

The influence of self-talk in Ultimatum and Dictator Games: *What you say to yourself matters!*

An experimental study on the effects of self-talk on negative emotions and fair bargaining behavior



Student: Jeroen Bakker
Student number: 4093887

E-mail address: J.s.bakker@students.uu.nl

Master's degree program: Applied Cognitive Psychology/Toegepaste Cognitieve Psychologie

Assignment: Thesis Final Version

Number of ECT's: 27,5

Supervisor: Vincent Buskens (University of Utrecht)

Faculty: Social and Behavioral Sciences

Thesis Coordinator & second reader: Jeroen Benjamins

Date: July 7th 2017

ABSTRACT. This study investigates to what extent self-talk as a cognitive strategy initiates fair behavior during Ultimatum and Dictator bargaining interactions, as well as to what extent it influences the emotional state of individuals who are treated unfairly. This study serves as a follow-up experiment to a previous study by Frey et al. (2017), in which this question was addressed by applying a self-talk manipulation to both proposers and responders in an Ultimatum Game (UG). In the UG, the proposer must decide how to divide a sum of money between him and the responder. The responder is given the option to accept or reject the offer. If the responder rejects the offer, both players get nothing. The current study applies the same manipulation in a Dictator Game (DG) in which, in contrast to the UG, responders cannot reject unfair offers. The three types of self-talk that were compared are self-focused (focusing on one's own interests), other-focused (focusing on the opponent's interests), and neutral, task-unrelated self-talk. By comparing the proposing behavior in the DG and the UG, the current study aimed to clarify the motives of proposers who behave fairly, and what role self-talk plays in this regard. Also, the comparison allowed examination of the effects of self-talk on responders' emotions while ruling out the possibility that rejection of unfair offers could function as emotion regulation. In sum, the results suggest that self-talk affects both behavior and emotions in UGs and DGs. However, not all self-talk types used in the experiment appeared to be suitable to regulate emotions. The results show that neutral self-talk down-regulated negative emotions in the UG, but up-regulated negative emotions in the DG. This suggests that self-talk which makes one think about an unfair situation only has a positive effect on one's emotions if there is a possibility to do something about it. Furthermore, the results show that self-talk which induces a focus on the other player led to fairer proposing behavior in both the UG and the DG. This finding suggests that taking one's opponent's interests into account increases one's concern for fairness and that fair behavior in the UG is thus not solely driven by strategic motives, but also by altruism. This study shows again the power of self-talk and the importance of further research into its mechanisms. Implications of the findings and directions for future research will be discussed.

Keywords: self-talk; ultimatum bargaining; dictator bargaining; emotion regulation; fair treatment.

Table of Contents

1. Introduction	4
1.1 <i>Self-talk</i>	4
1.2 <i>Central Research Question</i>	5
1.3 <i>Overview</i>	6
1.4 <i>Previous Research and their Limitations</i>	6
1.5 <i>Unfair Treatment and Negative Emotions in Economic Games</i>	9
1.6 <i>Does What You Say to Yourself Matter?</i>	10
1.7 <i>The Current Study</i>	12
1.8 <i>Research Hypotheses</i>	13
2. Methods	15
2.1 <i>Participants</i>	15
2.2 <i>Design</i>	16
2.3 <i>Materials</i>	16
2.4 <i>Procedure</i>	17
2.5 <i>Statistical Analysis</i>	18
3. Results	20
3.1 <i>Descriptive Statistics</i>	20
3.2 <i>Responder's Negative Emotions</i>	20
3.3 <i>Proposer's Offers</i>	24
4. Discussion and conclusion	25
4.1 <i>Responders' Negative Emotions</i>	25
4.2 <i>Proposer's Offers</i>	28
4.3 <i>Conclusion</i>	30
Acknowledgements	32
References	33
Appendixes	42
<i>Appendix A- Questionnaire</i>	42
<i>Appendix B – Instructions</i>	44

1. Introduction

1.1 Self-talk. *Self-talk* is considered a characteristic of human kind (Fields, 2002), as people talk to themselves a lot. Also, it is described as a key source for understanding ourselves and our environment (Galanis, Hatzigeorgiadis, Zourbanos, & Theodorakis, 2016; Rokke & Rehm, 2001). Hackfort and Schwenkmezger (1993, p. 355) defined self-talk as an “internal dialogue in which the individual interprets feelings and perceptions, regulates and changes evaluations and cognitions and gives themselves instructions and reinforcement”. In simple words, self-talk refers to statements people make to themselves either in an overt (i.e., out loud), or a covert (i.e., in mind) manner¹ (Ellis, 1962; Hatzigeorgiadis, Theodorakis, & Zourbanos, 2004).

The theoretical basis of self-talk comes from cognitive psychology (Payne & Manning, 1990), in which cognitive theorists have emphasized the relation between self-talk and behavior. They have suggested that an individual’s thinking can inhibit, initiate, and reinforce both emotional and behavioral outcomes (Hatzigeorgiadis & Biddle, 2008). Meichenbaum (1977) stated that statements addressed to oneself, as indices of an individual’s beliefs, can influence attentional processes and consequently affect behavioral performance. Also, he suggested that self-talk leads to more adaptive thoughts and effective coping behavior under stressful situations. Therefore, self-talk is a frequently used cognitive behavioral strategy among athletes and sports psychologists to influence sports performance (Hardy, 2006; Shannon, Gentner, Patel, & Muccio, 2012). Athletes can improve or impair their performance by talking to themselves, depending on the valence of the self-talk (i.e., positive or negative; Gammage, Hardy, & Hall, 2001).

Research shows that positive self-talk (e.g., “you are the best”; Gammage et al., 2001) improves performance in golf (Harvey, Van Raalte, & Brewer, 2000; Thomas & Fogarty, 1997), soccer (Papaioannou, Ballon, Theodorakis, & Auwelle, 2004) and tennis (Mamassis & Doganis, 2004). Hardy (2006) stated that this is because self-talk is a source of self-efficacy², which strengthens the athletes’ self-confidence. Zinsser, Bunker, and Williams (2001) add that self-talk can also enhance the athlete’s motivation and focus on key elements of the task. Negative self-talk (e.g., “what a stupid mistake”; Gammage et al., 2001) can in fact worsen sports performance, for example in bowling (Kirschenbaum, Ordman, Tomarken, & Holtzbauer, 1982) and darts (Dagrou, Gauvin, & Halliwell, 1992; Raalte et al., 1995). Hatzigeorgiadis et al. (2004) explained that negative self-talk deteriorates performance by causing anxiety and counterproductive thoughts. Furthermore, Theodorakis, Weinberg, Natsis, Douma, and Kazakas (2000), argue that *instructional* self-talk (e.g. "focus on the ball") helps in tasks where skill, timing, and precision are required because it makes someone focus on the key elements of the task (Schunk & Zimmerman, 2003). *Motivational* self-talk (e.g., "you can do this") increases effort and self-confidence and creates positive moods. This type

¹ Self-talk is also referred to as inner dialogue, internal monologue, intrapersonal communication, inner speech, self-communication, self-directed verbalizations, verbal thinking, verbal mediation, auditory imagery, or articulatory imagery (Van Raalte, Vincent, & Brewer, 2016).

² Self-efficacy is a construct defined by Bandura (1977, p. 3) as: “beliefs in one’s capabilities to organize and execute the courses of action required to produce given attainments.”

of self-talk is particularly effective in tasks where strength and stamina play a role because execution of these tasks can be supported through concentration and an increased effort (Hatzigeorgiadis et al., 2004). Aside from sports psychology, self-talk is also used in cognitive behavioral therapy to help people deal with anxiety (Meichenbaum, 1977), stress (Forman, 1983), and anger (Novaco, 1976). Also, Manz and Sims (1989) suggested that self-talk, as a self-influencing tool, can lead to better performance in the business world as well. They claim that employees and managers of companies can positively influence personal effectiveness through self-talk, as it leads to more effective thought patterns (e.g., thinking of potential opportunities in challenging situations, rather than the obstacles).

Even though the above literature suggests a direct relationship between self-talk and performance, other studies indicate that the influence of self-talk on performance is mediated by emotions (Ellis, 1975; Harrell, Chambless, & Calhoun, 1981; Mayer & Salovey, 1997; Neck & Manz, 1992; Robazza, Pellizzari, & Hanin, 2004). According to Neck and Manz (1992, p. 688), self-talk causes an emotional state that corresponds to the content of the self-talk³, which in turn affects performance, evaluations and decision making (Bower, 1981; Neck & Manz, 1992). For example, emotional states improve when negative statements addressed to oneself are replaced by positive ones (Robazza et al., 2004). In turn, these positive emotional states can cause performance improvement (Mayer and Salovey, 1997). Furthermore, strategies for restructuring the content and reducing the frequency of negative thoughts, provide a basis for cognitive behavioral approaches to reduce negative emotions (e.g., fear) and subsequently improve performance (Georgakaki & Karakasidou, 2017).

1.2 Central research question. In summary, self-talk affects emotions and behavior and its specific content matters. In this study, the effect of self-talk is investigated in a different domain than sports or behavioral therapy, namely in Ultimatum and Dictator bargaining games. Prior research suggests that self-talk can be an effective strategy to influence emotions and behavior during bargaining interactions (e.g., Frey et al., 2017; Grecucci, Giorgetta, Van 't Wout, Bonini, & Sanfey, 2013; Van 't Wout, Chang, & Sanfey, 2010). However, the remaining question is to what extent different types of self-talk can initiate fair behavior during these social interactions, as well as to what extent they can influence the emotional state of individuals who are treated unfairly. Therefore, this research aims to provide more insight into these issues. To achieve this goal, this study will apply a self-talk manipulation to both proposers and responders in a Dictator Game (DG). The DG is an economic test of fairness (Forsythe, Horowitz, Savin, & Sefton, 1994), and is widely used to study how people behave in situations in which they must make decisions about the well-being of themselves and others (Pruitt & Kimmel, 1977). In the DG, a proposer is given an endowment by the experimenter (say \$20) and must determine how much of this money is

³ Based on the assumption that intrusive thoughts lay the foundation for fear and emotion, Ellis (1975, p. 52) stated: "one may control one's emotions by changing the internalized sentences, or self-talk, with which one largely created these emotions in the first place". Furthermore, Ellis (1962, 1975) claimed that irrational and negative thoughts could cause emotional suffering, and rational thoughts can result in positive emotional states. Rosin and Nelson (1983) investigated the effects of thoughts with different content on emotions. Their results show that subjects who used rational self-talk experienced less negative emotions during their task (i.e., solving a cube puzzle) than subjects who spoke irrationally to themselves.

