatments, and the null hypothesis that states that the medians of the two groups are not different is not rejected. The robustness check indicates the same results as the original experiment (Table K3).

Finally, for the fourth hypothesis (H4), Spearman's rank-order correlation test was conducted. The fourth hypothesis was supporting that people with higher expectations of return also have higher levels of trust. The number of observations that were used to test this hypothesis was 166. The Spearman's rho (ρ) = 0.876, which indicates a very strong monotonic relationship

between the variables, with a p-value < 0.001 . Hence, the effect is statistically significant at the 5% significance level. Therefore, the null hypothesis that the two variables are independent is rejected. A graphic illustration of this effect can be observed in the scatterplot (Figure I). The robustness check also supports a lower but strong and positive correlation between the trust levels and the expectations of return from the individuals with a rho (ρ) = 0.787. This effect is statistically significant at the 5% significance level.

VI. Discussion and Limitations

6.1 Discussion

Taking into account the results for the first (H1) and the second hypothesis (H2), this study successfully provides evidence to support that a directive or an empowering leadership style of advice positively impacts the trust levels of the followers compared to the control group. However, not every hypothesis of the current study was confirmed. In the third hypothesis (H3), it was expected from the directive leadership treatment to increase the trust levels of the individuals more compared to the empowering leadership treatment approach. Nevertheless, the results implied that there was not sufficient evidence to support this hypothesis. The inability to confirm the third hypothesis may be due to the fact that the participant that took part in this experiment were not enough. It is worth mentioning now, that the only treatment that fulfilled the power analysis sample size, was the control treatment. The power analysis indicated that 27 observations were required for the control group, and in this study, the control group observations were nearly doubled (51). However, the sample sizes for both the directive (55) and empowering (60) leadership treatments were insufficient to meet the power analysis's recommended number of 412 observations in each group.

Another explanation could be the literature that was used as benchmarks in this study to form the hypothesis itself. Because there is a lack of literature when it comes to the trust game design with leadership interventions, the hypothesis was formed by the studies of Lorinkova et al. (2013), and Sims et al. (2009). These studies were not focused on a trust game, whether they were suggesting that directive leadership is more effective compared to empowering leadership in the initial performance of a task and for short-term goals. Given the one-shot structure of the experiment, the experiment is both short-term and the decision of the subjects was made in the

initial phase of the game. Hence, that's how the third hypothesis was formed. In spite of the fact that the third hypothesis was rejected, I still believe that it is possible for the directive leadership treatment to be more effective in increasing the trust levels of the individuals compared to the empowering leadership treatment. Hence, I do not believe that the result that this study supports is a null finding for the third hypothesis. As mentioned before the number of participants in each of the leadership groups was not the desired, hence potential power problems hold in this study. Furthermore, by investigating deeper into the demographics of the participants an indication of selection bias can be observed (see Limitations for a more detailed explanation). Concluding, I consider that the above-mentioned factors may have influenced the third hypothesis findings.

Lastly, the fourth hypothesis (H4) was in line with the results of this study. The fourth hypothesis implied that people with higher expectations of return also have higher levels of trust. This hypothesis was formed by the studies of Ashraf et al. (2006), Sapienza et al. (2013), and Bolle (1998), who supported a positive correlation between the trust levels of the individuals and their beliefs on trustees' expected returns.

6.2 Limitations

Nonetheless, these results must be interpreted with caution and a number of limitations should be borne in mind. Because of the insufficient resources and facilities, the hypothetical design of this trust game is the initial limitation that should be mentioned. Following that, the lack of literature background on testing leadership interventions in trust game environments led this study to sometimes stand on unknown ground. The lack of previous studies on this topic, despite providing the motivation for this study to be conducted, restricted the third hypothesis formulation, and the methodological decision when it comes to the calculation of the power analysis. The lack of a sufficient sample size for the leadership treatments is also another limitation that is worth mentioning. In addition, selection bias was also observed in some of the participants' demographics. Finally, the choice of measuring the participants' trust levels and expectations of the trustee's return on a continuous scale using a slider even though it has some benefits, also comes with some drawbacks. However, I do not expect that to be a real problem when it comes to my results.

Previously conducted studies have supported over time that in a trust game design similar results can be drawn, by conducting a hypothetical compared to a non-hypothetical, incentivized trust game (Thielmann et al., 2016; Buchan & Croson, 2004). However, this specific trust game design with the two leadership interventions should be interpreted carefully before future studies to provide additional support and information on this topic are conducted. A real money design could make the subjects' decisions more selfish, less prosocial, or change their overall behavior and strategy in the game (Balcetis & Dunning, 2008; Thielmann et al., 2016). More specifically, I consider it possible that a real money design, can increase the stakes of the experiment and the decision of the participants can affect their real-life money situation. Therefore, the participants may focus more on following a more goal-driven and concise directive leadership advice, compared to an empowering style. By increasing the stakes of the experiment, the subjects may become more nervous, and be easier for them to follow more clear advice and directions that a directive leadership style provides them with, as opposed to an empowering leadership style that divides the power and the responsibility for the decision.

Conducting this novel trust game experiment with the leadership interventions came with some difficulties in the formulation of the third hypothesis, as far as some methodological decisions. Given the fact of the unknown and non-studied effect of both the directive and the empowering leadership styles on the trust levels of individuals, the formulation of the third hypothesis was based on more broad concepts that previous studies concluded. Then, common ground was found with these studies to form the hypothesis. For example, the effectiveness of directive compared to empowering leadership style in initial performances and in short-term goals were in line with the one-shot nature of this experiment's design (Lorinkova et al., 2013; Sims et al., 2009). Therefore, the third hypothesis was formed. The methodological difficulty, which was faced in this study happened while trying to conduct an a priori power analysis with G*Power. Using this technique, it can be determined, which is the proper sample size for each treatment group so that the analysis can take place. It is required that the effect size (Cohen's d) be completed in advance in order to conduct this analysis, and its value is based on previous literature and similar studies conducted in the past. However, due to the uniqueness and the novelty of the experiment, there was no theoretical background on which to base the effect size (d). Consequently, the effect sizes (d) that were used were calculated by using logical assessment when it comes to differences in the effect expectations comparing the treatments. This could possibly lead to wrongly used effect sizes for the power analysis, hence the wrong sample sizes calculations for the treatments. Another limitation that should not be overlooked

is that despite the fact that three of the hypotheses were not rejected, and that this study reached an answer to its original research question, the number of sufficient participants according to the power analysis was never achieved.

