Empathy and Altruism: an economic approach

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Abstract

The present study further added to the ever growing body of research into the relationship of empathy and altruistic sharing. Previous studies have provided evidence for an existing relationship between empathy and altruistic sharing. The present study is aimed at understanding underlying dimensions of empathy and their relationship to altruistic sharing. A positive relationship is hypothesized between underlying dimensions of empathy and altruistic sharing. Said underlying dimensions included Perspective Taking, Empathic Concern and a Fantasy scale. As previous studies mainly focused on the affective components of empathy, in this study the cognitive component is analyzed as a possible predictor for altruistic sharing. The hypothesized relationship was operationalized through comparing self-reported data on empathy on the general level with altruistic sharing measured through dictator games in order to reaffirm the relationship found in previous studies. The underlying dimensions of empathy were then analyzed to find whether the positive effects of empathy on altruistic sharing could be explained through the underlying dimensions of empathy. Subjects reported data on their levels of empathy through the use of the interpersonal reactivity index. In addition, the treatment group was subjected to cultivating cognitive empathy. The results show that only the underlying affective dimension Empathic Concern, Perspective Taking and the treatment itself had a positive effect on altruistic sharing. In this study no evidence was found that the cognitive component Fantasy had a statistically significant effect on altruistic sharing in the dictator game. Interaction effects between the treatment and General Empathy, or between the treatment and the underlying dimensions of General Empathy, were found to negatively influence altruistic sharing rather than positively.

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1. Introduction

Despite the early interest of the role of empathy in economics (Smith, 1759), empathy has long been a subject mostly studied by psychologists. During the development and formalization of economic theory in the 20th century a great deal of focus had been put into the idea that individuals satisfied certain axioms of rationality, in which economic agent where assumed to maximize their own utility. Economic agents interacted through the market. As such, behavior of economic agents had been mostly studied through studying markets rather than studying the individual economic agent (Kirman & Teschl, 2009) Social preferences, such as altruism, were assumed to be non-relevant in the formalization of economic theories of the 20th century, as these social preferences did not seem to play an instrumental role in the workings of economics. However, a great deal of present day research into the topic seems to raise the notion that the behavior of economic agents is much more subject to the ideas and ideologies of these economic agents (North, 2016). The role of these ideas and ideologies show their prevalence in behavior through social preferences such as altruism. It is therefore important to learn more about the phenomenon of empathy and its underlying factors, as previous research has shown that affective empathy is a strong predictor for altruistic behavior (Edele, Dziobek, & Keller, 2013). However what the role of cognitive empathy is in altruistic behavior remains relatively unknown. In this paper it will be assessed whether individuals with certain levels of empathy act differently when presented with contextual information on others when making decisions that affect others. This leads to the following research question:

What is the effect of different levels of empathy on altruistic sharing after cultivating cognitive empathy?

By presenting participants with contextual information on the receiver in a dictator game cognitive empathy is induced. In said game, the dictator is asked to actively and consciously relate to the receiver's situation. In combination with the IRI questionnaire that measures empathy levels, this research aims at exploring whether actively engaging in cultivating cognitive empathy significantly changes an individual's behavior and whether this correlates with their respective levels of empathy.

2. Literature research

2.1 What is empathy?

On the definition of empathy there has been a great deal of discussion in the academic world, and as such the subject of empathy has been a growing body of research during at least the past 50 years. Present-day, empathy is defined as the ability to comprehend another person's experience with regards to their thoughts, feelings and attitudes through the act of perspective taking. Or, in more common terms: to place oneself in another's shoes (Bellet & Maloney, 1991). The discussion that led to this present-day definition of empathy regarded the nature of empathy and what components comprise empathy itself. The process of empathy and empathic actions or reactions has been described through the use of a two factor model, in which there is mention of a cognitive component and an affective component to empathy. Both these components have recently been described in easily understandable terms. The cognitive component is described as the drive to recognize another person's feelings and thoughts, whereas the affective component is described as the drive to accompany this initial recognition with an appropriate emotional response, as a means to alleviate the other person's distress (Baron-Cohen, 2012). However, empathy has not always been recognized to be comprised of these components, as this is certainly not the only attempt at describing empathy in a clear fashion. Therefore, it is important to recognize and compare earlier definitions to gain a clearer view of what empathy can entail, as over time and study earlier definitions of empathy seem converge into what the present-day definition of empathy has become.

Early definitions of empathy were of a cognitive nature (Borke, 1971; Hogan, 1969; Kohut, 1971), in which only the act of perspective taking was described, as the ability to apprehend another person's state of mind and accompanying thoughts. However, there was no mention of the affective state that might be derived by the empathizer when taking the perspective of another person in these definitions. Hogan (1969) describes the consensus on the definition of empathy at that time to be: "the act of constructing for oneself another person's mental state". As research into the topic progressed, more affective aspects within empathy came to light. As one can imagine that the product of perspective taking or constructing another person's mental state in oneself is likely to induce an involuntary emotional reaction. As such, empathy has been described as not only the cognitive skill to transform one's own perspective as if it were that of another person, but also as the vicarious experience of what the perspective entails with regards to accompanying affective reactions (Underwood & Moore , 1982). This seems to be an indication that the concept empathy as a whole, consists of two parts: a cognitive part and an affective part. In summation, the cognitive part accounts

for the constructing of a perspective with regards to what someone else's situation is, and what he or she might be thinking or feeling due that situation. The affective part consists of how this perspective translates into an affective reaction within the perspective taker, and how this affective reaction is posed to mimic what the other person is feeling and thinking. The perspective taker has this affective reaction, because they made an estimation of what the other individual is experiencing. As such, they allocate an affective weighing to the perspective that is taken.

2.2 Contextual information and perspective taking

As mentioned before, there are two components to empathy, a cognitive one and an affective one. In this study the cognitive component is posed to be triggered, through having participants take a perspective. This phenomenon, the cognitive component of empathy, has been named and described in similar ways. In the scope of this study it is important to define what this cognitive component entails and what it is called, as some terms seem to be used interchangeably in the literature on the subject. First off, within the concept of perspective taking, there is a distinction to be made between affective and cognitive perspective taking. As "Affective" perspective taking is a somewhat misleading term, this is because the lines of what is cognitive and what is affective converge very quickly. For example, say an individual is asked to take a perspective, he/she can do this through different sources of information on the perspective that is to be taken. This is a task that triggers a cognitive process, which in this case is the action of processing acquired knowledge about the perspective to be taken. The individual could have been given a piece of information on the situation of which they are asked to construct a perspective of within their own minds. However, if this piece of information comes in the form of a sound, a picture or even a moving picture, this is likely to induce an affective reaction as these types of stimuli can easily induce emotions. For example, an image can be scary or frightening, much like beautiful landscape depictions can induce serenity or even joy (Grühn & Scheibe, 2008). Sounds or auditory stimuli are similar in their capability of inducing emotional reactions (Bachorowski & Owren, 2003). Thus the perspective that is formed may include emotional aspects. However, the act of perspective taking is still a cognitive action, the possibility that this action is accompanied by an affective reaction leads to the term affective perspective taking. In this paper the cognitive component of empathy is referred to as cognitive empathy, and by its meaning refers to the processing of information into a perspective, with that information being of a purely informative nature. The information on the perspective to be taken by participants will thus be in the form of plain text, describing the situation of an individual in need of altruistic helping. Information was provided to the participants with the aim of minimizing the possibility of an affective reaction to that information. Said information will be referred to as "the contextual information" henceforth.

2.3 Empathy-altruism hypothesis

The empathy-altruism hypothesis states that the prosocial motivation elicited from empathic feelings is directed towards the goal of increasing another person's welfare, the welfare of a person in need (Batson, et al., 1991). However, there can be many different sources of empathic behavior of one individual towards another, and emphatic behavior can be evoked in different forms. One might feel obliged to show empathy towards another either through emotional contagion of an involuntary nature, but can also feel obliged to do so due to a relationship with the individual in need of empathy, a relationship deemed as important. In case of the latter, it could occur that the situation that an empathizer is confronted with does not necessarily denote a situation that would elicit a significant emotional response. However, due to the nature of the relationship between the empathizer and the individual in need of empathy, the empathizer could still feel the need to show understanding through empathic feelings. As such, the empathizer would engage in mental perspective taking to gain a form of understanding for the feelings and thoughts of an individual in need. Secondly, the empathizer could increase that person's welfare through an appropriate emotional response to the situation. Other motivations to engage in perspective taking could be that an individual believes himself to be a good person and therefore should be able to generate an appropriate emotional response regardless of the status of the relationship between them self and the person in need. This, in combination with the description of cognitive empathy as a tool to manipulate and deceive people to an individual's advantage by Smith (2006), can be a reason to argue that mental perspective taking can be used as a tool to attain a certain goal, such as relieving the distress of a person in need of empathic understanding. Therefore, this study utilizes mental perspective taking defined as constructing for oneself another person's mental state, as a nudging tool towards altruistic behavior.

2.4 Measuring empathy levels: the interpersonal reactivity index.

During the research towards understanding the workings of a higher order social behavioral mechanism such as empathy, many different instruments have been developed to measure such a thing. As mentioned before, empathy is not defined in a clear cut way, this most likely being the reason for the large number of instruments developed to measure empathy. Some researchers have developed instruments based on the definition of empathy through cognitive means, such as Hogan (1969), who developed the Hogan empathy scale. The Hogan empathy scale measures empathy through a 64-item self-report measure based on the vicarious or intellectual recognition of another individual's thoughts and feelings without themselves actually experiencing any affective reaction that might be derived from the act of doing so (Hogan, 1969). Mehrabian & Epstein (1972) dispute this,

arguing that empathy might also include the affective reaction of the act of cognitive role taking, at least at a basic level of unpleasant or pleasant feelings.