being offered to the responder, and how much he keeps for himself. The DG is a social interactive design in which emotions are very present because recipients of the offer have no choice but to accept the proposer's decision (Eckel & Grossman, 1996). This study will serve as a follow-up experiment to a previous study by Frey et al. (2017), in which the influence of different types of self-talk on negative emotions and behavior was experimentally tested using an Ultimatum Game (UG). Like the DG, the UG is an experimental game that is frequently used in social and economic research (Camerer, 2003; Camerer & Thaler, 1995). The rules of the game are almost similar to those of the DG: two players (i.e., the proposer and the responder) must agree on how an amount of money (allocated by the researcher) is divided between them. After this, the responder is given the option to accept or reject the offer. If the responder accepts the offer, this person receives the amount offered and the proposer may keep the remaining amount. If the responder rejects the offer, both players will get nothing. The key difference between these games is that DG responders cannot reject the offers, and UG responders can. The decision of the DG proposer can thus be considered an indicator of altruism, while the UG proposer is expected to behave strategically (in fear of rejection of a too low offer; Espinosa & Kovářík, 2015). The three types of self-talk that this study compares are self-focused (focusing on one's own interests), other-focused (focusing on the opponent's interests) and neutral, task-unrelated self-talk. The study of Frey et al., which will be discussed in more detail later, demonstrates that the effects of these different types of self-talk on emotions and decision making differ from each other. For a better understanding of the underlying mechanism through which self-talk affects fair behavior, and for a better understanding of which type of self-talk has what effect on emotions, the current study will investigate the following research question:

"To what extent do the effects of three different types of self-talk (self-focused, other-focused, or neutral) on negative emotions of receivers of an unfair offer differ, and which type of self-talk is most effective for fair bargaining behavior in Ultimatum and Dictator Games?"

1.3 Overview. In the following sections, previous related research and their limitations will be discussed. Also, unfair treatment in economic games will be addressed, as well as its effect on emotions. Furthermore, it will be explained in more detail why the research of Frey et al. (2017) needs a follow-up experiment, in which a DG is used. Following this, the details of the current experiment and the hypotheses will be presented. Subsequent sections will provide a description of the data and the methods used, followed by the strategy for the analyses and the results. Finally, the results are interpreted and discussed, followed by the conclusion.

1.4 Previous research and their limitations. Before turning to the description of this study, it is important to explain why research on its topic is relevant. Firstly, there has been a relative lack of systematic research conducted on (instructed) self-talk in economic games (Frey et al., 2017, p.2). So far, research on self-talk has particularly focused on the comparison of positive and negative self-talk (Hamilton, Scott, & MacDougall, 2007). Except for research on sports,

there are only a few studies that compare the effects of different types of instructional self-talk (e.g., Frey et al., 2017), which are not necessarily positive or negative. Also, research on the effects of self-talk in bargaining situations is scarce. For this reason, this study can contribute to research that has investigated the factors that can change the mindsets of players in economic bargaining games. For example, several studies have examined to what extent behavior of players is influenced by the formulation of the rules of the game (i.e., verbal framing; Sarlo, Lotto, Palomba, Scozzari, & Rumiati, 2012; Tomasino et al., 2013). In the research of Sarlo et al. (2012), framing influenced the behavior in such a way that responders rejected more offers in cases where the offer was framed as a loss (i.e., “I take”), rather than a gain (i.e., “I give”). Tomasino et al. (2013) also investigated the effect of gain and loss framing in Ultimatum bargaining. Contrary to the results of Sarlo et al. (2012), unfair offers in this study were equally rejected in both conditions. Studies that use economic games to investigate the effects of framing on behavior in bargaining situations have focused mainly on the recipients of an offer. The current research will complement framing studies because it also provides more insight into the (linguistic) factors that influence the behavior of proposers in economic games.

In addition to framing research, this study can contribute to research on *cognitive reappraisal*, which also indicates that self-talk can influence people’s behavior in bargaining situations. Cognitive reappraisal is a cognitive-linguistic emotion regulation⁴ strategy, involving the reinterpretation of an emotion-eliciting situation into a situation with a different emotional impact (Goldin, McRae, Ramel, & Gross, 2008; Swart, Kortekaas, & Aheman, 2009). Emotional responses to a stimulus can be modified (i.e., intensified or weakened), depending on the nature of the reappraisal (Goldin et al., 2008). By interpreting the meaning of a situation in a different (e.g., less negative) manner, the strength of negative emotions can either be reduced or increased, which is called down-regulation, or up-regulation, respectively (Goldin et al., 2008). Emotional experiences can be influenced by cognitive reappraisals because it is an antecedent-focused strategy, which enables one to manipulate information before it elicits an emotional reaction (Van ‘t Wout et al., 2010). According to Holt and Hogg (2002, p. 263), self-talk can be seen as a form of cognitive reappraisal because it can be used to restructure perceptions of negative emotions, like stress. In several studies, participants have been instructed to reappraise unfair offers in economic games (e.g., Grecucci et al., 2013; Van ‘t Wout et al., 2010), which are suitable for studying emotion regulation because of the presence of negative emotions that arise in response to low offers. These studies show that instructions can influence the coping behavior of the recipients of an unfair offer. For example, when responders in Van ‘t Wout et al. (2010) were told to reappraise unfair offers (e.g., by trying to adopt a neutral attitude as they receive the offers), they were more willing to accept them. Similar results were found in the study of Grecucci et al. (2013), where recipients were asked to focus on the proposer’s intentions. In this study, participants were told to think of a less or more negative interpretation of the

⁴ Gross (2013, p. 77) defines emotion regulation as: “functional processes that influence the intensity, duration, and type of emotions.” It allows flexibility in emotional responses in accordance with an individual’s current and long-term goals (Gross, 2013).

proposer's intentions. Again, when responders reappraised the offers in a way that they felt less negative about it, more unfair offers were accepted. Moreover, reappraisals that involved focusing on the proposer's selfish intentions caused less unfair offers to be accepted. Assuming that particular reappraisal instructions⁵ will cause participants to talk to themselves, the results of these studies suggest that self-talk, as a form of cognitive reappraisal, can be used to up- or down-regulate emotions, as well as to influence players' behavior (Frey et al., 2017). However, a limitation of previous research is that the researchers did not always determine the specific content of the reappraisal. Participants were often only instructed to reappraise unfair offers by rethinking the situation (e.g., in Van 't Wout et al., 2010), and were not given any specific self-talk formulations that could help them do this. This caused freedom for the participants to determine how they would reinterpret the situation. An exception hereto is the study by Grecucci et al. (2013), in which participants received specific instructions to reappraise the situation. However, a limitation of their study is that only the coping behavior of recipients of an unfair offer was assessed, so no comparison was made on the effects of different reappraisals on negative emotions. Also, reappraisal effects on proposer's decision making were not investigated. Therefore, the question remains whether the content of the reappraisal matters for its effectiveness in decreasing negative emotions and initiating fair bargaining behavior. Furthermore, participants in previous reappraisal studies were explicitly explained what cognitive reappraisal is and that the purpose of the instructions was to influence their emotional response (e.g., in Van 't Wout et al., 2010).

To overcome these limitations, the current research aims to compare instructed self-talk with different content, to investigate whether different types of self-talk are more effective in regulating negative emotions and decision-making in social interactive contexts like Ultimatum and Dictator Games (UGs and DGs, respectively). This will be done without explaining to the participants beforehand that cognitive reappraisal can influence their behavior. Also, by investigating this by means of UGs and DGs, another limitation of previous research on the effects cognitive reappraisal on emotions is considered. In most of these studies, reappraisal instructions were meant to down-regulate emotional responses to negatively valued images (e.g., in McRae, Ochsner, Mauss, Gabrieli, and Gross, 2008), and not to social interactive contexts. Because a player's decision affects his or her own post-game profit, the use of experimental games to investigate reappraisal is likely to initiate more realistic behavior than the use of the images.

In addition to the scientific contribution, the results of this research could be of interest to cognitive-behavioral therapists, who commonly use self-talk as a strategy to acquire new skills and enhance performances (Goldin et al., 2012; Rokke & Rehm, 2001; Schuurmans et al., 2006). An important reason for investigating decision making and emotion regulation together is that anomalies in both these processes are related to abnormal social behavior in several psychiatric disorders (Grecucci et al., 2013). Also, research on self-

⁵ For example, in Gross (1998), the instructions were: "think about what you are seeing in such a way that you don't feel anything at all", and in Butler et al. (2003) participants were told: "think about your situation in such a way that you remain calm and dispassionate".

talk could have implications for anyone who is treated unfairly and must be dealing with the negative emotions caused by this. Finally, the results of this research could gain insights into the improvement of emotional experiences and performances of athletes. Although self-talk is considered a strategy for enhancement of sports performances, knowledge of the underlying mechanisms and the effects of different types of self-talk on performance is scarce (Galanis et al., 2016).

To summarize, self-talk can be seen as a form of cognitive reappraisal, which can be used to alter behavior and emotional responses to various events. However, the abovementioned research did not clarify whether effects of different types of self-talk differ from each other in economic bargaining situations, in which people must make emotional decisions that influence both them and others. Therefore, Frey et al. (2017) used the UG to investigate this question. Before discussing their experiment, unfair treatment in UGs and negative emotions caused by this will be discussed.

1.5 Unfair treatment and negative emotions in economic games. Responders in the UG can reject an offer that dissatisfies them. However, it seems logical that rational responders will accept any positive offer, to prevent them from getting nothing at all (Kahneman, 2003). Therefore, proposers should be able to claim almost the entire sum of money. Unexpectedly, numerous studies demonstrate that players do not behave rationally (i.e., seek to maximize their income). Proposers usually offer more than the smallest amount possible, and responders often reject amounts that are higher than that (Oosterbeek, Sloof, & Van de Kuilen, 2004). Generally, the majority of the proposers offer 35 to 50% of the total endowment, and responders usually reject offers of less than 30% (e.g., Bolton & Zwick, 1995; Fehr & Gächter, 1999; Güth, Schmittberger, & Schwarze, 1982; Güth & Tietze, 1990; Nowak, Page, & Sigmund, 2000; Thaler, 1988). For example, proposers in the UG experiment of Güth et al. (1982) gave their opponent on average 36.7% of the endowment, and responders rejected offers of 30% of that amount. According to Thaler (1988, p. 197), this is because responders rather earn less than being treated unfairly, and proposers anticipate the possibility that small offers will be rejected. Van 't Wout, Kahn, Sanfey and Aleman (2006) state that responders experience negative emotions in response to unfair offers. Consequently, responders want to 'punish' proposers by rejecting the offer, preventing their opponent from getting the greater share of the endowment (Cubitt, Drouvelis, Gächter, 2011; Nowak et al., 2000; Takagishi et al., 2009; Van 't Wout et al., 2006). Xiao and Houser (2005) argue that the rejection of unfair offers is a way to express negative emotions associated with receiving these offers. Standard economic models of human decision making (e.g., utility theory) omitted the influence of emotions on decision-making behavior, but various studies suggest that behavior in bargaining interactions is tightly connected to negative emotions such as anger, disapproval and (moral) disgust (Chapman, Kim, Susskind, & Anderson, 2009; Pillutla & Murnighan, 1996; Sanfey, Rilling, Aronson, Nystrom, & Cohen, 2003; Takagishi et al., 2009; Van 't Wout et al., 2006). For example, findings from an fMRI study by Sanfey et al. (2003) show that unfair offers elicit activity in brain regions related to specific

negative emotional states, like anger and disgust (i.e., the anterior insula). Also, subjects in their study reported feeling angry when they received low offers and indicated that they would sacrifice financial gain to punish their opponent.