Selection bias was another limitation that was observed in some of the demographic variables in this study. Taking into account that the mean age of the participants was close to 26 years old, the majority of those who took part in this experiment were either students or young professionals just starting out in their careers. This can also be supported considering their occupation, as nearly 75% of the responders were students. Potentially, the young age, or student characteristics of the participants such as immaturity, low professional experience, and bad perception of straight directions compared to empowering advice, may influence the results. It can also be observed that almost 75% of the participants had completed at least tertiary education, which suggests that most participants were highly educated. Due to their higher education, these individuals may feel that directive advice are less acceptable compared to empowering one.

Lastly, the use of a continuous scale compared to a Likert scale measurement, despite being more precise, also expects the subjects to be certain about the specific amount that they prefer to choose. However, this may have caused difficulties for some subjects considering that they were unable to think of a specific number that fulfills their true preferences. A Likert-scale measurement could be easier to understand by some subjects and may feel easier for them to express their preferences. The use of the slider also comes with a more technical challenge, such as the difficulty for the subjects to choose the exact value that they want to report. This difficulty applies mostly to the subjects who took part using a mobile phone, where the small screen possibly made it difficult to choose a specific amount. However, the measure is just slightly noisy, with the subjects being able to still report somewhat close to their true preference, and their reports are not biased in a particular direction. Consequently, there does not seem to be an issue with the results.

Future research needs to be conducted to find how a directive and empowering leadership style impacts the trust levels of an individual since this is the first study that approaches a trust game with leadership interventions. The initial suggestion would be for an incentivized trust game design, a similarly designed experiment but with real money. Conducting an incentivized trust game can also lead to a comparison between the two studies to test for the similarity of the

results between the hypothetical and the non-hypothetical trust games with leadership interventions. Similar results are expected for the fourth hypothesis by conducting an incentivized compared to this (hypothetical) trust game. However, different results are expected for the first three hypotheses due to the increase in the stakes of an incentivized experiment. By adding real money to this experimental design, the first two hypotheses are expected to have the same sign as in this hypothetical design, but their size is expected to be different. More specifically, in the incentivized experiment a higher increase in the participants' trust levels (control group) when implementing the directive treatment style compared to this hypothetical design is expected. In contrast, a lower increase in the participants' trust levels (control group) is expected when implementing the empowering leadership approach. Finally, different results are also expected for the third hypothesis, where the directive leadership approach is expected to influence the trust levels of the followers more compared to the empowering leadership style.

Furthermore, certain demographics that got derived from this experiment indicated that there was a selection bias among participants. Future research is proposed to be conducted by specifying a target group or seeking participants from a wider range of backgrounds, in order to eliminate selection bias. In absence of selection bias, I expect a higher median for the directive treatment and a higher median difference overall between the control and the directive groups. In contrast, I expect a lower median for the empowering treatment and a lower median difference overall between the control and the empowering groups. When it comes to the third hypothesis, in the absence of selection bias, higher levels of trust are anticipated from the followers for the directive compared to the empowering leadership treatment.

Finally, a sufficient number of participants is also suggested for a future extension of this experiment. By conducting a study with sufficient sample size, I do expect the same results in the first two, and the fourth hypothesis, however, I do not expect the same results for the third hypothesis. More specifically, I expect statistically significant results to support the third hypothesis that directive leadership advice will increase the trust levels of the individuals more compared to empowering leadership advice.

VII. Conclusions

According to the findings of this study, either a directive or an empowering leadership style advice will enhance an individual's trust levels. Moreover, it corroborates previous studies that indicated a positive correlation between individuals' trust levels and their expectations of reward (Ashraf et al., 2006; Sapienza et al., 2013; Bolle, 1998). However, this study compared the two leadership style treatments and was not able to distinguish which of the two leadership styles was more effective in increasing the trust levels of the followers. As a result of the current experiment, the direction and opportunities for studying while combining leadership with experimental economics have been expanded and new and valuable findings have been produced. In addition, more exploration of trust game designs is possible since the literature background hasn't yet been fully utilized despite being applicable to a range of purposes. The increase in individuals' trust may be possibly increased by increasing their expectations of reward, and vice versa, however, this is not the first study that approached this topic.

In order to eliminate mechanisms that sustained investment without trust, such as repeated interactions, precommitments, learning confounds, etc., this study conducted a one-shot trust game in a between-subjects design experiment (Berg et al., 1995). The results of this experiment can be used in practice by companies, organizations, and other institutions in order to increase the trust levels of their employees, but always with caution since this study was conducted with limitations and given a specific experimental design. Directive or empowering leadership advice by employers or other decision-makers within the company (leaders) can potentially increase the trust levels of the employees (followers) compared to no advice at all. In addition, given the positive correlation between individuals' levels of trust and their beliefs about expected returns, decision-makers should find ways to raise followers' expectations for rewards, which may lead them to higher levels of trust. For such institutions, increasing the employees' trust levels can be essential for their success. Previous studies have supported that increasing trust levels among employees can improve cooperation between and within the team members, employees' productivity, and the team's overall performance (Hosmer, 1995; Kasper-Fuehrer & Ashkanasy, 2001; Costa & Anderson, 2012; Zak, 2014). Due to the one-shot nature of the experiment, the nudging advice techniques of the directive and empowering leadership that were used in this study are most appropriate for short-term tasks within these organizations.