As the notion of empathy being a multidimensional social construct arose, the instruments to measure empathy also changed because this multidimensionality was incorporated into a measuring tool. This led to the development of one of most widely used instruments to measure empathy, the interpersonal reactivity index, henceforth referred to as the IRI (for studies using the IRI, see e.g. Barraza & Zak, 2009; Edele, Dziobek, & Keller, 2013; Davis, 1983; Pulos, Elison, & Lennon, 2004). The IRI incorporates not only cognitive and affective aspects towards uncovering the underlying factors of empathy, but also a fantasy aspect and a personal distress aspect. The empathic concern and personal distress scales measure underlying affective dimensions of empathy, as these scales measure the tendency to feel emotion with regards to the statements corresponding to each of the two scales. The perspective taking scale and the fantasy scale measure the underlying cognitive dimensions of empathy; these scales measure the capacity of an individual to transpose themselves into the perspective of another individual.

Each of these aspects are incorporated into a 28-item self-report questionnaire under the following aspects (Davis, 1983):

- Empathic concern: indicates the feelings towards other individuals characterized as sympathetic and concern for their well-being.
- Perspective taking: indicates the propensity to spontaneously adopt another individual's psychological point of view.
- Fantasy scale: indicates the ability to transpose oneself vicariously into the feelings and actions of fictitious characters such as those as described in movies, stories or other imaginative situations. Arguably similar to perspective taking, with the key difference of the perspective to be taken being fictitious rather than one of reality.
- Personal distress: Indicates the self-oriented feelings of unease in an individual in apprehensive interpersonal situations.

Previous research has shown that measures of empathy in the form of a questionnaire are significantly related to altruistic and prosocial behavior shown by adults as well as children. As such, the interpersonal reactivity index has often been used as a measurement tool of empathy in studies regarding empathy's relationship to altruistic or prosocial behavior (Batson, Bolen, Cross, & Neuringer-Benefiel, 1986; Fuliz, Batson, Fortenbach, McCarthy, & Varney, 1986; FeldmanHall, Dalgleish, Evans, & Mobbs, 2015; Mayer & Geher, 1996).

2.5 Scoring and interpretation of the Interpersonal reactivity index

The IRI questionnaire is used in this study to measure empathy levels. However, with regards to scoring and interpretation of the self-reported values of empathy derived from the questionnaire there is some controversy. There are no clear cut-off scores defining respondents as higher or lower empathic (Davis, 1983). The score obtained from the questionnaire is one of a continuous nature, and as the IRI indicates there are four different dimensions, one could argue that there are different types of empathy distilled in an individual. These types of empathy could be derived from the scores given on each subscale of the questionnaire. For example, one individual could be more apt at perspective taking than exhibiting empathic concern and another could be more apt at the latter than the former. These two individuals could still score equally when looking at a total score derived from the IRI and be deemed equally empathic, while there is no reason this should be the case. Fortunately, this issue has been addressed in recent literature.

Through further analyzation of the IRI questionnaire and what the underlying factors are to empathy, it was found that a general empathy factor can be derived from the IRI (Pulos, Elison, & Lennon, 2004). This, general empathy factor is associated with the perspective taking, empathic concern and fantasy subscales of the IRI. Furthermore, the researchers pointed out that with regard to this general empathy factor the personal distress scale had little relation to the other subscales of the IRI. It was suggested that to obtain a higher order empathy scale from the IRI, a simple summation of the subscales perspective taking, empathic concern and fantasy scores may be more applicable than the full questionnaire. As per the suggestion of the study of Pulos, Elison & Lennon (2004) the IRI will be adapted to only include questions from the subscales perspective taking, empathic concern and fantasy. These subscales will be combined to form a total score that reflects a measure of general empathy. These subscales and the summation of the scores on these subscales will be the variables of interest for this study. This will be further discussed in section 4.

2.6 Noteworthy empirical research: The relationship of Empathy and Altruism

Quite a few experiments have been conducted in order to further uncover the relationship between empathy and altruism. Some have been mentioned in the previous paragraphs, others will be addressed in this entry, due to the large variation in methods used to measure, manipulate or trigger empathic reactions, perspective taking and altruistic behavior. A brief overview of empirical research is recorded in Table 1 in an effort to clarify methods chosen for the experiment of this study. The table includes the authors of the articles featuring experiments of interest, measure of empathy, measure of altruistic behavior and the nature of the relationship that was found between empathy and altruism.

Table 1.1: Empiric research on the relationship between empathy and altruistic behavior (part 1).

Authors	Measure of empathy	Measure of altruistic behavior	Nature of relationship Empathy-Altruism
Batson, Duncan, Ackerman, Buckley, & Birch (1981).	Batson Empathy Adjectives.	Offering to take a shock for another person	Empathy measure and altruistic behavior positively correlated
Toi & Batson (1982)	Batson Empathy Adjectives.	Offering to help a fellow student who broke her legs.	Empathy measure and altruistic behavior positively correlated
Batson, Early & Salvarani (1997)	Emotional Response Questionnaire	Offering to help a fellow student who has to take care of her little brother due to parents dying.	Empathy measure and altruistic behavior positively correlated
Cialdini, Brown, Lewis, Luce & Neuberg (1997)	Batson Empathy Adjectives.	Indicating willingness to help someone who: Has to make a phone call Had been evicted Died and left 2 kids	Empathy measure and altruistic behavior positively correlated. However, influenced by variable of interest "relationship closeness"
Davis (1983)	Interpersonal Reactivity Index.	Willingness to help a fellow student	Individuals experiencing high levels of empathic emotions were significantly more willing to help
Dovido, Allen & Schroeder (1990)	Emotional Response Questionnaire.	Willingness to help a fellow student	Empathy measure and altruistic behavior positively correlated
Schroeder, Dovido, Sibicky, Matthews & Allen (1988)	Emotional Response Questionnaire.	Helping a fellow student make phone calls to potential blood donors.	Empathic concern significantly correlated with frequency of helping

Table 1.2: Empiric research on the relationship between empathy and altruistic behavior (part 2).

Einolf (2008)	General Social Survey: including the empathic concern subscale from the IRI.	Up to 15 types of prosocial behavior such as: volunteering/donating to charity, talking with depressed people, loaning money, housesitting, helping finding employment, etc.	Overall weakness of empathic concern as a predictor of real-life helping behavior. Some spontaneous face-to-face helping decisions strongly correlated with the GSS.
Edele, Dziobek & Keller (2013)	Interpersonal Reactivity Index, Multifaceted Empathy Test, Movie for the Assessment of Social Cognition	Dictator games utilizing 20 tokens each worth 30 Euro-cents	Affective empathy found to be the strongest predictor of altruistic sharing. Cognitive empathy did not predict altruistic sharing.
Barraza & Zak (2009)	Interpersonal reactivity index	Ultimatum games with $40 stakes. To assess generosity towards strangers	An increase in experienced empathy was associated with greater generosity in the UG.

As can be seen in Table 1, many empirical studies found a positive relationship between empathy and altruistic behavior. Many of which have used self-report measures such as the general social survey, the interpersonal reactivity index and the emotional response questionnaire to measure empathy levels. The general social survey (GSS) is a sociological survey that has been collecting data on American society since 1972, in order to monitor and explain certain trends in attitudes and behavior of the American population. The GSS also includes questions that measure the capacity to show empathy as it incorporates the empathic concern subscale of the IRI in its survey questions. The emotional response questionnaire (as well as the Batson empathy adjectives questionnaire) uses a set of adjectives describing different emotional states to gage empathic reactions of respondents, by having the participants indicate on a 7-point scale how much they experienced these emotional states whilst participating in their experiment.

The research of Batson, Duncan, Ackerman, Buckley, & Birch (1981) provides evidence in support of the validity of the empathy-altruism hypothesis. In this study, the empathy-altruism hypothesis was tested by having subjects watch another individual receive electric shocks, after which the participants had the option of helping this individual by taking the remaining shocks the individual had to take. The study featured a 2x2 design in which ease of escape from continuing to watch the individual take shocks was manipulated to be either difficult or easy. It was hypothesized that participants feeling a high degree of empathy, as opposed to a low degree of empathy, would show

high levels of helping behavior regardless of the ease of escape condition. In this study it was found that highly empathic individuals displayed high levels of altruistic helping behavior, even when a low-effort alternative for their personal stress relief was available.

In another study, more evidence to support the empathy-altruism hypothesis was found (Toi & Batson, 1982). In this study participants had to listen to an interview which reveals that a freshman named Carol had broken both her legs. Due to her recovery time, she was forced to drop out of a course of her study psychology, and as a result would be set back an entire year with regards to her study. During the experiment, the participants were given an option to help Carol catch up the lectures she missed in an effort to help her be able to pass the course she would otherwise have dropped. The manipulation of empathy was done through having participants take a certain attitude when listening to the interview tape. One attitude was an objective one, which instructed participants to focus on the information about Carol's situation and her thoughts, this was the low-empathy condition. The high-empathy condition instructed participants to focus on what Carol might have been feeling due to the situation (Toi & Batson, 1982). The manipulation of empathy was thus done through a cognitive type and an "affective" type of perspective taking. Ease of escape from having to help Carol was manipulated to be either difficult or easy. The results showed that participants under the high-empathy condition displayed high levels of altruistic helping behavior, even when ease of escape was difficult. However, the results also showed that under the low-empathy condition, participants still showed altruistic helping behavior towards carol, in both conditions for ease of escape. Even though this effect was weaker, it did indicate that using cognitive skills to form a perspective about Carol's situation and thoughts could evoke altruistic helping behavior from the participants.