As noted earlier, previous studies show that negative emotions due to unfair treatment in UGs can either be intensified or weakened using cognitive reappraisal. Engaging in a social interaction when previously thinking about someone else's interests, or while being able to see the bigger picture (e.g., realizing that receiving some payment is better than getting nothing) can avoid development of negative emotions (Van 't Wout et al., 2010). Successfully reinterpreting unfair treatment can thus reduce anger and frustration about it, which reduces the need to punish the unfair proposer. In Grecucci et al. (2013), down-regulation of emotions led to more acceptance of unfair offers, where up-regulation led to a lower acceptance rate. However, it was not yet clear whether people's behavior and emotional experience during bargaining interactions could change if they were instructed to talk to themselves, in order to reinterpret the situation. This question was addressed by Frey et al. (2017).

1.6 Does what you say to yourself matter? The goal of the Frey et al. study was to investigate whether self-talk allowed responders to regulate negative emotions caused by unfair offers and whether it influences the acceptance rate of these offers. Also, it was investigated whether self-talk had an impact on the proposer's offers. In UGs without self-talk, proposers offer approximately 40% of the endowment (Güth et al., 1982), but it was still unknown whether self-talk could change their thought patterns, and consequently encourage them to engage in fair or unfair behavior (depending on the content of the self-talk).

As said, previous studies (e.g., Van 't Wout et al., 2010) instructed participants to 'rethink the situation', and thus did not provide specific self-talk instructions that could guide the participants in doing so. To this end, Frey et al.'s research focused on comparing types of self-talk with different content, to investigate whether some alternative interpretations are more effective in Ultimatum bargaining than others. For this reason, Frey et al. explicitly asked the players to apply different types of self-talk before they either made or received an offer. To agree on the distribution of money during the UG, players must take into account not only their own interests but also those of the opponent. To take this into account, Frey et al. asked players in one condition to speak to themselves in a way that reminded them of their own interests (the *self-focused* self-talk condition). In the second condition, players were asked to think of their opponent's perspective (the *other-focused* self-talk condition). The third group of subjects was asked to apply a more neutral form of self-talk, which made them think calmly about the situation (the *neutral* self-talk condition). The fourth group received no instructions for self-talk (the *no* self-talk condition). For proposers, it was examined whether self-talk could stimulate fairer sharing behavior when they would think of the interests of the other player, by offering a bigger part of the endowment than proposers in the condition without self-talk. For proposers who kept their own interests in

mind, it was examined whether they behaved more unfairly (i.e., by offering a smaller amount). For responders, Frey et al. examined whether self-talk could affect their acceptance rates and negative emotions caused by the offer.

Their results show that other-focused self-talk leads proposers to make higher offers, compared to the other conditions. It appears that this form of self-talk is effective in stimulating fair behavior. Furthermore, the self-focused group gave the lowest offers. This type of self-talk led many proposers to offer only one point. For responders, other-focused and neutral self-talk lead to a higher acceptance rate of unfair offers, compared to the players who had not received self-talk instructions⁶. This result suggests that self-talk can affect the level of acceptance among responders. When an individual tells himself to focus on another person or to calmly think about the decision, this increases the acceptance rate in comparison to a situation where someone does not speak to himself and makes the decision directly⁷. However, it does not seem to matter which type of self-talk is applied in the UG, because there were no significant differences between the acceptance rates of the three self-talk conditions.

Negative emotions of the responders were determined by measuring the satisfaction about the offer and its proposer using a subjective measure⁸. Negative emotions were measured immediately after accepting or rejecting an offer. In every condition, responders' negative emotions decreased with the number of points offered. The content of self-talk did not seem to have a big impact on negative emotions. Compared to the other conditions, participants from the self-focused condition tended to be least satisfied with unfair offers. Even though the results concerning the responders were in the expected direction (see Figure 1), only the difference in satisfaction between self-focused and neutral self-talk conditions was significant. This suggests that when a responder focuses on his own interests, this causes stronger negative emotions than when this person thinks calmly about the situation. According to Frey et al. (p. 2), this leads to more rejections of unfair offers.

⁶ The difference between the self-focused and no self-talk condition was not significant.

⁷ These results are comparable with the discussed findings of Grecucci et al. (2013).

⁸ Similar measures were successfully used in previous UG research (e.g., in Suleiman, 1996).

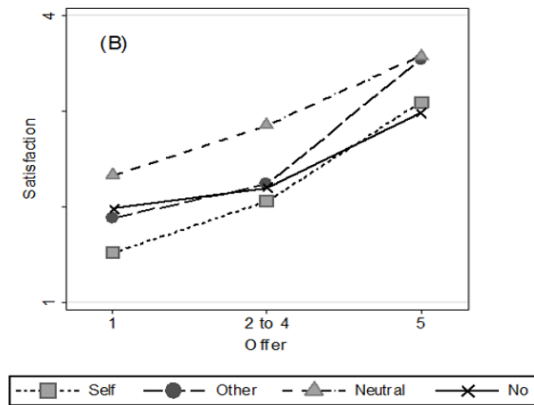


Figure 1. The effects of low offers on responder’s satisfaction about offers and proposers (offers of 2 to 4 points are taken together because of the small number of cases). Responders tended to be least satisfied with low offers in the self-focused self-talk condition, while they were most satisfied with these offers in the condition with neutral self-talk. Only the difference between neutral and self-focused self-talk reached significance at the 5% level. Adapted from “Self-talk in Ultimatum Games: Does what you say to yourself matter?”, by V. M. Frey, H. N. M. de Mulder, V. W. Buskens, M. ter Bekke, M. Struiksma, & J. J. A. van Berkum, 2017. Manuscript submitted for publication. Adapted with permission.

1.7 The current study. The abovementioned research on emotions in UGs indicates that responders would sacrifice their gain to punish unfair proposers and that this behavior results from a sense of revenge, and the need to reveal negative feelings to the proposers (Nowak et al., 2000; Xiao & Houser, 2005). Because expression of revenge can be seen as a strategy to down-regulate negative emotions (Davis, Levine, Lench, & Quas, 2010; Garner & Spears, 2000), it is possible that rejection of unfair offers in UGs acts as a form of emotion regulation. The absence of the effects of self-talk on negative emotions in the UG experiment of Frey et al. (2017) may be attributable to this. This possibility can be ruled out by determining what effect the different types of self-talk have on emotions when responders cannot reject the offer. For this reason, the current research uses the DG, in which the responder is powerless and forced to accept an unfair offer (Engel, 2011; Hilbig & Zetler, 2009). This game is often used as a test of altruism⁹, by examining an individual’s willingness to share an amount of money with an unknown partner. Acts of altruism in DGs cannot be explained by concerns about reputation because players are often informed that they play anonymously. Furthermore, the DG avoids strategic concerns about how opponents might respond to one’s offer (Summerville & Chartier, 2013). This study will compare the results of the UG experiment by Frey et al. (2017), to the results of a DG experiment, in which participants will receive the same self-talk instructions. This comparison allows examination of the effects of self-talk on responders’ emotions while ruling out the possibility that the rejection of unfair offers could function as emotion regulation.

In addition to the behavior of the responders, such a comparison can also gain insights into the decision-making behavior of proposers. Although the findings of the UG

⁹ The original dictator game experiments by Kahneman, Knetsch, and Thaler (1986), and Forsythe et al. (1994) were used to determine the extent in which higher offers in UGs were present because proposers were empathic, or because they feared rejection of lower offers. In these experiments, offers in the DGs were lower than in the UGs but were still higher than the possible minimum, which suggests that altruism plays a role too.

experiment regarding the proposers were quite clear-cut (if a proposer told himself that he had to keep the other player's interests in mind, this led to fairer behavior), it was unclear how this effect of self-talk on behavior came about. According to Frey et al., offers in the other-focused condition were higher than what would be strictly necessary for acceptance. On the one hand, this suggests that other-focused self-talk increased feelings of empathy¹⁰ or altruism, which could consequently be responsible for fair proposing behavior. This was the case in Edele, Dziobek, and Keller (2013), in which proposers who took into account their opponent's perspective and emotional state made higher offers than proposers who scored lower on empathy. On the other hand, it is possible that other-focused self-talk causes proposers to become more aware of the possibility that responders could reject unfair (low) offers, and that they made a fair offer for that reason. An example of such a strategic action is when a player makes a choice that seems generous or altruistic, but is intended to win the trust of the other players. Later in the game, he can benefit from this because it reduces the chance of rejection. With a DG, such a motive can be excluded because the proposer -the Dictator- determines the distribution of the money, and the responders have no influence on this decision (Hoffman, McCabe, & Smith, 1996; Eckel & Grossman, 1996). Therefore, altruistic behavior by the Dictator cannot be explained by strategic purposes (Edele et al., 2013).

By comparing the behavior of players of the DG and the UG, this study can clarify the motives of fair proposers, and in addition, it can clarify to what extent different types of self-talk may stimulate fair behavior when the chance that it is based on strategic motives is ruled out.

1.8 Research hypotheses. In summary, the objective of this study is to examine which type of self-talk (self-focused, other-focused, or neutral) is most effective for fair decision-making, and to what extent these types of self-talk influence the emotional state of individuals who are treated unfairly. To achieve this goal, a comparison will be made between the results of Frey et al. (2017), in which players of a UG applied different types of self-talk, and the results of players of a DG applying the same types of self-talk. In this addition to Frey et al.'s experiment, 10 hypotheses will be tested. Based on the outcomes of these hypotheses, the following central research question will be answered:

"To what extent do the effects of three different types of self-talk (self-focused, other-focused, or neutral) on emotions of receivers of an unfair offer differ, and which type of self-talk is most effective for fair bargaining behavior in Ultimatum and Dictator Games?"