Concluding, this study supports, a nudging implementation of leadership advice, either directive or empowering, to increase the trust levels of individuals, and a positive correlation between individuals' trust levels and their expectations of reward. However, it was not possible to identify which of the two leadership styles (directive or empowering) advice increases the trust levels of the followers more, hence which leadership style is more appropriate for implementation in this methodological design.

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IX. Appendices

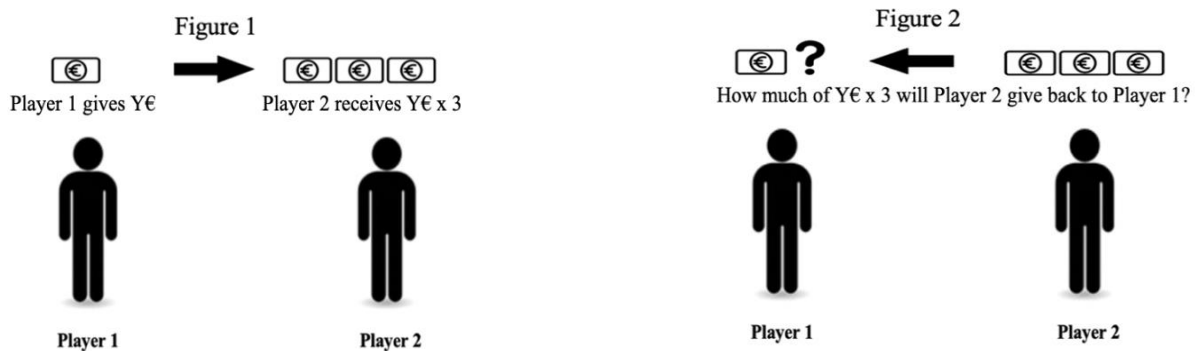
Appendix A

Rules:

“Imagine you are playing a game with an anonymous and randomly assigned person. You have been randomly assigned to the role of Player 1, and the other player is Player 2. These are the rules of the game.

You will act in the role of Player 1. You and Player 2 receive an endowment of 400€. From this endowment, you can decide to give any amount between and including 0€ and 400€ to Player 2. If you decide to give 0€, the game ends and you receive a hypothetical payment of 400€. If you decide to give any amount of this money to Player 2, the amount will be tripled and given to Player 2 (Figure 1). Now, Player 2 can decide to give you back any amount of the money received, which includes sending nothing back to you (Figure 2). After Player 2’s decision the game ends.”

Graphic Explanation of the game



“Please Note:

- You are Player 1.
- Player 2 is a hypothetical player and not a real person.
- Money is not real.

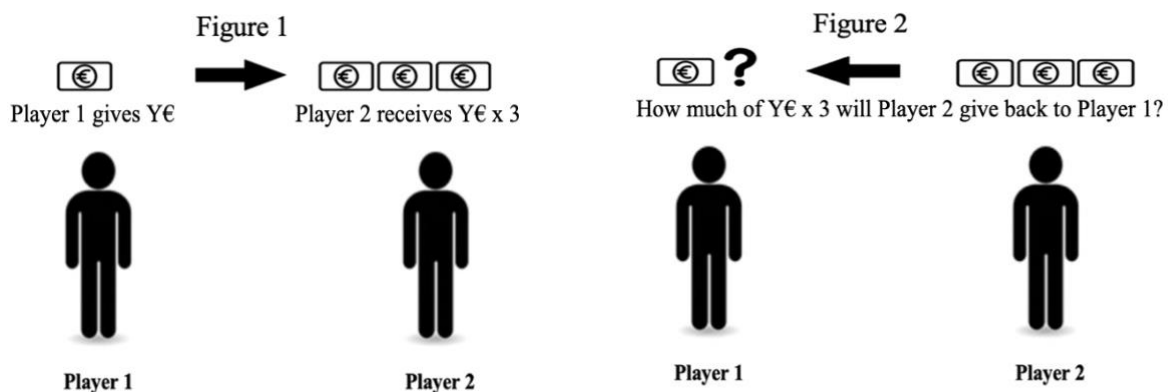
Given these instructions on the game, please answer the following questions.”

Appendix B

The example below is a quick explanation of how the trust game is played and the numbers used are according to the original trust game (Berg et al., 1995):

A trust game is a game between 2 Players, Player 1 is the trustor, and Player 2 is the trustee. Both the trustor and the trustee are receiving an endowment of 10€ from the experimenter. Then the trustor can choose an amount between and including 0€ and 10€ to give to the trustee. If the trustor gives 0€ to the trustee the game ends and both Players leave the game with the money that they currently earned. If the trustee decides to give any other amount to the trustee, the experimenter will initially receive this amount, triple it, and then will give the now tripled money to the trustee, this is the trust part of the game. Then the trustee chooses how much money to give back to the trustor. If the trustee decides to give back 0€, the game ends and both Players leave with the amount currently earned. If the trustee decides to give any other amount of money back to the trustor, the trustor will receive it and then the game ends with both Players leaving the game with the amount currently earned. This is the reciprocity part of the experiment.