Previous research has utilized mental perspective taking to analyze the empathy-altruism hypothesis. This was done through having the participants listen to a broadcast of a radio host who interviewed a student named Katie (Batson, Early, & Salvarani, 1997). According to the story Katie's parents had died in an accident, leaving her to take care of her little brother. She was struggling to finish her last year of college and she feared that she would not earn enough money to take care for her little brother in the years to come, this would result in her having to put her little brother up for adoption. Participants were asked to adopt the information under certain conditions, one of which is of interest to this study. That condition being the "Remain objective" condition, called the "Perspective taking manipulation" (Batson, Early, & Salvarani, 1997). Under this condition participants were instructed to process the information obtained through the radio broadcast as objective as possible while trying to stay detached from what Katie might have gone through with regards to feelings. Ease of escape from having to help Katie was manipulated to be either difficult or easy. The findings in this study were consistent with the empathy-altruism hypothesis. The results also found a

correlation between the low-empathy condition and helping behavior in both conditions for ease of escape.

The study of Dovido, Allen & Schroeder (1990) also provided evidence to support the empathy altruism hypothesis. In this study it was investigated whether the effect of empathy on helping behavior could be interpreted as altruistically or egoistically motivated. This was done with a manipulation of empathy similar to that of the research of Batson et al. (1981) as well as a similar manipulation of ease of escape conditions. This study found results consistent with the study of Batson et al. Participants with high levels of empathic concern for the individual in distress displayed high levels of helping behavior, even when escape condition was difficult. The study of Dovido, Allen & Schroeder seems to be a replication of the an earlier study of Schroeder, Dovido, Sibicky, Matthews & Allen (1988), in which it was also investigated whether the effect of empathy on helping behavior could be interpreted as altruistically or egoistically motivated. In this study it was also found that participants feeling high levels of empathic concern towards an individual in distress displayed high levels of helping behavior, even when ease of escape was difficult. However, what is interesting about this earlier study is that the effect of a fixed or labile mood within the participant was also investigated, and whether this had an effect on their emotional reactions. This was done through administering a placebo which led the participants to believe their mood was either fixed or labile. Results showed that participants in both mood conditions (fixed/labile) felt similar levels of empathic concern for the individual in distress. This finding suggests that the participant is more focused on the need of the individual in distress regardless of their own emotional state. This finding is consistent with the empathy-altruism hypothesis in the sense that empathic concern is more related to another's need than it is to the need of one's own situation.

The empathy-altruism hypothesis was criticized by Cialdini, Brown, Lewis, Luce, & Neuberg (1997). In the study of Cialdini et al (1997) it was hypothesized that the relationship between empathy and altruistic helping was mediated through relationship closeness, relationship closeness being the relationship between helper and the one in need, based on similarity, familiarity, friendship or kinship (Cialdini et al, 1997). In the study of Cialdini et al., participants were asked to focus on a particular individual who was either a stranger, an acquaintance, a friend or a family member, after which the participants had to consider that the particular individual had been evicted from their home. The participants also indicated their levels of empathic concern, personal distress and sadness regarding the situation of the individual in distress, after which they had to indicate their willingness to help this individual by indicating which out of 7 increasingly costly helping options they would offer him/her. In this study it was found that as the relationship closeness variable rose in categories, the willingness to help would also increase. In short, as the relationship got more personal, the participant was willing

to offer a more costly helping option. This study concluded that when the analysis controls for relationship closeness, the effect of empathic concern on willingness to help is eliminated. Therefore the authors conclude that it is not necessarily empathic concern that elicits altruistic helping behavior, but rather relationship closeness. One reason that this study did not find evidence that supports the empathy-altruism hypothesis might be that this study used self-report measures on behavior of respondents. Therefore, the results might be less reliable as self-report measures might also measure what the intent of a participant is, rather than his/her actual behavior.

Not only Cialdini and his research associates criticized the empathy-altruism hypothesis. This is apparent in the example of Einolf's (2008) research, in which it was found that, contrary to the consensus on the empathy-altruism hypothesis, empathic concern was a weak predictor for altruistic helping behavior (Einolf, 2008). This result could have been the product of a number of reasons, such as biases in the data as a result of cognitive biases of the experimenter/participants, or ambiguous instruments for measuring altruistic behavior. Edele, Dziobek & Keller (2013) specifically address potential reasons for Einolf (2008) finding these contrary results to the consensus on the empathy-altruism hypothesis, and found empathy to still be a strong predictor for altruistic sharing. They attribute the differences in findings between their studies to the self-report measures used by Einolf (2008). Edele, Dziobek & Keller (2013) utilized several different measures for empathy including both self-report and non-self-report measures. Each of these measures correlated strongly with altruistic sharing measured through dictator games (Edele, Dziobek, & Keller, 2013). Barazza & Zak (2009) also utilized a game, the ultimatum game, to measure altruism (Barraza & Zak, 2009). However, it would seem the ultimatum game is not as suitable for measuring altruism, as this game features a reciprocal component that might influence results to show the effects of reciprocity on the outcomes of the ultimatum games.

In summation, many studies have found evidence to support the empathy-altruism hypothesis. In the studies mentioned in this section affective components of empathy were found to be a strong predictor for altruistic behavior. However, whether triggering the cognitive component of empathy can also enhance the effect of empathy on altruistic behavior has not specifically been studied before. The present research aims at uncovering whether the triggering this cognitive component of empathy can enhance the effects of empathy on altruistic behavior.

3. Methodology & Procedures

In this chapter the components needed to answer the research question will be discussed. In order to study the effects of different levels of empathy on altruistic sharing after cultivating cognitive empathy this study utilizes statistical analysis. This chapter describes the manipulation of variables of interest, the experimental design, the hypotheses and expectations of the experiment, the sample and the procedure of the experiment needed for the statistical analysis. The survey used to collect the data can be found in Appendix E

3.1 The present research

To measure empathy levels of students an adapted version of the interpersonal reactivity index was utilized in order to measure self-reported levels of empathy. These levels of empathy were subsequently analyzed in their relationship to answers given in two different dictator games. The dictator games served as a measure of altruistic sharing. Mental perspective taking served as manipulation of empathy. Cognitive empathy can lead to an emotional reaction, as discussed in the literature research (see section 2.3). However, before arriving at this emotional state, the individual has to actively engage in mental perspective taking. As such, the prerequisite for an emotional reaction as a result of cognitive empathy is effort, hence the term the cultivation of cognitive empathy. Whether participants actually reach this affective state is dependent on their own characteristics. These characteristic would include whether the participants have a tendency to be emotional, what norms and values they have or how socially developed they are. This is because these characteristic, amongst others, determine how a participant would conduct themselves towards others as a result of how they feel. The present research aims at letting the effects of these characteristics on whether a participant derives an emotional state from perspective taking take its course. The information on the perspective that is to be taken only includes a rather bland set of information in bullets. This rather bland set of information aims at supplying the participants with the means to construct a perspective for themselves, devoid of emotional influence. The contextual information is aimed to trigger the cognitive component of empathy as much as possible, whilst minimizing the possibility of participants having an emotional reaction that is the product of something other than their own characteristics. Or in other words, supplying the participants with the means to construct another's perspective for themselves whilst minimizing the possibility that these means result in a form of emotional contagion from external influence.

3.2 Cognitive empathy: variable manipulation & experiment procedure

In order to see what effect the cultivation of cognitive empathy had on altruistic sharing in the dictator games, a manipulation of the empathy variable was needed. More specifically, a manipulation was needed that triggered individuals to use the cognitive component of empathy before playing a dictator game. In the present study all participants were asked to fill out the IRI questionnaire, as well as play a dictator game. One dictator game had no instructions except for the standard instructions for a dictator game.

The dictator game served as a measurement of altruistic sharing of participants. The dictator game that was not preceded by contextual information is referred to as DG1. The other dictator game, referred to as DG2, included the contextual information and instructions to engage in cultivating cognitive empathy before respondents participated in DG2. In the present study, the instructions used were a modified version of those used in the previous studies (Toi & Batson, 1982; Batson, Early, & Salvarani, 1997). The bullet points of contextual information concerned an individual in distress. The source of distress in the situation of this individual was the inability to participate in the workforce due to an accident, which impaired him physically. As a result of this accident, the individual could no longer work, and had to rely on financial aid through welfare funds in order to afford his living costs. However, the financial aid was only sufficient to afford living costs, it was not enough to afford leisure activities such as vacations or a day out of the house. Therefore the individual in distress had to rely on charity organizations for leisure activities.