The first hypothesis relates to the influence of the ability to reject the offer on emotions. Namely, for responders will be examined to what extent self-talk affects their negative emotions when they cannot reject the offer. Previous research suggests that rejection of an offer can act as emotion regulation. Because responders in the DG have no choice but to

¹⁰ Empathy is considered the foundation of human sociality (Masten, Morelli, & Eisenberger, 2011). It helps people to understand other people's feelings, even if they differ from their own. This facilitates prosocial interaction. Social psychological research has charted the role of empathy in prosocial behavior. For example, it is associated with concerns about others well-being (Batson, 1998) and helping others (Davis et al., 1999).

accept the offer, negative emotions are expected to be stronger at the DG, compared to the UG. For this reason, the first hypothesis is:

H1a: Negative emotions of responders to unfair offers will be stronger in the DG than in the UG.

The following hypothesis refers to the effect of the number of points offered on negative emotions. Based on the results of Frey et al. (2017), the following is expected:

H1b: In both games, responders' negative emotions will increase as the value of the offers decreases.

Based on the findings of Frey et al., it is expected that the three types of self-talk have different effects on the responder's emotions. Because the two experiments are almost identical, results of the DG experiment are expected to show a similar tendency as the results of the UG experiment. However, the absence of the possibility of rejection in the DG is expected to strengthen the effects of self-talk on emotions. Where the differences between the condition without self-talk and the self-talk conditions in the Frey et al. experiment were not all significant, we expect this to be the case in the DG because the negative emotions caused by an unfair offer cannot already be reduced by rejection.

For players applying self-focused self-talk, stronger negative emotions than players who do not apply self-talk are expected, because the instructions in the self-focused condition remind players to think about their own interests (Frey et al., 2017). It is likely that someone who has his own interests in mind will experience an unfair offer more negatively than someone who has not. For other-focused and neutral self-talk, negative emotions are expected to be less strong in comparison to the condition without self-talk. Players in the other-focused condition will take over the opponent's perspective, considering the intentions, interests, and feelings of the other player (Frey et al., 2017). If you think of other people's interests, receiving a lower offer yourself is probably not that negative (because it means your opponent receives a higher offer). Players in the neutral self-talk condition must think quietly about the offer, and it is therefore expected that negative emotions would already down-regulate due to the time this would take (Grimm & Mengel, 2011). This expectation is based on previous research on the effects of time delay in UGs. For example, Neo, Yu, Weber, and Gonzalez (2012) found that a time delay (i.e., performing an additional task after receiving an offer), is correlated with increased reported feelings of satisfaction, and fewer rejections of offers. The following hypotheses are tested for the effects of self-talk:

H2a: In both games, self-focused self-talk leads to stronger negative emotions after an unfair offer, than when no self-talk is applied.

H2b: The increasing effect of self-focused self-talk on negative emotions will be stronger in the DG than in the UG.

H2c: In both games, other-focused and neutral self-talk leads to less strong negative emotions than when no self-talk is applied.

H2d: The decreasing effect of other-focused and neutral self-talk on negative emotions will be stronger in the DG than in the UG.

For proposers who applied other-focused self-talk, it is still the question which motives guided their fair bargaining behavior. Previous research shows that offers in the DG are significantly lower because offers cannot be rejected (e.g., Bechler, Green, & Myerson, 2015; Camerer & Thaler, 1995; Forsythe et al., 1994; Nouri & Traum, 2013). Based on these studies, it is expected that honest behavior in the UG has strategic purposes. However, based on the discussed studies by Edele et al. (2013) and Frey et al. (2017), it is expected that feelings of empathy, fairness, and altruism could also play a role if other-focused self-talk elicits them. For these reasons, we expect a similar tendency in the proposer behavior in the DG as in the UG, but we expect the increasing effect of other-focused self-talk on offers to be stronger in the latter. This is based on the expectation that in the UG, both strategic motives and feelings of altruism could lead to higher offers. In the DG, the strategic argument does not get enforced. Based on the abovementioned literature, the expectations about the proposers are as follows:

H3a: Offers in the DG are lower than offers in the UG.

H3b: In both games, other-focused self-talk will lead to higher offers compared to the self-focused, neutral, or no self-talk conditions.

H3c: The increasing effect of other-focused self-talk on proposer's offers will be stronger in the UG than in the DG.

H3d: In both games, self-focused self-talk will lead to lower offers compared to the other-focused, neutral, or no self-talk conditions.

The next section provides a description of the methods used.

2. Methods

2.1 Participants. The data was collected from in total 254 native Dutch participants. The majority of them were university students, aged from 17 to 66 years ($M = 22.9$ years, $SD = 6.4$), and was female (68.5%; $N = 174$). The participants were recruited from the participant database of the ELSE laboratory, using ORSEE (Greiner, 2015). Also, the participant database of the Utrecht Institute of Linguistics was used. Only native Dutch speakers were suitable for participation. Participants were given a financial compensation for taking part in the experiment. Their bargaining choices during the experiment determined the exact amount of money they earned because it was dependent on the points received in the game. Also, each participant received a 2.5 euro show-up fee. On average, DG players earned 10.91 euro ($SD = 1.8$). For UG players, this was 9.5 euro ($SD = 1.3$).

2.2 Design. The independent variables in this study were self-talk type and game type, which were between-subject variables. For responders, the main dependent variables were the subjective experience of their negative emotions about the offer and the proposer. For proposers, the main dependent variable was offer value.

The data was collected during eleven experimental sessions. Frey et al. conducted seven experimental UG sessions in 2016, with 20 to 26 participants per session. In total, 188 participants played the UG. The data for the DG was collected in four sessions, each involving a group of on average 17 new participants. In total, 66 participants played the DG. Participants were randomly assigned to one of the four self-talk conditions (self-focused, other-focused, neutral, or no self-talk). In the UG, there were 46 and 48 participants per self-talk condition. In the DG, the number of participants per condition varied from 16 to 18.

In each experimental session, participants played two sequences of 10 UGs or DGs. Players stayed in the same role for 10 rounds. In the first sequence, half of the participants started in the role of proposers, whereas the other half began as a responder (and vice versa in the second sequence) while staying in the same self-talk condition during the two sequences. Each session, all subjects who started as responders were assigned to the same self-talk condition. All subjects who started as proposers were randomly assigned to one of the four conditions, in a way that there was an approximately equal number of starting proposers in every condition. In this way, all responders were being matched to similar numbers of proposers regarding their self-talk condition. This assured that responders in different self-talk conditions would not receive other offers caused by different self-talk conditions of the proposers.

2.3 Materials. The experiment was presented on a computer screen. The versions of the DG and the UG, which included the self-talk sentences and questions about the subjective experience of emotions, was programmed in z-Tree (Zurich Toolbox for Ready-made Economic Experiments; Fischbacher, 2007), which is a software program that is especially suitable for developing and conducting economic experiments.

Following every offer, responders rated their emotions on a 7-point Likert scale, ranging from very positive to very negative, where a higher score means stronger negative emotions. Because there were no systematic differences between the two items that measured negative emotions (i.e., about the offer and proposer), the analyses focus on “average” negative emotions about unfair offers (the internal consistency of the two items was good, $\alpha = 0.93$).

After the experiment, participants had to fill in a computerized questionnaire (which was also programmed in z-Tree). The questionnaire contained demographic variables and questions on how the subjects experienced engaging in self-talk. Furthermore, the participants were asked whether Dutch was their mother tongue, whether they participated in an economic bargaining experiment before, how many other players they knew by name, and whether they were familiar with game theory.

Moreover, the questionnaire contained an item in which participants were asked

which sentence they had to say during the experiment (i.e., *“What sentence did you have to say to yourself?”*), and an item concerning their thoughts during the self-talk (i.e., *“Can you describe your thoughts when you said the sentence to yourself?”*). These open questions were included to check whether participants had followed the instructions correctly. Also, participants were asked whether they internalized the meaning of the sentence, or whether they simply had read them. Answers to this question could explain a possible absence of self-talk effects because someone who does not internalize the meaning of the sentence does not follow the instructions as intended.

Finally, using an open question, participants were asked for their thoughts after receiving an unfair offer (i.e., *“Can you describe what you thought of when you got a low offer from the proposer?”*). This question was added to gain further insights into the responder’s feelings after receiving a low offer, which could be useful to explain unexpected results (see Appendix A for both Dutch and English questionnaire items).

2.4 Procedure. The experiments took place at the ELSE laboratory at Utrecht University, The Netherlands. After participants entered the room, they were randomly assigned to a computer. Separation screens were placed between the participants so that they could not see the computer screens of other players. All participants were given the same printed instructions about the game and the payment of the experiment (see Appendix B for both Dutch and English instruction sheets for both games). Each player was then randomly assigned a role (i.e., proposer or responder), and a self-talk condition. Only for participants in the self-talk conditions, additional instructions were given on the computer screen (see Appendix B for screens with further instructions on self-talk). Participants were instructed to covertly say a sentence to themselves during the game, and that they should try to internalize the meaning, rather than just read the sentences. Also, participants were asked to say the sentence twice (see Table 1 for the self-talk sentences per condition). The instructions did not reveal any information about the self-talk conditions of the participant’s opponent. The experiment began when all the participants had read the instructions. Each DG proceeded as follows. Prior to each round, each proposer was endowed with 20 points. As a first step of the game, the proposer was asked to divide his endowment between himself and his opponent (i.e., the responder). This offer was then given to the responder who was matched randomly to the proposer. Proposers in the condition without self-talk could make their decision immediately, whereas players in the self-talk conditions first read the following sentence: *“Before you make your choice, covertly say twice to yourself:”*. This sentence would appear for 2 seconds, after which the self-talk sentence was shown twice for 2 seconds. Subsequently, a button appeared that allowed the player to continue to the next screen. On this screen, the proposers could submit their offers. For responders in the self-talk conditions, one of the self-talk sentences was shown twice for 2 seconds after receiving an offer. After that, they were asked to rate their negative emotions about the offer and the proposing opponent with whom they had just interacted. Answers were given on a 7-point scale ranging from very positive to very negative. After that, a new round began in which

proposers had to decide about a new offer. The procedure was identical for the UG, except that UG responders were also given the option to accept or reject the offer on an additional screen following the offer. After this decision, UG players too had to rate their negative emotions.

In every round, participants were matched to a new partner, and no player was matched with the same opponent twice in the 10 rounds. After the first sequence, another 10 rounds were played, while the proposer and responder roles were reversed. It was possible that players were matched with an opponent with whom they already were matched in the first sequence. However, because the instructions told participants that the matching was random, none of the players could know whether they have already been matched. After the experiment, the points that participants earned during the game were exchanged for euros and paid out in cash (20 points = 1 euro). While the participants filled in the questionnaire, the experimenters prepared the payments. An experimental session lasted about 30 to 60 minutes.