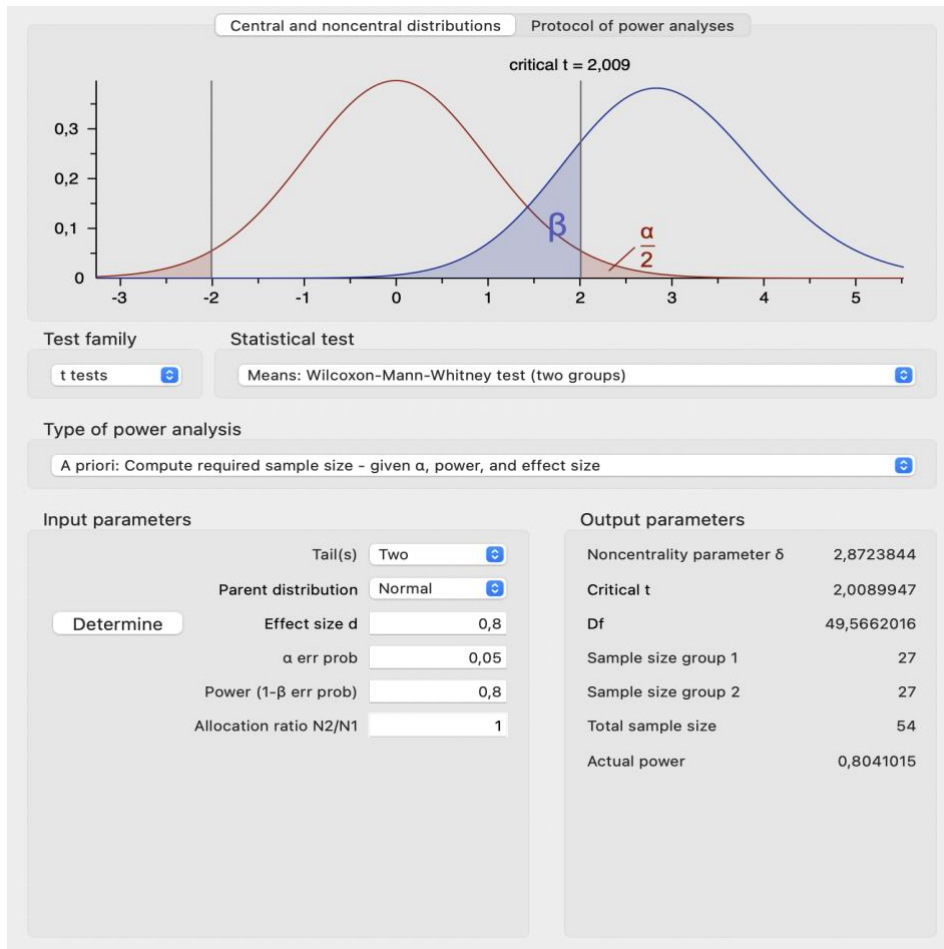
Appendix C



Notes: Graphic explanation of the game for the first question ("trust" question) in Figure 1, and for the second question ("expected return" question) in Figure 2

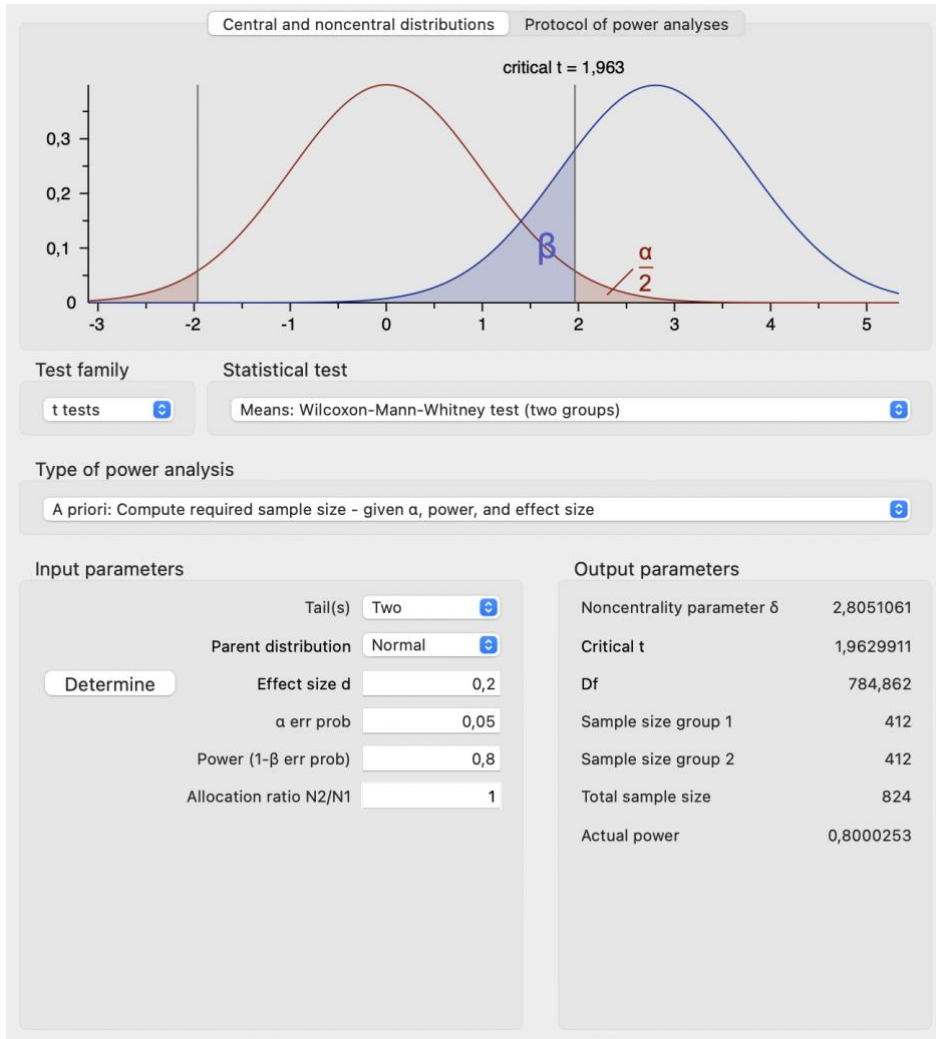
Appendix D

Figure D1



Notes: *G*Power, Power Analysis: finding the appropriate sample size for groups while comparing the control with the directive leadership treatment, and the control with the empowering leadership treatment*

Figure D2



Notes: G*Power, Power Analysis: finding the appropriate sample size for groups while comparing the directive with the empowering leadership treatment

Appendix E

Table E1

Gender	Freq.	Percent	Cum.
(1) Male	77	46.39	46.39
(2) Female	87	52.41	98.80
(3) Non-binary/third gender	1	0.60	99.40
(4) Prefer not to say	1	0.60	100.00
Total	166	100.00	

Notes: Tabulation of occupation

Table E2

Education	Freq.	Percent	Cum.
(2) Primary education	42	25.30	25.30
(3) Tertiary education	71	42.77	68.07
(4) Master's or PhD degree	53	31.93	100.00
Total	166	100.00	