The manner in which the contextual information was presented is derived from the research of Toi & Batson (1982). The difference in the present study is that the context of the situation was conveyed to participants via the bullet points rather than a tape recording. After recruitment, participants were requested to visit a hyperlink. The link redirected participants to the webpage that contained the survey. The survey contained the adapted IRI questionnaire and a dictator game. The software used to conduct the survey randomly divided its visitors into either the control group or the treatment group. The survey could be completed using a laptop or a smartphone of any kind. Depending on which group a participant was sorted into, participants were asked to adopt a certain perspective towards playing the dictator game. Participants in the control group and treatment were presented with the instructions to a standard dictator game. Before playing the dictator game participants read were instructed on how the dictator game was played. The instructions read that a dictator game was played with two players, a dictator and a receiver, both of whom were anonymous to each other before, during and after the game. Participants were then informed that they were the

dictator, and that they were gifted €10, - which the participant had to divide between themselves and the receiver. Participants were also informed that they had no obligation to give the receiver anything.

Participants in the control group played a dictator game and filled in the IRI to complete the survey, similar to the participants in the treatment group. Participants in the treatment group also received the instructions on how to play a dictator game. However, before the treatment group engaged in playing a dictator game, they had to read the instructions to the treatment. These instructions clarified that participants would be presented with a set of bullet points containing information on an individual in distress, and that after reading these bullet points they would be asked to engage in taking a perspective that would correspond to the situation described in the bullet points. Participants were also instructed to remain objective when forming their perspective about the individual in distress. These Instructions for the treatment group, as well as the instructions for the dictator game, are provided in Appendix C.

After receiving these instructions, participants in the treatment group received the contextual information. For the online filling-out of the survey, a measure had been taken to ensure individuals took their time to construct a perspective for themselves. The software used to conduct the survey prevented participants from submitting an answer to the dictator game. The dictator game would only appear if the participant spent 45 seconds on the page including the instructions and contextual information. As such, either participants could drop out of the survey due to disinterest or participants finished the survey as intended. Due to this measure, participants who "rushed" the filling-out of the survey, were filtered out of the sample. Were this measure not placed, participants in the treatment group who would have rushed through the filling-out of the survey would not have had enough time to properly construct a perspective for themselves, or would not have done so at all. As such, the responses from these participants would not have been representative, as they did not complete the treatment.

Through the combination of the instructions and the use of bullet points, rather than instructions combined with auditory or visual stimuli, the participants were triggered to engage in objective mental perspective taking. This combination of static text and the instruction to focus on the situation of the individual in distress attempted to make sure there were as few affective influences as possible within the manipulation of empathy.

A small incentive was implemented in order to increase the motivation to answer the questions in the survey and the games truthfully and with attention. This was done through a random lottery incentive. A participant was selected at random to have their choice in the dictator game paid out. The remaining money was donated to a charity that organizes activities for individuals as described in the contextual information. Said charity is "De Zonnebloem" a Dutch charity that organizes day's out of the house and vacations for individuals with a physical handicap. The random lottery incentive resulted in a €5, - payout for the dictator and a €5, - donation to the charity. The survey concluded with a question asking about the e-mail address of participants in order for the researcher to be able to contact the winner after the experiment had ended. After the experiment ended, the participant who won the random lottery was contacted via his e-mail. As bank account information was deemed sensitive, it was agreed that the researcher and the participant would meet on the Erasmus University Rotterdam campus for a physical exchange of his payout. The donation to the charity was made via an online payment service.

3.3 Experimental design

The experimental design was a between-subject design. After a participant was recruited, they were asked to visit the web page that contained the survey. The survey was conducted using the software from www.qualtrics.com. Using the questionnaire software, participants were randomly assigned into the control group or the treatment group. This was done in order to minimize the possibility of large variation in individual differences with regards to age, gender and nationality between the control and treatment group. Both the control and treatment group filled in the adapted IRI in order to obtain self-report data on their capacity to show empathy. The control group participated in DG1. The treatment group participated in DG2. Before participating in DG2 the treatment group was asked to engage in taking a perspective corresponding to the contextual information described in section 3.2. This was the treatment. Furthermore, to control for a possible fatigue effect in the IRI questionnaire, the questions of the IRI were randomized. In order to control for additional possible carry-over effects between the dictator game and the questions of the IRI questionnaire, the dictator game and IRI questionnaire were also randomized. These Randomization techniques are displayed in a flowchart of the experimental design in Figure 1.

Figure 1. Flowchart experimental design: between-subject design.
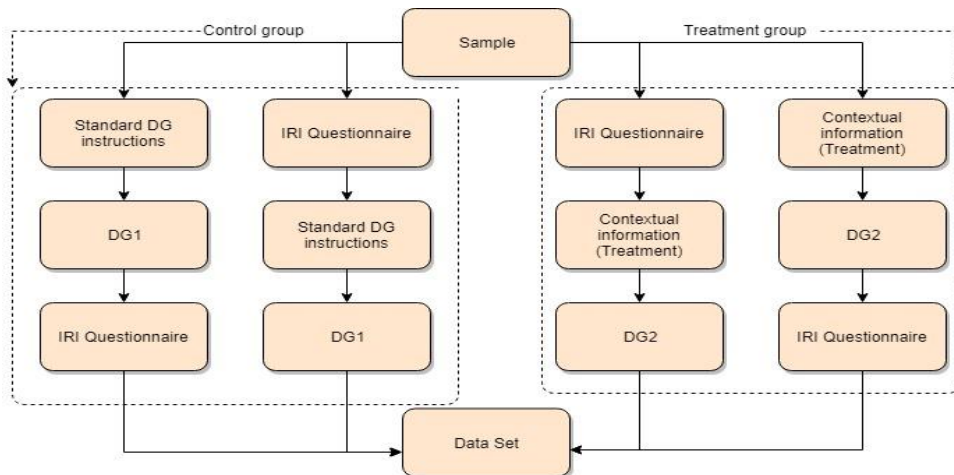
With regards to choice of design, a between-subject design was chosen for several reasons. Although a within-subject design needs fewer participants because there is less variation in individual differences, two issues in particular suggest that a between-subject design is more feasible in terms of procedure. One issue is that when a within-subject design had been used, the possibility of a demand characteristics bias occurring would have been too large, this is because participants would then have played in two dictator games during the same session. A demand characteristics bias occurs when the participant forms an idea about what is being researched and unconsciously and/or unintentionally change their behavior to conform to this idea. For example, a participant played a dictator game, after which they received a piece of information on another individual. The participant was then asked to engage in taking the perspective of the individual described in the piece of information they received. Immediately after the participant had taken this perspective, the participant was asked to play another dictator game. Clearly there were clues in the experiment that the researcher was researching interaction between individuals after taking a perspective. The participant could then have responded in a way that he or she thinks complies with the notion of what the researcher is researching. As such, the response of the participant would not have been reliable as it would not reflect what their own behavior or intention would have been. The second issue with a within-subject design was that it would have featured both the control and treatment conditions for each participant, making the procedure of a within-subject design take more time than a between subject design. The increased duration of the procedure could have resulted in a fatigue effect occurring within some of the participants. Due to these two issues a between-subject design had been utilized. Furthermore, there were no demographic measures included in the survey as pilot studies showed the survey to be time consuming and somewhat repetitive in the nature of questions. In order to not increase the severity of this issue further, demographic measures had been removed from the survey.

3.4 Hypotheses and expectations

To answer the research question, five hypotheses have been formulated. Additionally, expectations to the hypotheses are also provided. To test whether the treatment had an effect on the outcomes of the dictator game and whether levels of General Empathy positively correlated with altruistic sharing in the setting of this experiment, the first two hypotheses formulated are as follows:

H₁: Having received treatment increases the amounts sent in the dictator games.

H₂: Increased levels of General Empathy increase the amounts sent in the dictator games.

With regards to expectations, it was expected that participants with higher General Empathy levels give more in the dictator games. If empathy is defined as the ability to comprehend another person's experience with regards to their thoughts, feelings and attitudes through the act of perspective taking, then It makes sense that individuals who are more apt at this ability give more in the dictator game. This expectation seems even more likely in the treatment group, as in the treatment group more information about the receiver was given to the dictator. When a dictator is more skilled at comprehending the receiver's situation, it is expected that this dictator would give more in the dictator game than another dictator that is less skilled at comprehending the receiver's situation. This difference is expected because a dictator, who is skilled at comprehending the receiver's situation, would also have wanted a payout were the case that this dictator was the receiver. As such, a dictator who is skilled at comprehending the receiver's situation would be more inclined to give at least something in the dictator game.

As mentioned in section 2.3, it is expected that taking the perspective of an individual in distress can elicit an emotional reaction, even if the need situation of this individual in distress does not necessarily denote a situation that elicits an emotional response from the perspective taker. Cognitive empathy can therefore transform into affective empathy, meaning that due to mental effort spent on taking a perspective an individual can reach an affective state. This affective state would then not be the product of emotional contagion, emotional contagion in the sense that it is involuntarily, spontaneous and having an external influence at the source. In the case of the present research, it is expected that any states of affective empathy achieved by participants were achieved through the emotional contagion of one's self, so without an external influence at the source. Individuals who are only given the means to create an objective perspective of another's situation, could incite within themselves an affective state, in this affective state they would be more prone to altruistic sharing (Edele, Dziobek, & Keller, 2013). To test whether this effect can occur, it is hypothesized that when individuals with greater capability of mental perspective taking are presented with the means to

objectively construct another's perspective, they would display more altruistic sharing than those with a lesser capability of mental perspective taking. Based on these expectations, the third, fourth and fifth hypotheses are formulated as follows:

H₃: Participants with a higher level of General Empathy do not increase the amounts they send in the dictator game after receiving contextual information.

H₄: Higher scores on the subscale Perspective Taking significantly increase the amounts sent in the dictator game after receiving contextual information.