Table 1. Self-talk sentences and their English translation

Self-talk condition	Label	Sentence in Dutch	Sentence in English
Self-focused self-talk	Self	Laat ik mijn eigen belang voor ogen houden	Let me keep my own interests in mind
Other-focused self-talk	Other	Laat ik ook aan de ander denken	Let me also think of the other person
Neutral self-talk	Neutral	Laat ik even rustig nadenken	Let me take some time to think calmly
No self-talk	No	-	-

2.5 Statistical analysis. The data was analyzed in IBM SPSS Statistics 24. To test the hypotheses about the effects of self-talk on negative emotions of the responders, only the data for the *unfair* offers was used. Offers were defined as unfair if they were 5 points or lower out of 20 because in the UG, offers of 6 or 7 points were accepted 94% of the time, and offers of 8 or more points were nearly always accepted. For responders, two linear mixed model regression analyses were performed to investigate whether self-talk type, game type, offer, and their interactions affected negative emotions. The self-talk conditions were treated as dummy variables, with No used as reference category. The first model included fixed effects for self-talk type, offer, and game type, and a repeated-measures time factor. To investigate the interactions between these variables, a second model was performed in which fixed effects were added for game type x self-talk type interactions (i.e., Self x game type, Other x game type, and Neutral x game type), and game type x offer interaction. Offer was used as a covariate in the models, so that the effects of self-talk on negative emotions could be calculated after adjusting for offers, thereby accounting for possible baseline offer size disparities among self-talk conditions. It was verified whether inclusion of random intercepts improved model fit, compared to an equivalent model without random intercepts. Log likelihood comparisons (likelihood ratio chi-squared test of the variable's contribution to the

model) showed model improvement when random intercepts for subject identity were included (for a more detailed explanation of this method, see Bagiella, Sloan, and Heitjan, 2000). The participant-specific random intercepts were included in the models to allow for heterogeneity between participants. For proposers, two linear mixed model regression analyses were performed to investigate whether self-talk type, game type, and their interactions affected the proposer's offers. Again, the self-talk conditions were treated as dummy variables, with No used as reference category. The first model included fixed effects for self-talk type and game type, and a repeated-measures time factor. In the second model, fixed effects were added for game type x self-talk type interactions (i.e., Self x game type, Other x game type, and Neutral x game type). For these models too, the inclusion of random intercepts improved model fit, compared to a similar model without random intercepts.

Furthermore, a least significant difference (LSD) post hoc multiple comparisons test was performed to determine the existence of mean differences in offers between the four self-talk conditions. In all statistical tests, statistical significance was defined as $p < .05$, two-sided.

Even though all participants played a UG or a DG in both roles in two sequences, the analyses in the results section are based exclusively on data from the first sequence because effects of the different self-talk manipulations on offers and negative emotions appeared to be small in the second sequence. This observation suggests that the effect of self-talk may decrease over time, possibly caused by attention problems due to the length of the task (Frey et al., 2017). After restricting the analysis to the first sequence of 10 games, there were 22 to 24 participants per role and condition in the UG, and 7 to 9 participants in the DG (see Table 2). There are two reasons for the sample size disparity between both games. Firstly, more cases were needed in the UG than in the DG, because it allowed comparisons of decisions made by UG responders (i.e., acceptance or rejection) after receiving offers of different amounts, next to the measurement of responder's negative emotions. In the DG, a smaller sample size was required because only the responder's emotional responses to the offers were investigated. The second reason was the difficulty in recruiting more Dutch subjects who could participate within the time span of this study (next to the 254 subjects that were already recruited).

Table 2. Distribution of participants per role per condition after restricting the analysis to the first sequence of 10 games, split by game type

Self-talk condition	Ultimatum Game		Dictator Game		Total
	Proposer	Responder	Proposer	Responder	
Self-focused	23	24	8	9	64
Other-focused	23	25	8	7	63
Neutral	24	23	9	9	65
No	24	22	8	8	62
Total	94	94	33	33	254

3. Results

3.1 Descriptive statistics. In total, 1270 offers were sent. Proposers in the UG ($N = 940$) offered on average 6.62 of their 20 points to the responder ($SD = 3.24$). The offers in the DG ($N = 330$) had a mean value of 4.13 ($SD = 3.71$). In the UG, 37.0% of the offers was unfair (5 points or lower; $N = 348$). In the DG, this was 71.8% ($N = 237$; see Table 3 for the distribution of unfair offers, split by game type). In the UG, the mean rating of negative emotions was 5.42 ($SD = 1.28$) for unfair offers, which indicates that players felt relatively negative about these offers. This was also the case in the DG, where the mean negativity rating was 4.79 ($SD = 1.77$; see Table 4 for a summary of the reported responder's negative emotions, split by game type, condition, and offer size).

3.2 Responder's negative emotions. A linear mixed model regression analysis was performed to investigate the effects of self-talk type, offer, and game type on negative emotions (see Model I in Table 5). Log likelihood comparisons (with a chi-square distribution) showed model improvement when random intercepts for subject identity were included: the relationship between self-talk, offer, game type, and negative emotions showed significant variance in intercepts across participants, $\text{var}(u_{0j}) = 1.12$, $\chi^2(1) = 336.07$, $p > 0.01$. Therefore, random intercepts for individual identity were included in the model. Furthermore, a second model was performed to investigate the interaction effects between self-talk type, offer, and game type (Model II; see Table 5 for the results of the linear mixed-effects model analyses).

The results of the models showed a significant negative main effect of game type on negative emotions: negative emotions about unfair offers were significantly stronger in the UG than in the DG. This result contradicts hypothesis 1a. Furthermore, there was a significant negative main effect of offer on negative emotions: responders' negative emotions decreased with the number of points offered¹¹. This finding supports hypothesis 1b. Model II showed a significant interaction between game type and Neutral, and a marginally significant interaction between game type and Other (Table 5). These interactions suggest that the effects of these types of self-talk are different for the two games. To explore these interactions, a similar linear mixed model was run to test for self-talk type and offer effects on negative emotions, for each game separately (the results of these models are reported in Table 6). In the DG, there was a marginally significant positive main effect of Neutral on negative emotions, as compared to No. DG players were more negative after applying neutral self-talk, compared to participants who did not engage in self-talk. In the UG, there was also a marginally significant main effect of Neutral, in comparison to the condition without self-talk. However, this effect was in the opposite direction: UG players who applied neutral self-talk felt less negative after an unfair offer than UG players who did not engage in self-talk (Table 6). These findings contradict hypotheses H2a-H2d.

¹¹ We also controlled whether UG players accepted or rejected an offer. As might be expected, the inclusion of this variable showed that players who are more likely to accept an offer experienced less negative emotions. This control did not affect the other results.

Furthermore, Model II showed a significant game type x offer interaction. This interaction indicated that the effects of offer value on negative emotions differed between the two games: emotions became less negative faster in the DG than in the UG (Table 5). The mean estimates in Table 6 show that the decrease of negative emotions is stronger for DG players, compared to UG players (as demonstrated by the steeper slope of the regression line for DG players).

In sum, responders in the UG felt more negative about unfair offers than responders in the DG. Also, responder's negative emotions decreased as the value of the offers increased, and this occurred faster for DG players. Overall, self-talk did not significantly influence responder's negative emotions. However, the significant interaction between game type and neutral self-talk showed that neutral self-talk affected negative emotions of players of both games differently. In the UG, neutral self-talk tended to cause emotions to be less negative. In the DG, this type of self-talk increased negative emotions, but the effects of Neutral were only marginally significant.

Table 3. Distribution of unfair offers (offers up to 5 points out of 20) per game in percentages. Number of observations in parentheses (*N*).

Offer (in points)	Ultimatum Game (<i>N</i> = 348)		Dictator Game (<i>N</i> = 237)	
	Percent	Cumulative percent	Percent	Cumulative percent
1	13.1	13.1	44.2	44.2
2	3.5	16.6	7.0	51.2
3	2.8	19.4	4.5	55.8
4	2.6	21.9	4.5	60.3
5	15.1	37.0	11.5	71.8

Table 4. Responder's average negative emotions about unfair offers (i.e., offers up to 5 points) by self-talk condition and number of points offered. Sample: responders' reactions in the first sequence of 10 games. Negative emotions were rated on a 7-point Likert scale, ranging from very positive to very negative (standard deviations in parentheses).

Offer (in points)	Ultimatum Game					Dictator Game				
	Self	Other	Neutral	No	N	Self	Other	Neutral	No	N
1	6.48 (.90)	6.11 (1.11)	5.67 (1.09)	5.96 (1.30)	28	5.28 (1.31)	5.30 (1.54)	5.81 (1.22)	5.00 (1.75)	33
2	6.50 (.71)	6.03 (.65)	5.64 (1.03)	5.71 (.86)	7	5.69 (1.31)	5.13 (1.89)	5.20 (1.64)	4.33 (1.94)	6
3	6.50 (.71)	5.36 (.64)	4.93 (1.48)	6.00 (.63)	6	4.75 (1.77)	4.60 (1.29)	4.75 (1.85)	2.38 (2.75)	4
4	5.79 (1.14)	5.75 (.29)	4.50 (1.50)	6.00 (0)	3	3.40 (1.64)	4.10 (1.82)	2.50 (0)	2.75 (.96)	4
5	4.90 (1.24)	4.46 (1.25)	4.42 (1.21)	5.03 (1.17)	37	3.00 (1.20)	4.00 (1.58)	3.77 (1.29)	1.82 (.56)	11
Tot. mean	5.63 (1.30)	5.44 (1.27)	5.08 (1.30)	5.52 (1.22)	81	4.81 (1.60)	4.87 (1.60)	5.36 (1.50)	3.99 (2.08)	58

Table 5. Linear mixed models were used to test for game type, offer, and self-talk type effects and their interactions on negative emotions. Model I: linear mixed model regression analysis on the effects of self-talk type, offer, and game type on negative emotions. Model II: linear mixed model regression analysis on the effects of self-talk type, offer, game type, and their interactions on negative emotions. Sample: responders' reactions to offers of 1 to 5 points in the first sequence of 10 games ($N = 127$). The models include dummy variables for the self-talk conditions (i.e., self-focused, other-focused, neutral, and no self-talk), the condition without self-talk was used as reference category. The variable game type was included, with UG as reference category. Random intercepts were included for individual identity.