Notes: Tabulation of education

Table E3

Occupation	Freq.	Percent	Cum.
(1) Student	88	53.01	53.01
(2) Working	39	23.49	76.51
(3) Working student	34	20.48	96.99
(4) Unemployed	5	3.01	100.00
Total	166	100.00	

Notes: Tabulation of occupation

Table E4

Informed	Freq.	Percent	Cum.
(1) Friend	78	46.99	46.99
(2) Social media Platform	10	6.02	53.01
(3) Survey Swap	78	46.99	100.00
Total	166	100.00	

Notes: Tabulation of how people got the link for the online experiment

Table E5

Variable	Obs	Mean	Std. Dev.	Min	Max
age	166	25.89	7.46	18.00	61.00

Notes: Summary Statistics of age

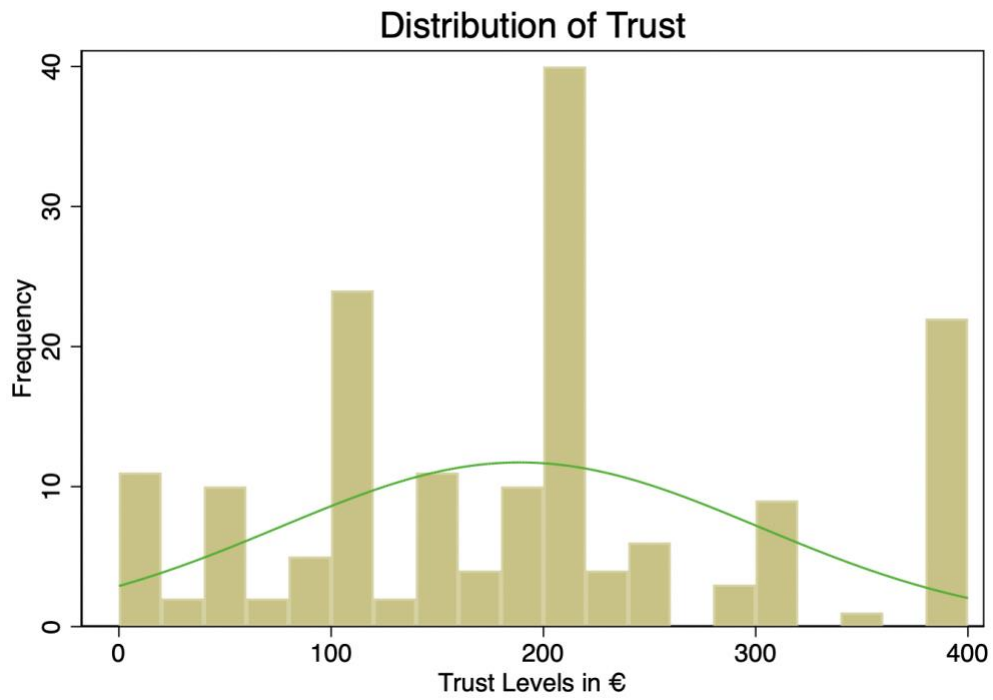
Appendix F

Table F1

Variable	Obs	W	V	z	Prob>z
trust	166	0.961	4.842	3.595	0.000
expreturn	166	0.911	11.347	5.536	0.000

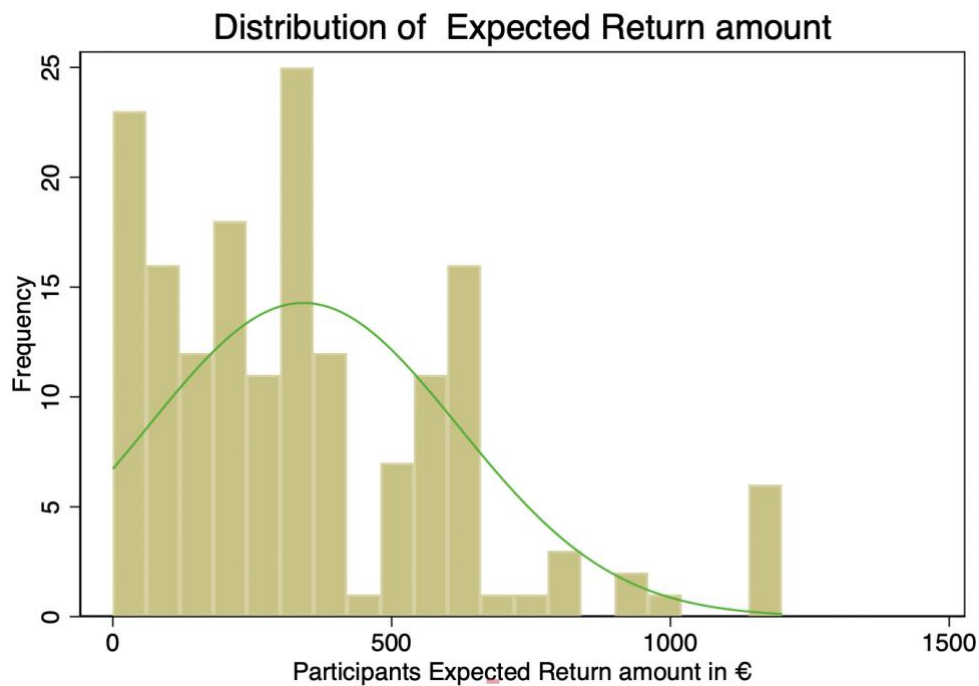
Notes: Shapiro–Wilk test for normal data

Figure F1: Histogram



Notes: This histogram shows the distribution of the trust levels of the participants

Figure F2: Histogram



Notes: This histogram shows the distribution of the participants' beliefs about the expected return

Appendix G

An independent categorical variable “treatment” was generated in order to identify in which treatment each observation was assigned. 36.14%, or else 60 participants, of the observations were assigned to the empowering leadership treatment. 33.13%, or else 55 participants, in the directive leadership treatment, and 30.72% , or else 51 participants, in the control treatment (Table G1).