H₅: Higher scores on the subscale Fantasy significantly increase the amounts sent in the dictator game after receiving contextual information.

In order to test whether the effect of the treatment is also dependent on affective components of empathy, the third hypotheses takes empathy as a whole into account. Note that both the Fantasy scale and Perspective Taking variables are taken into account for the fourth and fifth hypotheses. These variables have been taken into account because they measure an individuals ability to transpose another's perspective to be their own perspective, which is deemed a cognitive action. Perspective taking concerns taking a perspective with regard to non-fictive characters, whereas the Fantasy scale measures how well individuals take the perspective of fictitious characters.

3.5 The sample

The sample will consist of students recruited on the Erasmus University of Rotterdam campus or via online channels. Said online channels would consist of platforms on which students of the Erasmus communicate, this is done in order to maintain a student sample. The choice for a student sample had been made simply because students are easy to reach and relatively homogenous. An estimation of the optimal sample size can be made via power calculations. The significance level is set to α = 0.05, typical for experiments. The power level (1- β) denotes the probability of a type II error, i.e. not rejecting the null hypothesis when it is actually false. Previous research has formulated a rule of thumb to determine statistical power level. Cohen (1988) uses a four-to-one weighing rule for beta-to-alpha risk that is reasonable in a variety of settings (Cohen, 1988). As α = 0.05 is used, this results in a β = 0.20 level per the four-to-one weighing rule of thumb. This comes down to a (1- β) = 0.80 power level. Cohen also introduced standardized effect sizes. Effect size is calculated through the following calculation.

$$Effect\ Size = \frac{[Mean\ of\ the\ treatment\ roup] - [\ Mean\ of\ the\ control\ group]}{Pooled\ Standard\ Deviation}$$

Analysis revealed a sample of about 100 subjects to provide a good balance between practical feasibility and power. In particular, 106 subjects are sufficient to detect a Cohen's standardized effect size of 0.50, characterized as "medium".

4. Results

In this chapter the results of the experiment will be discussed, starting with a description of the data obtained from the experiment. Secondly, the possible models to model the data will be compared in order to find the model to best interpret the data from. Finally, after concluding which model fits the data best, the statistical conclusions on the hypotheses will be provided.

4.1 Descriptive statistics

Any incomplete responses have been removed from that data set. As there were no demographic measures (see section 3.3), there are no descriptive statistics to report for them. Respondents were asked to fill in the IRI, responding to 7 statements for each of the 3 subscales (perspective taking, empathic concern and fantasy) on a 5-point Likert-scale. The minimum score therefore was the lowest end of the Likert-scale, 0, and the maximum score was the highest end of the Likert-scale 4, multiplied by 7 questions, multiplied by 3 subscales, i.e. 84. Descriptive statistics for the IRI and the dictator game are provided in Table 2 and 3, respectively. Additional descriptive statistics for the subscales are provided in Appendix A. Each subscale scoring range ranges between 0 and 28, following the same logic as above. The dictator game scoring ranges between 0 and 10 euros.

Table 2. Descriptive statistics: Interpersonal Reactivity Index.

	Mean	Var.	Std.	Min.	Max.
IRI: Total	51.07	122.29	11.06	25	76
IRI: Control	50.10	126.61	11.25	25	76
IRI: Treatment	52.16	117.18	10.82	25	76

Table 3. Descriptive statistics: Dictator Games.

	Mean	Var	Std.
DG: Total	4.23	8.98	3.00
DG: Control	3.72	8.81	2.97
DG: Treatment	4.81	8.67	2.95

A first glance at the descriptive statistics suggests that the means of the IRI scores are quite close to one another across the treatment and control group for both the General Empathy variable and each of the subscale variables. A Wilcoxon rank sum test tests whether two independent samples are drawn form the same underlying population with regards to a specified variable that is measured on the ordinal level. The data on empathy levels was collected through the use of a 5-point Likert

scale, thus the data is on the ordinal level. Therefore the Wilcoxon rank sum test was the logical choice to test whether the control group and treatment group are drawn from the same underlying population with regards to the variable General Empathy.

Table 4. Wilcoxon Rank Sum test for similar underlying population between control and treatment group for variable "General Empathy".

Variable	Hypothesis	N	P-value
General Empathy	H_0: The distribution of the General Empathy variable in the control group = The distribution of the General Empathy variable in the treatment group	Control group: 67 Treatment group: 59	$p = 0.248$

The Wilcoxon rank sum tests were performed to ascertain whether any differences in the outcomes of the dictator game between the samples could have been the result of a difference in empathic characteristics of the participants in the control and treatment group, rather than from the treatment itself. As can be seen in the table above, when comparing the samples with regards to the total scores on the IRI representing the "General Empathy" variable, the p-value ($p > 0.05$) is larger than the significance level set at $\alpha = 0.05$. Therefore we cannot reject the null-hypothesis that the two samples come from the same underlying population. This test is repeated in order to see whether the same holds up for the scores given on each of the subscales, of which the "General Empathy" variable is derived. For all subscales, the null hypothesis that the two samples come from the same underlying population cannot be rejected (see Appendix A).

4.2 Testing hypotheses

To test whether the treatment had an effect on the outcome of the dictator games, a Wilcoxon rank sum test will be used. As the control group and treatment are similar with regards to empathy levels, and the procedure of experiment is identical except for the treatment group receiving treatment, a Wilcoxon rank sum test indicates whether the amounts given in the dictator games differ statistically significant between the control and treatment group as a result of the treatment.

Table 5. Wilcoxon rank sum test for difference of samples regarding outcomes of dictator games.

Variable	Hypothesis	N	P-value
Dictator Game outcomes	H_0: The distribution of the dictator game outcomes in the control group = The distribution of the dictator game outcomes in the treatment group	Control group: 67 Treatment group: 59	$p = 0.028$

As can be seen in Table 5 the null hypothesis that the two samples are drawn from the same underlying population is rejected, as the p-value ($p < 0.05$) is lower than the predetermined alpha level ($\alpha = 0.05$). The groups are assumed to be drawn from the same population due to random assignment to treatments; and indeed, the Wilcoxon test in table 4 reveals that there are no significant differences. Therefore the first hypothesis that having received treatment increases the amounts sent in the dictator games is accepted. To test the second hypothesis, a Spearman correlation test is applicable, as the spearman correlation test measures the monotonic relationship between two continuous or ordinal variables. The data collected in the present research is on the ordinal level. The Spearman correlation test produces the Spearman's rho, which indicates the nature of the correlation between the General Empathy variable and the outcomes of the dictator games.

Table 6. Spearman's Rho : General Empathy and Subscales
correlation with outcome of dictator game

VARIABLES	(1) Treatment=0	(2) Treatment =1
General Empathy	0.4807***	0.2564**
Perspective Taking	0.4487***	0.1247
Fantasy Scale	0.2476**	0.2245*

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

As can be seen in Table 6, in both the control and treatment group there is a statistically significant positive correlation ($p < 0.05$) between the variable General Empathy and the outcomes of the dictator games. This indicates that as the level of General Empathy rises, on average, the amounts give in the dictator game by respondents increase as well. Therefore, the second hypothesis is accepted. On average, increased levels of General Empathy are associated with an increase in amounts given in the dictator games at a significance level of $\alpha = 0.05$, ceteris paribus.

The last three hypotheses test whether the treatment enhances the effect of higher levels of General Empathy, Perspective Taking and Fantasy on the outcome of the dictator games. A Spearman correlation test was also performed for the variables Fantasy and Perspective Taking in order to obtain correlation coefficient between the outcomes of the dictator game and these variables, this test is displayed in Table 6. The spearman correlation test is a non-parametric test, as such it does not assume a normal or continuous distribution. As the data collected is on the ordinal scale, the spearman correlation test is applicable to gage whether the effect of General empathy and the subscale variables differ across the samples. The Spearman correlation test in Table 6 shows that the positive correlations

between the outcomes of the dictator game and the variables Perspective Taking and Fantasy scale are statistically significant in the control group, as expected. The correlations between the outcomes of the dictator game and the subscale variables are not statistically significant at $\alpha = 0.05$ in the treatment group. This result seems to be an indication that the having received treatment increases amounts given in the dictator game, regardless of the levels of the subscale variables. Linear regression models were created in order to see if the treatment enhances effects of empathy on altruistic sharing at higher levels of the subscale variables. Initially this was tested by creating regression models that used the dictator game outcomes as the dependent variable and General Empathy and the subscale variables as independent variables. These models also included an interaction term between the treatment variable and the Empathy variable of interest. For example, an interaction term between treatment and General Empathy, or between treatment and Perspective taking. However, this resulted in a multitude of models that suffered from problematic multicollinearity between the treatment variable and the interaction variables. This was deduced from high variance inflation factors in the models that included these interaction terms. Therefore, alternative models were created[1], which treated the variables of interest to the hypothesis being tested as dummy variables. In these models the General Empathy, Perspective taking and Fantasy variables are categorized as either high or low to see if models can be formed including all variables without problematic multicollinearity being present. The classification of a high or low score is a simple, ad-hoc classification to use with this sample. It is only done in order to see whether a statistically significant effect of the interaction term can be found at higher levels of the variables of interest. This is done through looking at the median score of General Empathy, Perspective taking and Fantasy. All scores above the median will be regarded as "high" scores and all score lower than the median will be regarded as "Low".

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[1] All models used to answer hypotheses 3,4 and 5 satisfy the assumptions of linear regression, statistical proof can be found in Appendix B

Table 7: Linear regression: Effect of treatment and higher level of General Empathy on dictator game outcomes.