	Model I ^a			Model II ^b		
	b	SE b	t	b	SE b	t
Intercept	6.58	.22	29.27***	6.61	.25	26.85***
Self	.31	.28	1.09	.16	.32	.51
Other	.03	.29	.09	-.25	.32	-.79
Neutral	-.09	.29	-.31	-.54	.33	-1.66
Offer	-.41	.02	-20.55***	-.35	.02	-14.36***
DG	-.97	.23	-4.29***	-1.35	.45	-2.98**
DG x Self				.51	.61	.84
DG x Other				1.10	.63	1.73 [†]
DG x Neutral				1.58	.61	2.60**
DG x Offer				-.178	.04	-4.31***

†: $p \leq 0.10$, *: $p \leq 0.05$, **: $p < 0.01$, ***: $p < 0.001$

^a: -2 Log likelihood = 1635.38

^b: -2 Log likelihood = 1609.22

Table 6. Linear mixed models were used to test for self-talk type, and offer effects on negative emotions, for each game separately. Sample: responders' reactions to offers of 1 to 5 points in the first sequence of 10 games. The models include dummy variables for the self-talk conditions of the responders (i.e., self-focused, other-focused, neutral, and no self-talk), the condition without self-talk was used as reference category. Random intercepts were included for individual identity.

	UG ($N = 94$)			DG ($N = 33$)		
	b	SE b	T	b	SE b	t
Intercept	6.62	.23	28.31***	5.27	.42	12.42***
Self	.16	.31	.53	.67	.57	1.17
Other	-.26	.31	-.84	.85	.61	1.38
Neutral	-.54	.31	-1.73 [†]	1.04	.57	1.82 [†]
Offer	-.35	.02	-16.87***	-.53	.04	-13.67***

†: $p \leq 0.10$, *: $p \leq 0.05$, **: $p < 0.01$, ***: $p < 0.001$

3.3 Proposer's offers. Again, a linear mixed model regression analysis was performed to investigate the effects of self-talk type and game type on proposer's offers (Model III). Log likelihood comparisons (with a chi-square distribution) showed model improvement when random intercepts for subject identity were included: the relationship between self-talk, game type, and proposer's offers showed significant variance in intercepts across participants, $\text{var}(u_{0j}) = 7.11$, $X^2(1) = 1112.69$, $p > 0.01$. Therefore, random intercepts for individual identity were included in the model. Furthermore, an additional model was performed that included the interaction between self-talk type and game type, to investigate the interaction effects between these variables on proposer's offers¹² (Model IV; see Table 7 for the results of the linear mixed-effects model analyses for proposer's offers).

As expected in hypothesis H3a, there was a significant negative main effect of game type on the offers: offers were lower in the DG than in the UG. Furthermore, as shown in Table 7, Model III showed a significant positive main effect of Other on offers in both games, as they were higher in the other-focused condition, compared to the conditions without self-talk. There also was a significant negative main effect of Self on offers: offers were lower in the self-focused self-talk conditions in both games, in comparison to the conditions without self-talk. The LSD post hoc multiple comparisons test found the following differences between treatment means for each of the self-talk conditions (see Table 8): offers in Other ($M = 7.05$) were significantly higher than offers in Self ($M = 4.15$, $p < .001$), Neutral ($M = 4.83$, $p < 0.01$), and No ($M = 5.51$, $p = .03$). Also, offers in Self were significantly lower than offers in No ($p = .05$). These findings support hypotheses H3b and H3d. Offers in Self were not significantly lower than offers in Neutral ($p = .31$), which contradicts hypothesis H3d. Model IV showed no significant interactions between game type and self-talk type, indicating that the effects of self-talk on offers did not differ between the two games¹³ (Table 7). This observation contradicts hypothesis H3c.

In sum, proposers gave significantly higher offers in the UG than in the DG. Also, other-focused self-talk led to higher offers, compared to the other conditions, and self-focused self-talk caused offers to be lower than offers that were made without applying self-talk.

¹² Again, random intercepts for individual identity were included in the model.

¹³ Furthermore, after the inclusion of the interactions between game type and self-talk type, the effects of self-focused and other-focused were found to be non-significant.

Table 7. Linear mixed models were used to test for game type and self-talk type effects, and their interactions on proposer's offers ($N = 127$). Model III: linear mixed model regression analysis on the effects of self-talk type and game type on proposer's offers. Model IV: linear mixed model regression analysis on the effects of self-talk type, game type, and their interactions on proposer's offers. Sample: proposer's offers in the first sequence of 10 games. The models include dummy variables for the self-talk conditions (i.e., self-focused, other-focused, neutral, and no self-talk), the condition without self-talk was used as reference category. The variable game type was included, with UG as reference category. Random intercepts were included for individual identity.

	Model III ^a			Model IV ^b		
	b	SE b	T	b	SE b	t
Intercept	6.74	.50	13.46***	6.81	.55	12.29***
Self	-1.36	.69	-1.98*	-1.24	.79	-1.56
Other	1.54	.69	2.24*	1.42	.79	1.79 [†]
Neutral	-.67	.68	-.99	-.92	.78	-1.18
DG	-2.48	.55	-4.49***	-2.73	1.11	-2.47*
DG x Self				-.46	1.57	-.29
DG x Other				.48	1.57	.31
DG x Neutral				.93	1.53	.61

†: $p \leq 0.10$, *: $p \leq 0.05$, **: $p < 0.01$, ***: $p < 0.001$

^a: -2 Log likelihood = 5441.34

^b: -2 Log likelihood = 5440.42

Table 8. Results of LSD post hoc multiple comparisons test of offers in each of the four self-talk conditions.

Compared groups	Mean Difference
Self - Other	-2.90***
Self - Neutral	-.69
Self - No	-1.36*
Other - Neutral	2.21**
Other - No	1.54*
Neutral - No	-.67

†: $p \leq 0.10$, *: $p \leq 0.05$, **: $p < 0.01$, ***: $p < 0.001$

4. Discussion and conclusion

4.1 Responders' negative emotions. The results regarding the responders were not in line with the proposed hypotheses. At first, negative emotions were predicted to be stronger in the DG than in the UG, because responders in the DG cannot punish unfair proposers by rejecting their offer. Surprisingly, negative emotions about unfair offers were significantly stronger in the UG than in the DG. Possibly, UG responders were more irritated because they realize that their opponent neglects the fact responders can reject unfair offers and that, as a result, both players get a lower payoff. It is possible that DG responders already expect proposers to abuse their power by giving lower offers, knowing that they can easily get away with it. The open questions in the questionnaire confirm this reasoning, as the answers reveal that responders were not surprised at all that DG proposers kept as much money as possible for themselves. Also, several participants admitted that they would have done the same thing, especially in situations where they have no knowledge about their opponent's identity (which was the case in this experiment). These explanations are in line with previous

research on social distance in DGs. Social distance is the perceived distance between individuals or groups (Kazdin, 2000), and has been known to affect individual decisions in strategic interactions¹⁴ (Buchan, Nancy, Johnson, & Croson, 2006). For example, Hoffman et al. (1996) investigated the effect of social distance in DGs and demonstrated that offers in DGs decrease, as the social distance in the game increases¹⁵.

Moreover, the fact that emotions were less negative in the DG than in the UG, which is unexpected regarding the hypotheses, could be explained by previous research on emotions in economic games. According to Tingley, Lee, and Renshon (2015), the relationship between unfair offers and behavior (i.e., unfair offers lead to anger and rejection), may not exist if responders are unable to punish the unfair proposer by rejection. For example, Yamagishi et al. (2009) used a game in which rejection could not influence the payoff of both players. In their study, 34% of the responders rejected unfair offers (i.e., offers up to 20% of the endowment) because of anger, and this rate was much lower than the one in the UG (i.e., 50%). This finding suggests that the absence of an effective way to punish the proposer, which is also the case in DGs, prevented some responders in this study from being angry about unfair offers.

As expected, negative emotions decreased as the value of the offers increased in both games. This result is in line with previous research by Tingley et al. (2015), which shows that higher offers lead to less emotional arousal in a different bargaining game (in terms of skin conductance activity). In addition to the effect of game type on negative emotions, the results showed that DG players get more positive when the value of the offer increases than UG players. One possibility is that since responders in the DG get lower offers than those in the UG (and therefore feel quite powerless; Hilbig & Zetler, 2009), higher offers for DG players could feel more special, which consequently influences the self-reported emotions about these offers.

But what was the effect of self-talk on negative emotions of the responders? Contrary to the hypotheses, the three types of self-talk did not seem to have a direct impact on negative emotions, compared to the conditions without self-talk. However, our data showed a significant interaction between the effects of game type and neutral self-talk on negative emotions. Further analysis of this interaction indicated that negative emotions were stronger in the DG after applying neutral self-talk, compared to participants who did not engage in self-talk. In contrast, in the UG, negative emotions were less strong after engaging in neutral self-talk, than those of participants in the condition without self-talk. These findings suggest that when someone takes the time to think calmly about an unfair offer when one has no choice but to accept the offer (e.g., in the DG), this person gets angrier compared to when he does not (e.g., in the condition without self-talk). Although it was assumed that self-talk which nudged people to think calmly about the situation would down-regulate negative emotions (“it is just a game, getting something is better than nothing”), it is possible that this

¹⁴ See Akerlof (1997) for a model that includes the concept of social distance to explain economic decisions in social interactions.

¹⁵ Furthermore, results of Glaeser, Laibson, Scheinkman, and Soutter (2000) show that the degree of similarity between proposers and responders (e.g., having the same nationality) influenced the degree of altruism in experimental games, and research of Habyarimana, Humphreys, Posner, and Weinstein (2009) demonstrates that responders also expect lower offers from outgroup proposers, compared to ingroup proposers.

type of self-talk made DG responders more conscious about the powerlessness and unfairness of their situation. Previous research shows that time delay (e.g., thinking about the situation) down-regulates negative emotions in the UG (Neo et al., 2013), due to the time this takes (Grimm & Mengel, 2011). It is possible that because UG responders can reject a low offer, and therefore have the feeling that they have some influence in the decision-making process, it could give them a certain rest, which in turn weakens feelings of anger and powerlessness. To further explore this possibility, future research could investigate the effects of time delay on emotions in both UGs and DGs.

Furthermore, it was hypothesized that self-talk reminding players to keep their own interests in mind leads to stronger negative emotions in the DG, compared to the UG. The effect of self-focused self-talk was expected to be stronger in the DG because emotions of DG responders cannot be down-regulated by rejection. However, this was not the case because the effects of this type of self-talk did not differ between the two games. This is probably caused by the fact that negative emotions were significantly weaker in the DG than in the UG, which could have prevented the expected effects from being present. Another possible explanation for the absence of the expected increasing effect of self-focused self-talk in the DG is that several DG players indicated that they were simply reading the sentence, instead of internalizing its meaning. This may have caused that several participants, in fact, did not engage in self-talk, which could explain why the expected behavior was absent.