Table G1

Treatment	Freq.	Percent	Cum.
(1) Directive Leadership	55	33.13	33.13
(2) Empowering Leadership	60	36.14	69.28
(3) Control	51	30.72	100.00
Total	166	100.00	

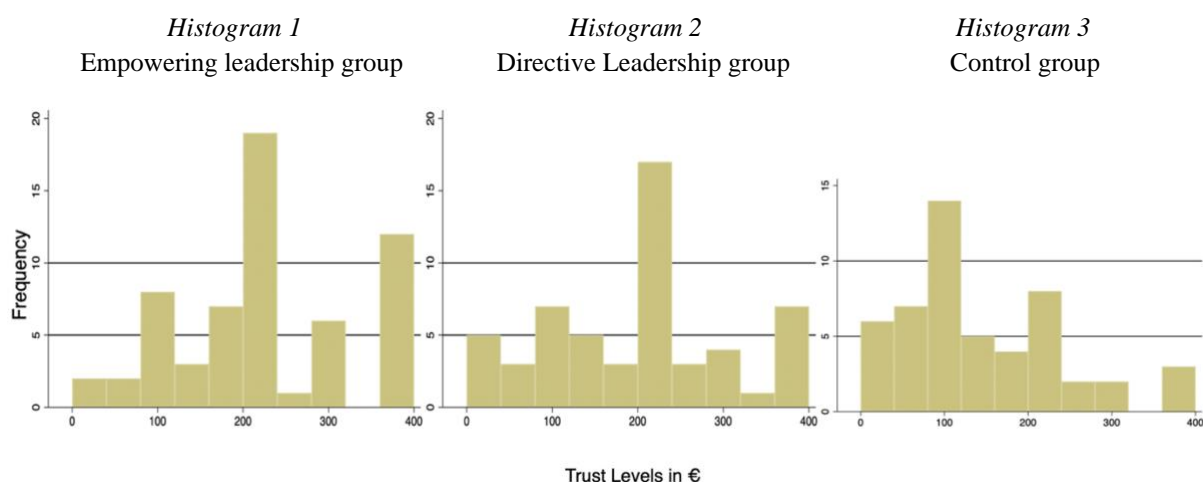
Notes: This table provides the tabulation of the treatments

Appendix H

The first three conditions need to be held for a Mann-Whitney U test to determine whether the two groups come from the same population and have the same distribution (Nachar, 2008; Mann & Whitney, 1947; Wilcoxon, 1945): (a) The participants of the two groups that are compared must have been drawn randomly from the same population. (b) The experiment needs to be a between-subject design. There should be independence within groups and mutual independence between groups. (c) The dependent variable should at least be measured at the ordinal or continuous level. If this last condition mentioned below also holds, the Mann-Whitney U test can be performed as a test for detecting differences in the medians of two groups (Divine et al., 2018): (d) The distributions of the dependent variable of the two groups must only differ in location and not in their shape.

This study fulfills the first three prerequisite conditions since: The participants were drawn randomly from the same population, the experiment was a between-subject design where the participants were randomly assigned by Qualtrics XM to each treatment while every observation corresponded to a different participant, and lastly, the dependent variable “trust” was measured at the continuous level. However, for the fourth condition to hold, further supporting evidence were required in order to form the null and the alternative hypothesis that the Mann-Whitney U test would check. To test the groups' shape of the distribution, visual illustrations of each group's distribution needed to be made. In Figure H1, Histogram 1, Histogram 2, and Histogram 3 present graphically the shape of the distributions of the empowering, the directive, and the control group respectively.

Figure H1: Graphic illustration of the distributions of trust in each treatment (Histograms)