VARIABLES	Model 1.
General Empathy-High	2.499***
	(0.680)
Treatment	2.224***
	(0.726)
General Empathy-High*Treatment	-2.319**
	(1.001)
Constant	2.568***
	(0.455)
Observations	126
R-squared	0.138

Standard errors in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 7 shows the regression analysis when the General Empathy variable is transformed into a dummy variable, where the dummy General Empathy-High takes on the value = 1 if the score of a respondent is above the median score in the sample on the Interpersonal reactivity index (median = 51) and is 0 otherwise. Model 1 uses the variables Treatment, General Empathy-High and General Empathy-High*Treatment as independent variables, to measure the effects of empathy and the treatment on the dependent variable. The dependent variable is the outcome of the dictator game. The significance level is set to α = 0.05 for all hypotheses, typical for experiments. On average, having a General Empathy score above the median of the sample positively increases the amount given in the dictator game, ceteris paribus. On average, having received treatment increases the amount given in the dictator game, ceteris paribus. However, the interaction effect, indicating having received treatment and having a General Empathy score above the median of the sample, negatively influences amounts given in the dictator game, ceteris paribus. Model 1 shows that, on average, participants with a higher level of General Empathy actually decrease the amounts they send after receiving contextual information compared to those not having received contextual information. Thus, no evidence in support of the third hypothesis is found. Therefore, the third hypothesis that participants with a higher level of the variable General Empathy increase the amounts sent in the dictator game after having received contextual information is rejected.

Table 8. Linear regression: Effect of treatment and higher levels of Perspective taking or Fantasy on dictator game outcomes.

VARIABLES	Model 2.	Model 3.	Model 4.
Empathic Concern-High	1.128**	1.141**	1.136**
	(0.542)	(0.533)	(0.545)
Perspective Taking-High	1.237**	2.000***	1.229**
	(0.535)	(0.622)	(0.538)
Fantasy Scale-High	0.198	0.267	0.317
	(0.504)	(0.496)	(0.683)
Treatment	1.202**	2.369***	1.339*
	(0.490)	(0.701)	(0.722)
Perspective Taking-High*Treatment		-2.008**	
		(0.876)	
Fantasy Scale-High*Treatment			-0.256
			(0.987)
Constant	2.386***	1.979***	2.323***
	(0.488)	(0.511)	(0.546)
Observations	126	126	126
R-squared	0.162	0.197	0.163

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 8 shows the regression analysis when the variables Empathic Concern, Perspective taking and Fantasy are transformed into dummy variables. In which the dummies takes on the value Empathic Concern-High = 1, Perspective taking-High = 1 and Fantasy Scale-High = 1 if the score of a respondent is above the median score of the sample on the specified subscale. The medians respectively are $M = 17$, $M = 18$ and $M = 16$. Model 2 uses the variables Empathic Concern-High, Perspective Taking-High, Fantasy Scale-High and the Treatment as independent variables. Model 3 uses the same variables as Model 2 with an exception for the addition of an interaction term between the variables Perspective Taking-High and Treatment. Model 4 also uses the same variables as Model 2 with an exception for the addition of an interaction term between the variables Fantasy Scale-High and Treatment. Each of these models uses the outcomes of the dictator game as the dependent variable. Similar as with the results for General Empathy, derived from Model 1, Model 3 shows a similar effect of Perspective taking and the treatment on the outcomes of dictator game. Both variables separately have a statistically significant positive effect on the outcome of the dictator game,

ceteris paribus. However, the interaction effect, indicating having received treatment and having a Perspective Taking score above the median of the sample, negatively influences amounts given in the dictator game, ceteris paribus. The fourth hypothesis, that higher scores on the subscale Perspective Taking increase the amounts that participants sent in the dictator game after receiving contextual information, is rejected. Model 3 shows that participants with a higher level of Perspective Taking decrease the amounts they send after receiving contextual information compared to those not having received contextual information.

Models 2 and 3 indicate that there is no statistically significant effect of the score of respondents on the Fantasy Scale on the outcomes of the dictator games. Nonetheless, Model 4 is generated to confirm the expectation that there is also no effect of having higher scores on the Fantasy scale whilst having received treatment on the outcome of the dictator game, Model 4 confirms this expectation. The interaction effect, indicating having received treatment and having a Fantasy Scale score above the median of the sample, does not have a statistically significant effect on the outcomes of the dictator game at any standardized significance level, ceteris paribus. The fifth and last hypothesis, that higher scores on the subscale Fantasy increase the amounts that participants sent in the dictator game after receiving contextual information, is rejected as well.

5. Discussion & conclusion

In this chapter the results will be summarized, combined with a number of notes regarding limitations of the study and possible future research on the topic. Furthermore, with the summary of results and the acceptance or rejection the four hypotheses, an answer to the research question will be formulated.

5.1 Summary of results

A Wilcoxon rank sum test for the same underlying distributions of control and treatment group with regards to empathy showed that the control and treatment group are assumed to be drawn from the same underlying distribution. This did not apply to the scores on the dictator game, although this was expected as it was assumed that the difference between the two samples was due to the treatment and not due to a difference in underlying distribution. After the Wilcoxon rank sum test, a number of regression models were generated to determine the effects of the treatment, general empathy and the subscale variables on the outcomes of the dictator game. The regression analysis resulted in the acceptance of hypotheses 1 and 2 and the rejections of the hypotheses 3, 4 and 5. The results show that there was no positive interaction effect between the treatment and the

levels of empathy, or between the treatment and the underlying dimension of empathy, on altruistic sharing.

5.2 Limitations & recommendations for future research

The first limitation stems from the presence of multicollinearity between variables of interest. The limitation causing this problem can be attributed to many factors, in order to minimize the possibility of future research similar to this research one should take note of this and implement measures beforehand to overcome this issue. As such the first limitation is the sample size. Multicollinearity is a hard to solve problem when dealing with data analysis. This is because multicollinearity between variables usually doesn't stem from a faulty analysis but rather it is just present in the data. Therefore one of the more basic but effective measures in preventing multicollinearity in the data is just to aim at collecting data from a larger sample. Multicollinearity occurs when one of the explanatory variables can be predicted through looking at the other explanatory variables in the same regression. This makes it difficult to attribute changes in the dependent variable to either independent variable specifically. When more data is collected, more accurate parameters can be estimated, to a point where the data is rich enough to be able to distinguish which effect stems from which variable.

Secondly, future research should take more care in choosing the medium through which the data is collected. In this research the method proposed to collect data was through social media groups consisting of student populations and on campus recruitment. As the medium through social media proved to supply a more than sufficient size for the sample, the recruitment on campus was not necessary. Although measures had been taken in order to ensure respondents engaged in the treatment, or in other words cultivating cognitive empathy, there exists a possibility that these measures were ignored therefore resulting in unreliable self-reported levels of empathy. It could be monitored and tested whether a participant ignores instructions in lab conditions.

Furthermore, another mention needs to be made on the subject of incentivizing. As pilot studies showed that the survey was repetitive and boring under a low pay condition. Future research could greatly benefit from having a higher budget for the experiment. When an individual is payed properly for their time, they will be more motivated to pay attention and answer reliably through that incentive. This would enable the researcher to add more questions to the survey. Relating to the survey used in this paper, which had to exclude demographic questions, demographic questions could also be added. As such, more precise parameters could be estimated, as it would then be possible to also control for gender, age and nationality. For example, an individual who older is more likely to have a steady job and therefore a steady income. With this steady income, their worries about having

enough money could decrease. As a result of having no worries about money they could be more inclined to give more money to the receiver in a dictator game. The outcome of the dictator game between an individual without a steady a job and an individual with one could then also be dependent on having worries about money besides the capacity to show empathy.

The last limitation was that high empathic individuals actually did display high levels of altruistic sharing as a result of that property of their personality. But, it could also be possible that this very empathic individual already reached his or her limit of altruistic sharing in a specific time period, and therefore chose not to share altruistically in the setting of the experiment. Perhaps this individual feels that they should only spend a certain amount of money in a specific period of time with the goal of that spending being of an altruistic nature. In this case their score on the IRI would have indicated that they were very empathic and thus the expectation would have been that they sent large amounts in the dictator game, but the actual outcome of the dictator game would have reflected the opposite. The opposite being a very empathic individual who sends nothing to the receiver in a dictator game. This was a more complicated limitation to overcome as it would have required the monitoring of the behavior of respondents with regards to altruistic sharing before the experiment.

5.3 Conclusion

In this research, with the methods used, only a significant positive relationship was found between General Empathy levels, Perspective Taking levels and the treatment on the outcomes of the dictator game. Analysis of the data collected showed that there was no significant positive interaction effect between the treatment and the levels of General Empathy or any of its subscales on the outcomes of the dictator game. The treatment was expected to enhance the effects of empathy and its underlying dimensions on altruistic sharing measured through the dictator game. However, the analysis shows that treatment had an effect on altruistic sharing regardless of the level of general empathy or the levels of Empathic Concern, Perspective Taking and Fantasy. The effect of different levels of empathy on altruistic sharing after cultivating cognitive empathy was found not to be positive in the setting of this experiment. There was an effect of self-reported General Empathy and Perspective Taking on altruistic sharing. There was also an effect of cultivating cognitive empathy, the treatment, on altruistic sharing. However, the two variables do not enhance each other. There was no statistical proof found that the positive effect of empathy or any of its underlying dimensions on altruistic sharing could be enhanced through the act of cognitive perspective taking in the setting of this experiment.