Still, the result that the different self-talk sentences had no significant effect on the responder's behavior is line with previous studies on verbal framing. Namely, Dreber, Ellingsen, Johannesson, and Rand (2013) found that different ways to frame the DG description and its strategies do not affect player's behavior differently. In their study, the DG was framed as either a taking game or a giving game, which could cause players to think about themselves or others, just as in this study. Relatedly, Cubitt et al. (2011) also studied the effect of framing on emotions in economic games, and they too found no evidence that framing affected emotional experiences. However, the findings of the current study seem to contradict with those of previous studies on cognitive reappraisal, which found emotions to be up- or down-regulated by different types of reappraisals (e.g., Grecucci et al., 2013; Van 't Wout et al., 2010). For example, these studies found that reappraisals that made players think less negative about their opponent caused negative emotions to decrease. Although it was assumed that other-focused self-talk would make players feel less negative as well, this was not the case. In retrospect, it is possible that the other-focused self-talk sentence could be ambiguous and therefore caused participants to interpret it in different ways. On the one hand, it could have made them think about the other person just being someone like themselves, who wants to earn money too (i.e., the intended meaning). On the other hand, it may have made them aware of the opponent's selfish behavior. This ambiguity could account for the absence of effects of other-focused self-talk on the responder's emotions. Future studies can overcome this limitation by using sentences that are less open to multiple interpretations.

Differences with prior research on cognitive reappraisal and resemblances with

research on framing could be explained by examining how free players were in determining their reinterpretations of the situation. In contrast to this study, studies in which participants could choose their own reappraisal demonstrate significant effects of cognitive reappraisal on player's decision-making. For example, in Van 't Wout et al. (2010), participants were instructed to adopt a neutral attitude as they watch the offers. The fact that these studies show a direct effect on player's behavior, and that both the current study and the discussed studies on framing do not, suggest that reappraisals are more effective if one has autonomy over one's thoughts.

Furthermore, a limitation in this study is the sample size disparity between both games. Although more subjects were intentionally planned for the UG to investigate responder's decision-making as well, the skewed distribution of participants could explain the unexpected results regarding the effects of self-talk. This limitation influenced statistical power for comparing the self-talk conditions within the DG because there were only 7 to 9 participants per role and condition in this game. With a larger sample of DG players and thus more statistical power, it is more likely to find clearer differences between the self-talk conditions.

It should also be noted that responders self-reported how negatively they felt after receiving an offer and that self-reports are subjective measures (Ziegler, Schmidt-Atzert, Buhner, & Krumm, 2007). The results of these negativity ratings should be interpreted with caution because biases in human evaluation and decision-making make the valid and reliable measurement of emotions more difficult. That is, the subjective measurement of emotions could be influenced by the current mood of participants, their recent experiences, and environmental factors (Diener, Suh, Lucas, & Smith, 1999; Norrish & Vella-Brodrick, 2008). Using physiological, behavioral, or neural measures of emotional responses to unfair offers, future studies could investigate whether specific types of self-talk affect negative emotions more objectively. For example, previous research on negative emotions measured skin conductance activity (Dunn, Evans, Makarova, White, & Clark, 2012; Tingley et al., 2015; Van't Wout et al., 2006), heart rate (Densom, Grisham, & Moulds, 2011), activity of facial muscles (Chapman et al., 2009), and brain activity (e.g., Sanfey et al., 2003). The combination of quantitative data collected through Likert-scale type responses, qualitative data collected through open questions, and the addition of physiological measures could draw a more detailed picture of emotions in bargaining interactions like UGs or DGs.

4.2 Proposer's offers. As hypothesized, offers in the DG were lower than offers in the UG. This result is in line with prior studies that demonstrate a significant game effect on offer size (e.g., Bechler, Green, & Myerson, 2015; Camerer & Thaler, 1995; Forsythe et al., 1994; Nouri & Traum, 2013). The significantly smaller offers in the DG, in which responders cannot reject unfair offers, suggest that fair proposing behavior in the UG is based on strategic motives, to prevent responders from rejecting the offers.

It seems obvious that the fear of rejection leads to higher offers in the UG. However, the results regarding the effects of self-talk on the proposers suggest that other factors play a

role in their behavior too. These results were rather clear: if proposers tell themselves to focus on their opponent, they were stimulated to behave more generously (i.e., offering a larger part of the endowment). Furthermore, if proposers focus on their own interests, they keep more of the endowment for themselves. The generous offers in the other-focused condition suggest that taking the opponent's interests into account heightens one's concern for fairness and that fair behavior in the UG is thus also driven by feelings of fairness and altruism (next to strategic motives). This is in line with Brañas-Garza (2007), in which the same proposing behavior was observed if the sentence "*Note that the recipient relies on you*" was added to the instructions. According to Brañas-Garza (2007), this suggests that this sentence causes proposers to become aware of the interests and powerlessness of the responders, which guided them towards more generous offers in that study as well.

Moreover, the finding that thoughts about one's opponent promote more generous offers in both games, shows that this effect on behavior is present, even if one's opponent is powerless in the negotiation. One explanation is that thinking about the other player could make proposers feel guilty about giving low offers, which in turn stimulates them to display fairer behavior. This thought is in line with Lelieveld, Van Dijk, Van Beest, and Van Kleef (2013), in which evoked guilt during negotiations elicited more generous offers in UGs. Another explanation is that other-focused self-talk elicits feelings of empathy for the other player. This was the case in Edele et al. (2013), where players who considered their opponent's perspective and emotional state, made more generous offers than players who scored low on empathy.

Furthermore, it was expected that both strategic motives and altruism could nudge players towards more generous behavior in the UG and that these multiple motives would cause the effect of other-focused self-talk to be stronger in the UG than in the DG. However, this effect was equally strong in both games. This means that in a situation where behavior cannot be driven by strategic concerns (i.e., in the DG), other-focused self-talk leads to similar offers compared to a situation where fair behavior can be driven by both strategic and altruistic motives. This suggests that strategic motives play a smaller role in UG bargaining than expected and that fair UG players are mostly guided by notions of fairness or altruism.

Several other studies show that fair bargaining behavior is dependent on contextual and individual factors as well. For example, Eisenegger, Naef, Snozzi, and Fehr (2010) show that testosterone levels could play a role (e.g., one acute dose of testosterone in women increased the fairness of proposers' offers in UGs). Moreover, Terada and Takeuchi (2017) show that the change in facial emotion expressions significantly affects proposer's offers in UGs. Finally, Hoffman et al. (1996) show that presence of the experimenter could also affect proposing behavior. In their DG study, higher offers were made in the presence of the experimenter, as compared to when the game was played in complete anonymity. To a certain extent, the possibility that experimenters can influence participant behavior could also be the case in the current study. That is, the observation that other-focused self-talk led to higher offers should be interpreted with caution because the chance that participants

interpreted the instructions to be an implicit request to behave more fairly cannot be ignored. Still, the instructions in this study were formulated in a way that they did not contain (imperative) sentences in which the reader explicitly would be asked to give more, or less, to their opponent. Instead, instructions were used that only made participants *think* of themselves or other players so that they were not too specific, nor too pushy. Future research could investigate how exactly participants interpret these sentences, to determine whether the uncovered effects were due to misinterpreted instructions or, as intended, caused by self-talk.

4.3 Conclusion. Statements addressed to the self, or self-talk, can be used as a cognitive reappraisal strategy to influence behavior and emotions in numerous situations. This study focused on the effect of self-talk in UGs and DGs, for prior research suggests that self-talk can be effective in regulating emotions and influencing decision-making during bargaining interactions (e.g., Frey et al., 2017; Grecucci et al., 2013; Van 't Wout et al., 2010). This study investigated to what extent different types of self-talk can initiate fair behavior during experimental bargaining, as well as to what extent they can influence the emotional state of individuals treated unfairly. In addition to the experiment of Frey et al. (2017), who addressed this question using a UG, this study examined whether player's behavior and emotions would be different after applying self-talk in a DG. To this regard, we investigated the effect of game type on proposer's offers and responder's emotions, and, whether the effects of three types of self-talk on these variables were different for the two games. These questions are interesting because they can extend the literature on cognitive reappraisal beyond responses to negatively valued images and reappraisal instructions without specific formulations, to more complex social (bargaining) interactions in which players engage in instructed self-talk. Also, they contribute to existing research on self-talk, which has mainly focused on self-talk that is either positively or negatively framed. Contrarily, in this study, players in one condition spoke to themselves in a way that they would think of their own interests (the self-focused self-talk condition). In the second condition, participants were asked to think of the perspective of their opponent (the other-focused self-talk condition). The third group of subjects was asked to apply a more neutral form of self-talk, which made them think calmly about the situation (the neutral self-talk condition). The fourth group received no instructions for self-talk (the no self-talk condition).

Regarding proposers, the aim was to explore to what extent different types of self-talk, depending on the content, may lead to fairer behavior (i.e., higher offers), or unfair behavior (i.e., keeping more of the endowment to themselves). By also examining the effect of game type on proposer's behavior, this study aimed to clarify the motives of proposers who behave fairly. Namely, the fact that DG responders are unable to reject an unfair offer (in contrast to UG responders) could explain whether higher offers in UGs were present because proposers were altruistic, or because they feared rejection of lower offers. For responders, we explored whether self-talk could be effective in up-, and down-regulating negative emotions after unfair treatment (i.e., receiving a low offer). Also, examining the

effect of game type on emotions was meant to clarify whether the rejection of an unfair offer in the UG could function as emotion regulation. The following research question was investigated: *“To what extent do the effects of three different types of self-talk (self-focused, other-focused, or neutral) on negative emotions of receivers of an unfair offer differ, and which type of self-talk is most effective for fair bargaining behavior in Ultimatum and Dictator Games?”*