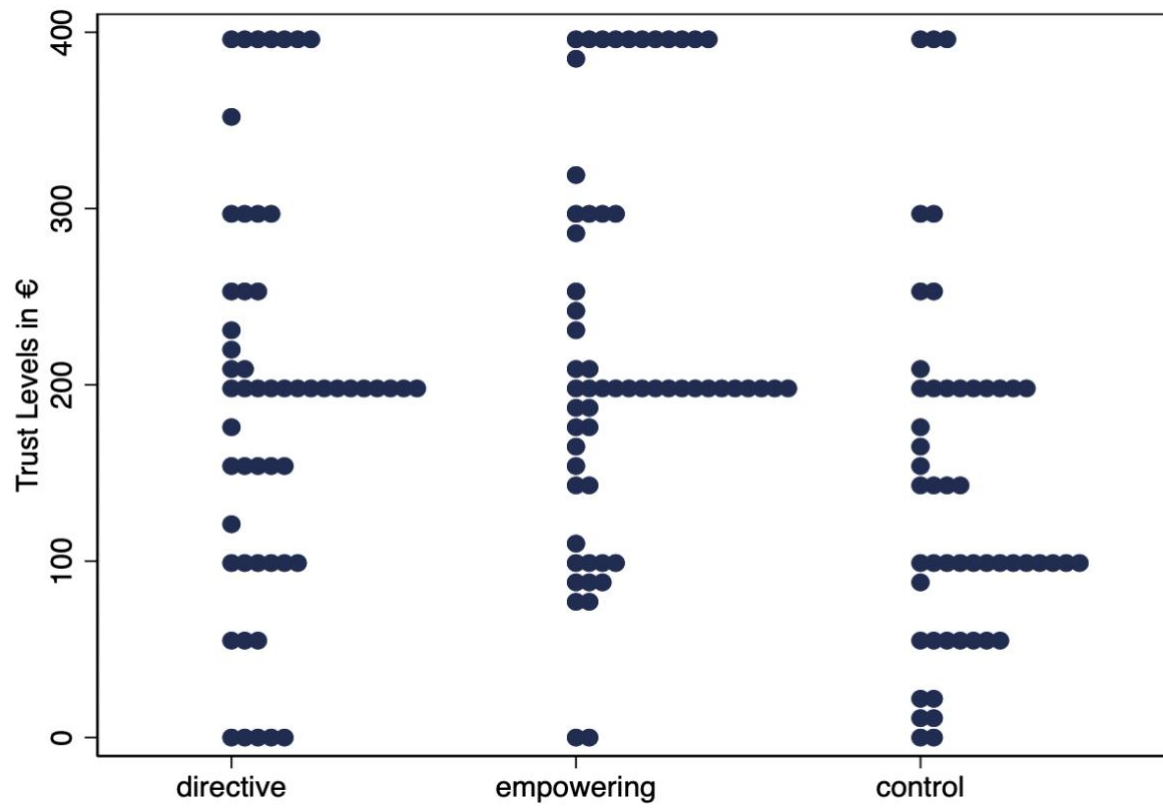


Initially comparing the two leadership groups are clearly similar shaped distributed, as the more frequent trust value that individuals reported in both of them are a bit more than 200€. The same argument can be supported by the second and the third most frequent reported values of almost 400€, and 100€. Afterward, a comparison between the control and directive leadership groups was made. Observing Histograms 2, and 3, there was a clear difference in the location of the two distributions. However, when it comes to the shape, both the groups have a value that is by a large margin the most frequent answer. For the directive leadership group is the value of nearly 200€, and for the control group is the value of 100€. An interesting observation that was made during the comparison, is that the difference between their most frequent values is almost double. While this alone meant nothing, taking their most frequently answered values as reference points (~200€, 100€), it was observed that their second and third highest frequency values were almost double (~400€, ~200€), and nearly half (100€, ~50€), of them respectively. Therefore, the shape of the distribution for the control and the directive leadership group was taken as similar. Similarly, due to the fact that the directive and the empowering leadership groups had in common the first three most frequently answered values. The comparison between the control and the empowering leadership group showed similar observations as the previous comparison. Hence, a similarly shaped distribution was supported between the control and the empowering leadership group. Knowing the fact that sometimes the histograms are affected by the bin size, thus their results can be visually different depending on that, a second test for the shape of the groups' distribution was displayed. A dot plot was used to double-test the previous observations about the shapes of the groups' distribution (Figure H2). In the dot plot, indeed the same exact observations were made, which supported the suggestion about the similar shape distributions made by the histograms. Concluding, since the similar group distribution condition is supported, the null (H0) and the alternative hypothesis (H1) were performed as a test for detecting differences in the medians of the two groups.

(H0) Null Hypothesis: *The medians of the two groups are equal.*

(H1) Alternative Hypothesis: *The medians of the two groups are not equal.*

Figure H2: *Graphic illustration of the treatment groups' distributions (Dot Plot)*

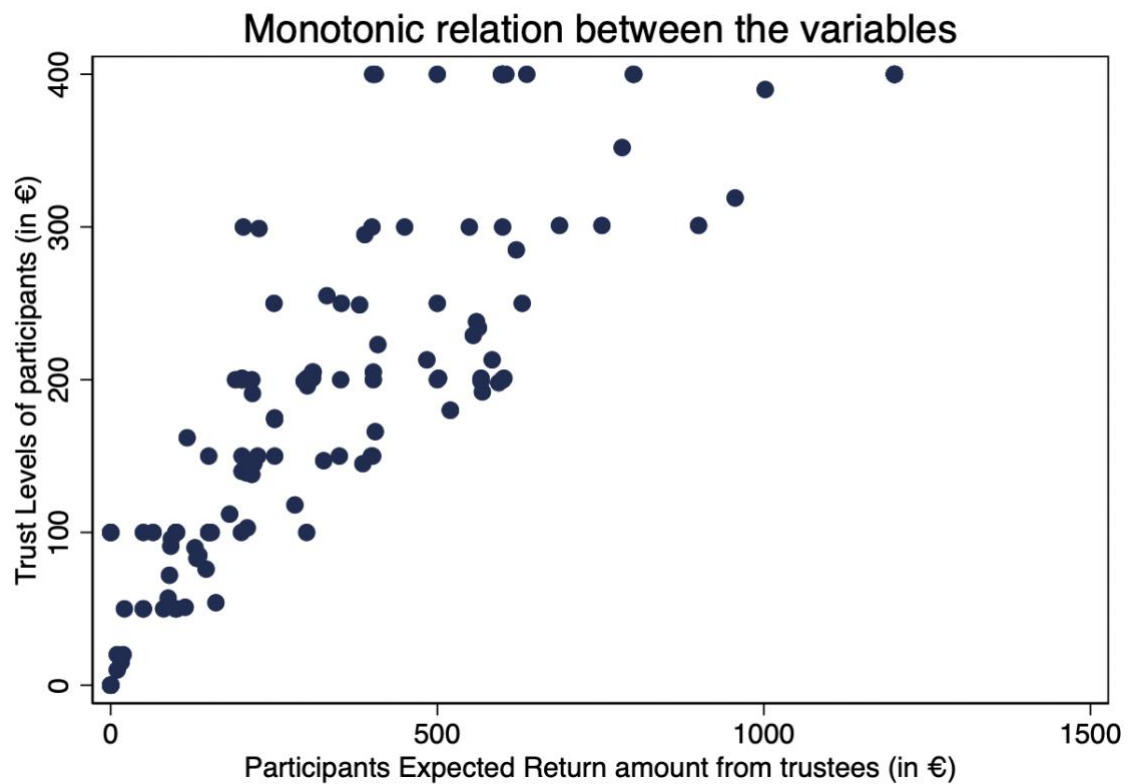


Notes: This dot plot tests the similarity of the shapes of the treatment groups' distribution

Appendix I

For Spearman's rank-order correlation method to be performed, the variables "trust" and "expreturn", should: (a) be at least measured at the ordinal or continuous scale, which both of them are. (b) Have monotonic relation between them. In the scatterplot (Figure I), the monotonic relation between the two variables can be seen. A monotonic relationship between two variables implies that the value of these variables increases together.

Figure I



Notes: This scatterplot shows the monotonic relation between the trust levels and the participants and the participants' expected return amount from the trustees. It also shows the positive correlation between the two variables.