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Appendices.

Appendix A: Additional descriptive statistics

Table A.1. Descriptive statistics: subscale Empathic concern.

	Mean	Var.	Std.	Min.	Max.
EC: Total	24.02	20.36	4.51	5	27
EC: Control	23.54	24.59	4.96	5	27
EC: Treatment	24.58	15.32	3.91	10	26

Table A.2 Descriptive statistics: subscale Perspective Taking

	Mean	Var.	Std.	Min.	Max.
PT: Total	24.80	19.17	4.38	3	28
PT: Control	24.66	20.23	4.50	3	27
PT: Treatment	24.97	18.24	4.27	8	28

Table A.3. Descriptive statistics: subscale Fantasy Scale

	Mean	Var.	Std.	Min.	Max.
FS: Total	23.25	30.36	5.51	4	28
FS: Control	22.91	30.99	5.57	5	28
FS: Treatment	23.63	29.89	5.47	4	28

Table A.4.Wilcoxon rank sum tests for similar underlying population between control and treatment for subscale variables Empathic Concern, Perspective Taking and Fantasy Scale.

	Hypothesis	N	P-value
Subscale EC score	H_0: EC~Control=EC~Treatment	Control group: 67 Treatment group: 59	$p = 0.485$
Subscale PT score	H_0: PT~Control=PT~Treatment	Control group: 67 Treatment group: 59	$p = 0.631$
Subscale FS score	H_0: FS~Control=FS~Treatment	Control group: 67 Treatment group: 59	$p = 0.426$

(Variable X~Control = The distribution of variable X in the control group ; Variable X~Treatment = The distribution of variable X in the treatment group)

Appendix B: Linear regression assumptions

Figure B.1: Scatter plot dictator game scores and General Empathy scores, tests for linear relationship
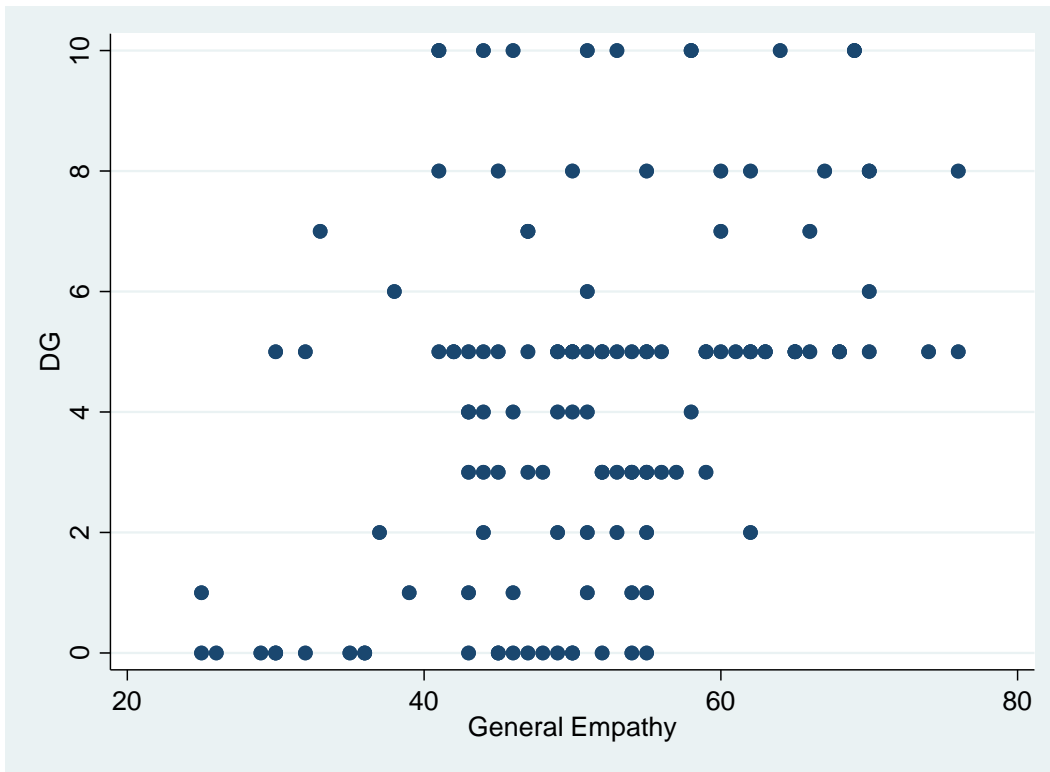

Figure B.2: scatter plot dictator game scores and perspective taking scores, tests for linear relationship
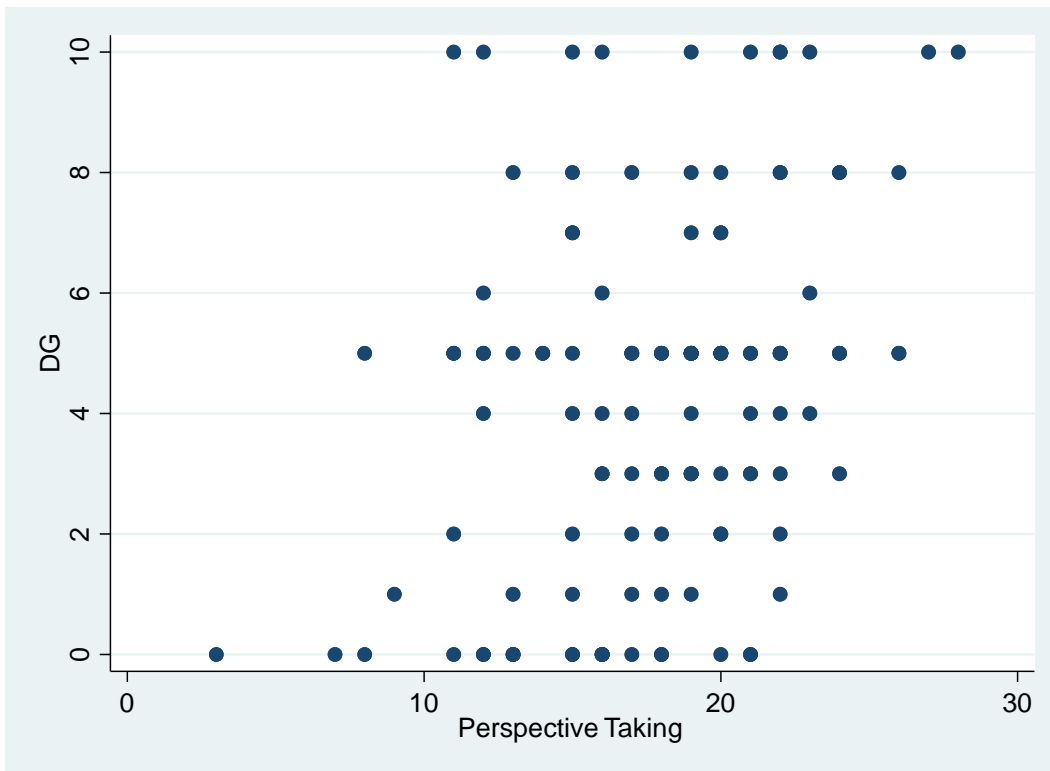