Appendix J

Table J1

Treatment	Obs	Rank Sum	Expected	p-value	Mean	Median
(1) Directive Leadership	55	3376	2942.5	0.006	195.9	200
(3) Control	51	2295	2728.5	0.006	140.6	100
Total	106	5671	5671			

Notes: Two-sample Wilcoxon rank-sum (Mann-Whitney) test comparing the control with the directive leadership group

Table J2

Treatment	Obs	Rank Sum	Expected	p-value	Mean	Median
(2) Empowering Leadership	60	4034.5	3360	0.000	223.3	200
(3) Control	51	2181.5	2856	0.000	140.6	100
Total	111	6216	6216			

Notes: Two-sample Wilcoxon rank-sum (Mann-Whitney) test comparing the control with the empowering leadership group

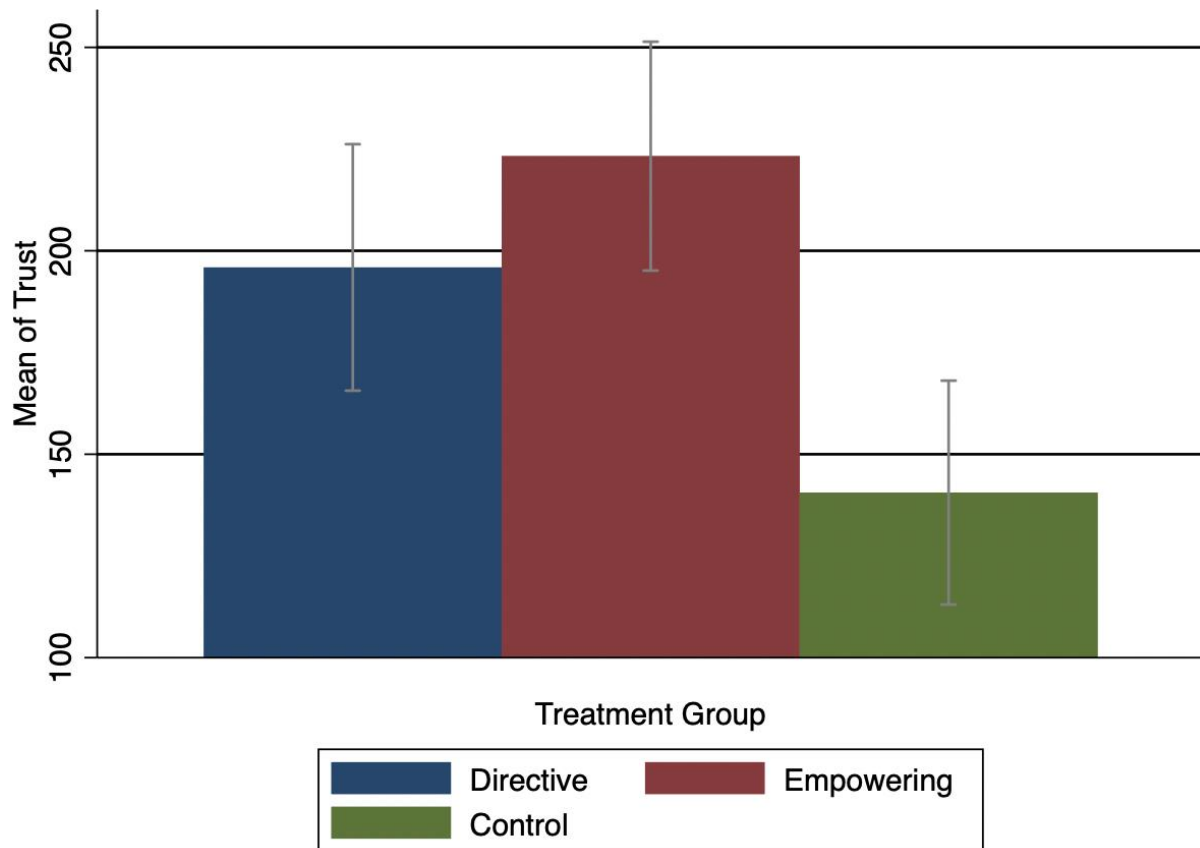
Table J3

Treatment	Obs	Rank Sum	Expected	p-value	Mean	Median
(1) Directive Leadership	55	2999.5	3190	0.283	195.9	200
(2) Empowering Leadership	60	3670.5	3480	0.283	223.3	200
Total	115	6670	6670			

Notes: Two-sample Wilcoxon rank-sum (Mann-Whitney) test comparing the empowering with the directive leadership group

Appendix K: Robustness Check

Figure K: The mean of the trust levels depending on the treatment (Bar Graph)



Notes: The Bar graph includes the error bars based on confidence intervals to visualize the difference in means between the trust levels depending on the treatment. The error bars graphically show the confidence interval in each treatment group.

Table K1

Treatment	Obs	Rank Sum	Expected	p-value	Mean	Median
(1) Directive Leadership	68	5412.5	4624	0.000	191.6	200
(3) Control	67	3767.5	4556	0.000	132.3	100
Total	135	9180	9180			

Notes: Two-sample Wilcoxon rank-sum (Mann-Whitney) test comparing the control with the directive leadership group

Table K2

Treatment	Obs	Rank Sum	Expected	p-value	Mean	Median
(2) Empowering Leadership	71	6033.5	4934.5	0.000	216.7	200
(3) Control	67	3557.5	4656.5	0.000	132.3	100
Total	138	9591	9591			

Notes: Two-sample Wilcoxon rank-sum (Mann-Whitney) test comparing the control with the empowering leadership group

Table K3

Treatment	Obs	Rank Sum	Expected	p-value	Mean	Median
(1) Directive Leadership	68	4506	4760	0.283	191.6	200
(2) Empowering Leadership	71	5224	4970	0.283	216.7	200
Total	139	9730	9730			

Notes: Two-sample Wilcoxon rank-sum (Mann-Whitney) test comparing the directive with the empowering leadership group