Figure B.3: scatter plot dictator game scores and Empathic Concern scores, tests for linear relationship
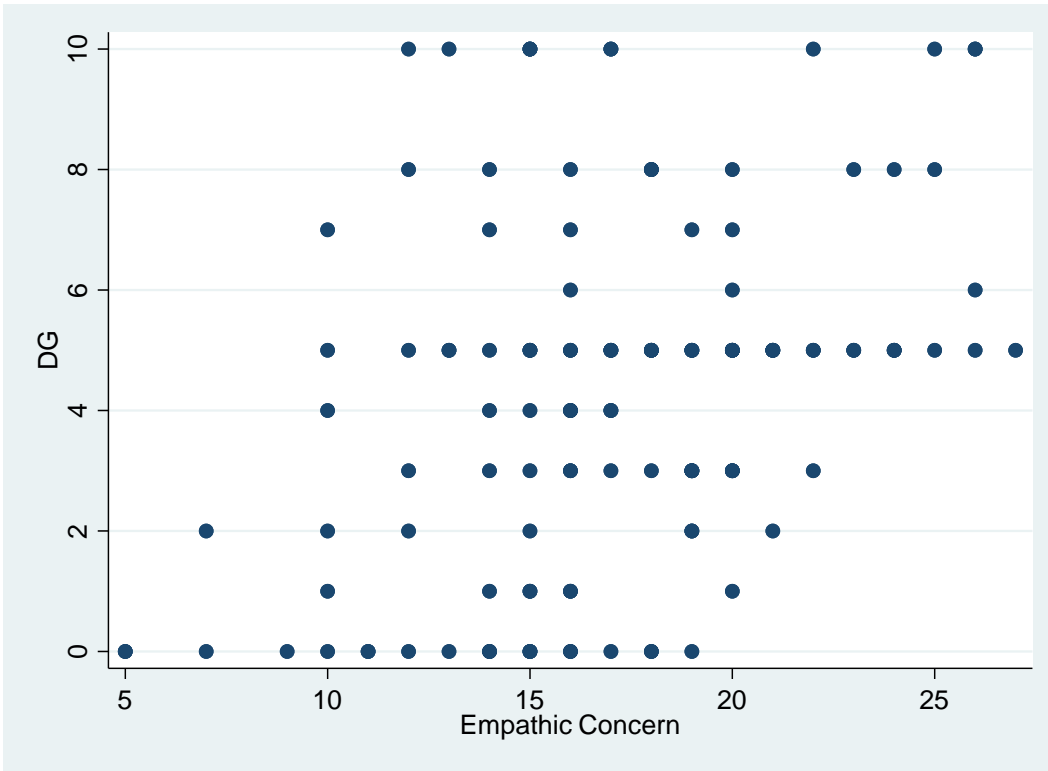
Figure B.4: scatter plot dictator game scores and Fantasy Scale scores, tests for linear relationship
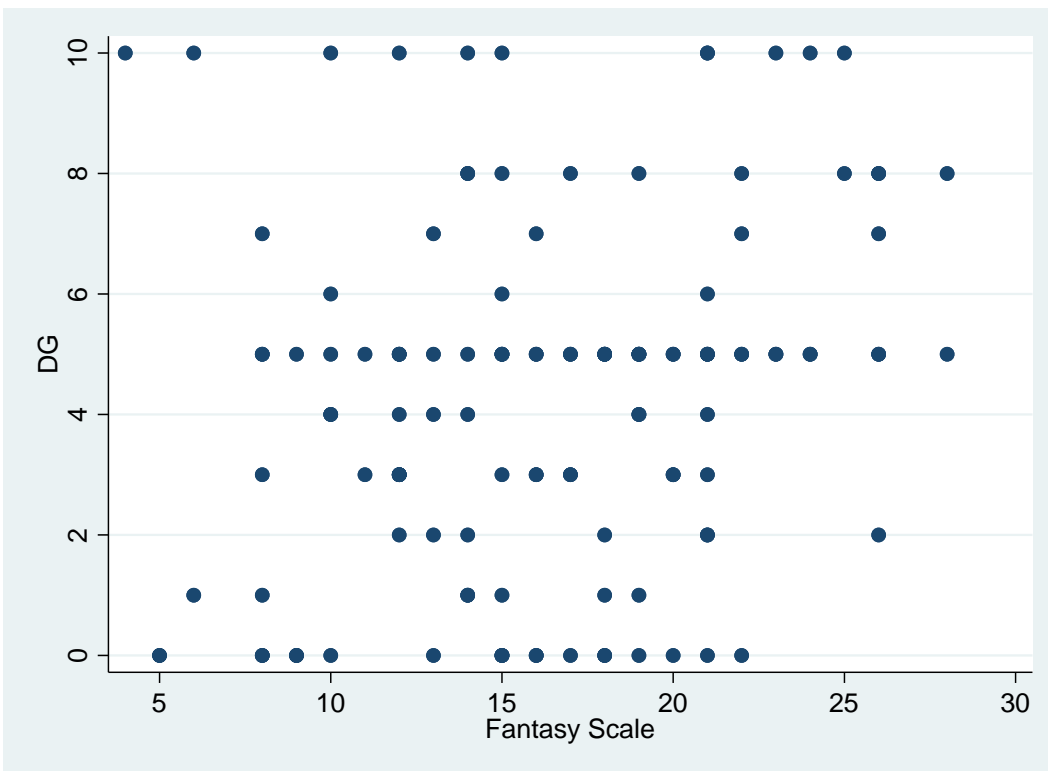

Table B.1: Shapiro Wilk test for normal data. (assumption: multivariate normality)

Variable	Obs.	W	V	z	Prob > z
GE	126	0.98	1.18	.37	0.356
EC	126	0.99	0.94	-.15	0.560
PT	126	0.99	1.33	.65	0.259
FS	126	0.99	0.96	-.10	0.540
Dg	126	0.99	1.17	.35	0.364

Table B.2: Variance inflation factors for regression Models 1,2,3 and 4 (assumption: no multicollinearity)

Model	Highest VIF	1/VIF
1	3.30	0.303
2	1.23	0.834
3	2.92	0.342
4	3.07	0.326

Table B.3: Breusch-Pagan / Cook-Weisberg tests for heteroscedasticity for Models 1,2,3 and 4 (assumption: constant variance)

H_0: Constant variance . Variables: fitted values of dictator game outcomes.

Model	Chi2(1)	Prob > Chi2
1	0.06	0.807
2	1.54	0.215
3	0.94	0.330
4	1.48	0.224

Appendix C: Adapted IRI, Control and Treatment group surveys.

First off, thank you for taking the time to fill out my survey. Your participation is greatly appreciated. Table C.1: Introduction and IRI instructions.

However, before you continue, I implore you to read all questions, instructions and descriptions carefully. If not done so, the responses are likely not usable. Additionally, one of all participants will be selected at random to have their choices in a dictator game paid out. The last page of this survey will include details on your payout.

The survey consists of 21 questions and 1 game. You should be done in just a couple of minutes.

In this section of the survey you are asked to carefully read a statement. After which, you are to indicate on a 5 point scale to what extent this statement applies to yourself.

Once again, thank you for the effort.

(*Note: Introduction and IRI instructions do not necessarily follow in subsequent order. Order is dependent on randomization.)

Table C.2: Interpersonal reactivity index Questions.

Question	
Q1 I daydream and fantasize, with some regularity, about things that might happen to me.	FS
Q2 I often have tender, concerned feelings for people less fortunate than me	EC
Q3 I sometimes find it difficult to see things from the "other person's" point of view.	PT
Q4 Sometimes I don't feel very sorry for other people when they are having problems.	EC
Q5 I tend to really get involved with the feelings of the characters in a story.	FS
Q6 I sometimes try to understand my friends better by imagining how things look from their perspective.	PT
Q7 Other people's misfortunes do not usually disturb me a great deal.	EC
Q8 When I watch a good movie, I can very easily put myself in the place of a leading character.	FS
Q9 When I'm upset at someone, I usually try to "put myself in his/her shoes" for a while.	PT
Q10 I am usually objective when I watch a movie or play, and I don't often get completely caught up in it.	FS
Q11 I try to look at everybody's side of a disagreement before I make a decision.	PT
Q12 When I see someone being taken advantage of, I feel kind of protective towards them.	EC
Q13 Becoming extremely involved in a good book or movie is somewhat rare for me.	FS
Q14 If I'm sure I'm right about something, I don't waste much time listening to other people's arguments.	PT
Q15 After seeing a play or movie, I have felt as though I were one of the characters.	FS
Q16 When I see someone being treated unfairly, I sometimes don't feel very much pity for them.	EC
Q17 I am often quite touched by things that I see happen.	EC
Q18 I believe that there are two sides to every question and try to look at them both.	PT
Q19 I would describe myself as a pretty soft-hearted person.	EC
Q20 When I am reading an interesting story or novel, I imagine how I would feel if the events in the story were happening to me.	FS
Q21 Before criticizing somebody, I try to imagine how I would feel if I were in their place.	PT

Table C.3: Standard dictator game & instructions in control group.

DG1 The dictator game is played with two players, a dictator and a receiver, who are anonymous to each other before, during and after the game. You are the dictator and you are gifted €10,00. You can divide this money between yourself and the receiver. However, you have no obligation to give the receiver anything. In the scale below, please indicate what amount of money you would send to the receiver.(this situation is not hypothetical, you will be paid out should you be selected for payout,)

		0	1	2	3	4	5	6	7	8	9	10

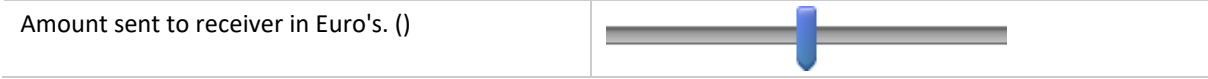Amount sent to receiver in Euro's. ()

Table C.4: Instructions dictator game in treatment group.

DG2 i After these instructions, you will be presented with a set of bullet points containing information on an individual in distress. After you have carefully read the bullet points about the situation of the individual in distress, please engage in taking a perspective that corresponds to the situation described in the bullet points.

When doing so please try to focus on the information provided about the situation and about the individual who is described in the bullet points. Try not to concern yourself with how this individual feels. Concentrate on remaining objective in constructing your perspective of the situation. A timer is included to make sure you take the time engage in taking a perspective. The timer counts down 45 seconds. After the timer ends you can continue to the next page.

Table C.5: Contextual information and treatment group dictator game.

DG2: The situation of the individual in distress is characterized by the following context.

-The individual works in construction industry·

-The individual has no education·

-The individual gets into an accident which impairs him physically ·

-The individual can no longer work·

-The individual gains financial aid through welfare funds·

-The financial aid is sufficient for living costs   ·

-The individual has to rely on charities for leisure activities, such as a vacation or a day out of the house.

Display This Question:
   If Timing [Page Submit] > 45

DG2 The dictator game is played with two players, a dictator and a receiver, who are anonymous to each other before, during and after the game. You are the dictator and you are gifted €10,00. You can divide this money between yourself and the receiver. However, you have no obligation to give the receiver anything. In the scale below, please indicate what amount of money you would send to the receiver.(this situation is not hypothetical. If you are selected for payout, what you allocate to the dictator will be paid out to you, and what you allocate to the receiver will be donated to benefit an individual such as the one described in the bullet points)

	0 1 2 3 4 5 6 7 8 9 10
Amount sent to receiver in Euro's. ()	====================[■]====================

Table C.6.: Contact question for pay out lottery.

Q33 Fill in your e-mail address in order for me to contact you with regards to pay-out should you be selected.

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