In conclusion, the results suggest that self-talk as a cognitive reappraisal strategy affects both behavior and emotions in Ultimatum and Dictator bargaining. However, not all self-talk types used in the experiment appear to be suitable to regulate emotions. The results show that neutral self-talk down-regulated negative emotions in the UG, but up-regulated negative emotions in the DG. Because DG responders know that they are powerless in the negotiation, and UG responders know that they can punish an unfair proposer by rejecting the offer, the above result suggests that self-talk which makes you think about an unfair situation only has a positive effect on your emotions if you can do something about it. The absence of the effects of self-, and other-focused self-talk on negative emotions is in contrast with previous research on cognitive reappraisal and expectedly caused by misinterpretation or a lack of internalizing of the meaning of the self-talk sentences. Furthermore, offers were significantly lower in the DG than in the UG. This suggests that fair proposing behavior in the UG is based on strategic motives, anticipating the possibility that low offers can be rejected. Still, the results also showed that self-talk which induces a focus on the other player led to higher offers in both games. This suggests that taking one’s opponent’s interests into account increases one’s concern for fairness and that fair behavior in the UG can be driven by more than strategic motives. The fact that the effect was equally strong in both games suggests that self-talk can elicit fairer treatment, even in situations like the DG in which proposers can easily abuse their power. This suggests that strategic motives play a smaller role in UG bargaining than expected and that fair UG players are mostly guided by notions of fairness or altruism. The results show again (cf. Frey et al., 2017; Hatzigeorgiadis et al., 2004) the power of self-talk and the importance of further research into its mechanisms. Also, they provide more insight into the influence of regulation strategies on social interactions, and in the variable nature of emotions that influence our decisions. Therefore, the results could, for example, have implications for cognitive behavioral therapists, as abnormalities in decision-making and emotions are often related to antisocial behavior (Van ‘t Wout et al., 2010). Future research is needed to better understand the processes underlying the effects of different types of self-talk in social interactions, and specifically, whether the behavioral and emotional changes in bargaining situations are mediated by taking over the opponent’s perspective, thinking about one’s own interests, or just thinking calmly. This study offers valuable evidence regarding the effects of self-talk on behavior and emotions. It is for a reason that Buddha once said: *“the mind is everything, what you think, you become.”*

Acknowledgements

I would like to thank prof. dr. ir. Vincent Buskens very much for his helpful feedback on the thesis throughout the process, and his guidance during the experimental sessions. Also, I want to thank Vincenz Frey, Hannah de Mulder, Vincent Buskens, Jos van Berkum, and Marijn Struiksma of Utrecht University, for letting me join their interesting research project, and providing me with the dataset of the Ultimatum Game experiment. I would also like to acknowledge dr. Stella Donker and dr. Jeroen Benjamins of the Social and Behavioral Sciences at Utrecht University, as the door to their office was always open whenever I had a question about the research or the Master's degree program of TCP. Finally, I must express my profound gratitude to my family and friends, for supporting me through the process of researching and writing this thesis.

References

- Akerlof, G. A. (1997). Social distance and social decisions. *Econometrica: Journal of the Econometric Society*, 1005-1027.
- Bagiella, E., Sloan, R. P., & Heitjan, D. F. (2000). Mixed-effects models in psychophysiology. *Psychophysiology*, 37(1), 13-20.
- Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. *Psychological review*, 84(2), 191.
- Batson, C.D., 1998. *Altruism and prosocial behavior*. In D.T. Gilbert, S.T. Fiske, & G. Lindze (Eds.), *The Handbook of Social Psychology*, vols. 1 and 2. McGraw-Hill, New York, NY, pp. 282–316.
- Bechler, C., Green, L., & Myerson, J. (2015). Proportion offered in the Dictator and Ultimatum Games decreases with amount and social distance. *Behavioural processes*, 115, 149-155.
- Bolton, G. E., & Zwick, R. (1995). Anonymity versus punishment in ultimatum bargaining. *Games and Economic behavior*, 10(1), 95-121.
- Bower, G. H. (1981). 'Mood and memory', *American Psychologist*, 36, 120-148.
- Brañas-Garza, P. (2007). Promoting helping behavior with framing in dictator games. *Journal of Economic Psychology*, 28(4), 477-486.
- Buchan, N. R., Johnson, E. J., & Croson, R. T. (2006). Let's get personal: An international examination of the influence of communication, culture and social distance on other regarding preferences. *Journal of Economic Behavior & Organization*, 60(3), 373-398.
- Butler, E. A., Egloff, B., Wilhelm, F. H., Smith, N. C., Erickson, E. A., & Gross, J. J. (2003). The social consequences of expressive suppression. *Emotion*, 3(1), 48–67.
- Camerer, C. (2003). *Behavior game theory: Experiments in strategic interaction*. Princeton University Press.
- Camerer, C., & Thaler, R. H. (1995). Anomalies: Ultimatums, dictators and manners. *The Journal of Economic Perspectives*, 9(2), 209-219.
- Chapman, H. A., Kim, D. A., Susskind, J. M., & Anderson, A. K. (2009). In bad taste: Evidence for the oral origins of moral disgust. *Science*, 323(5918), 1222-1226.
- Cubitt, R. P., Drouvelis, M., & Gächter, S. (2011). Framing and free riding: emotional responses and punishment in social dilemma games. *Experimental Economics*, 14(2), 254-272.

- Dagrou, E., Gauvin, L., & Halliwell, W. (1992). The effects of positive, negative and neutral self-talk on motor performance. *Canadian journal of sport sciences= Journal canadien des sciences du sport*, 17(2), 145-147.
- Davis, E. L., Levine, L. J., Lench, H. C., & Quas, J. A. (2010). Metacognitive emotion regulation: children's awareness that changing thoughts and goals can alleviate negative emotions. *Emotion*, 10(4), 498.
- Davis, M.H., Mitchell, K.V., Hall, J.A., Lothert, J., Snapp, T., Meyer, M., 1999. Empathy, expectations, and situational preferences: personality influences on the decision to participate in volunteer helping behaviors. *J. Pers.* 67, 469–503.
- Denson, T. F., Grisham, J. R., & Moulds, M. L. (2011). Cognitive reappraisal increases heart rate variability in response to an anger provocation. *Motivation and Emotion*, 35(1), 14-22.
- Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: three decades of progress. *Psychological Bulletin*, 125, 276–302.
- Dreber, A., Ellingsen, T., Johannesson, M., & Rand, D. G. (2013). Do people care about social context? Framing effects in dictator games. *Experimental Economics*, 1-23.
- Dunn, B. D., Evans, D., Makarova, D., White, J., & Clark, L. (2012). Gut feelings and the reaction to perceived inequity: The interplay between bodily responses, regulation, and perception shapes the rejection of unfair offers on the ultimatum game. *Cognitive, Affective, & Behavioral Neuroscience*, 1-11.
- Eckel, C. C., & Grossman, P. J. (1996). Altruism in anonymous dictator games. *GAMES AND ECONOMIC BEHAVIOR* (16), 181–191.
- Edele, A., Dziobek, I., & Keller, M. (2013). Explaining altruistic sharing in the dictator game: The role of affective empathy, cognitive empathy, and justice sensitivity. *Learning and individual differences*, 24, 96-102.
- Eisenegger, C., Naef, M., Snozzi, R., Heinrichs, M., & Fehr, E. (2010). Prejudice and truth about the effect of testosterone on human bargaining behaviour. *Nature*, 463(7279), 356-359.
- Ellis, A. (1962). *Reason and Emotion in Psychotherapy*, Lyle Stuart, New York.
- Ellis, A. (1975). *A New Guide to Rational Living*, Prentice-Hall, Englewood Cliffs, N.J.
- Engel, C. (2011). Dictator games: a meta study. *Experimental Economics*, 14(4), 583-610.
- Espinosa, M. P., & Kovářík, J. (2015). Prosocial behavior and gender. *Frontiers in behavioral neuroscience*, 9.

- Fehr, E., & Gächter, S. (1999). Cooperation and punishment in public goods experiments. *CEsifo Working Paper (183)*, 1-6.
- Fields, C. (2002). Why do we talk to ourselves? *Journal of Experimental & Theoretical Artificial Intelligence*, 14, 255-272.
- Fischbacher, U. (2007). z-Tree: Zurich toolbox for ready-made economic experiments. *Experimental economics*, 10(2), 171-178.
- Forman, S. G. (1983). Stress management for teachers: A cognitive-behavioral program. *Journal of School Psychology*, 20(3), 180-187.
- Forsythe, R., Horowitz, J. L., Savin, N. E., & Sefton, M. (1994). Fairness in simple bargaining experiments. *Games and Economic behavior*, 6(3), 347-369.
- Frey, V. M., de Mulder, H.N.M., Buskens, V.W., ter Bekke, M., Struiksmā, M., & van Berkum, J.J.A. (2017). Self-talk in ultimatum games: Does what you say to yourself matter? Manuscript submitted for publication.
- Galanis, E., Hatzigeorgiadis, A., Zourbanos, N., & Theodorakis, Y. (2016). Why Self-Talk Is Effective? Perspectives on Self-Talk Mechanisms in Sport. *Sport and Exercise Psychology Research: From Theory to Practice*, 181.
- Gammage, K. L., Hardy, J., & Hall, C. R. (2001). A description of self-talk in exercise. *Psychology of Sport and Exercise*, 2(4), 233-247.
- Garner, P. W., & Spears, F. M. (2000). Emotion regulation in low-income preschoolers. *Social Development*, 9(2), 246-264.
- Georgakaki, S. K., & Karakasidou, E. (2017). The Effects of Motivational Self-Talk on Competitive Anxiety and Self-Compassion: A Brief Training Program among Competitive Swimmers. *Psychology*, 8(05), 677.
- Glaeser, E. L., Laibson, D. I., Scheinkman, J. A., & Soutter, C. L. (2000). Measuring trust. *The Quarterly Journal of Economics*, 115(3), 811-846.
- Goldin, P. R., McRae, K., Ramel, W., & Gross, J. J. (2008). The neural bases of emotion regulation: reappraisal and suppression of negative emotion. *Biological psychiatry*, 63(6), 577-586.
- Goldin, P. R., Ziv, M., Jazaieri, H., Werner, K., Kraemer, H., Heimberg, R. G., & Gross, J. J. (2012). Cognitive reappraisal self-efficacy mediates the effects of individual cognitive-behavioral therapy for social anxiety disorder. *Journal of Consulting and Clinical Psychology*, 80(6), 1034.
- Grecucci, A., Giorgetta, C., Van't Wout, M., Bonini, N., & Sanfey, A. G. (2013). Reappraising the ultimatum: an fMRI study of emotion regulation and decision making. *Cerebral Cortex*, 23(2), 399-410.

- Greiner, B. (2015). Subject pool recruitment procedures: organizing experiments with ORSEE. *Journal of the Economic Science Association*, 1(1), 114-125.
- Grimm, V., & Mengel, F. (2011). Let me sleep on it: Delay reduces rejection rates in ultimatum games. *Economics Letters*, 111(2), 113-115.
- Gross, J. J. (1998). The emerging field of emotion regulation: An integrative review. *Review of general psychology*, 2(3), 271.
- Gross, J. J. (2013). Emotion regulation: taking stock and moving forward. *Emotion*, 13(3), 359.
- Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: implications for affect, relationships, and well-being. *Journal of personality and social psychology*, 85(2), 348.
- Güth, W., Schmittberger, R., & Schwarze, B. (1982). An experimental analysis of ultimatum bargaining. *Journal of economic behavior & organization*, 3(4), 367-388.
- Güth, W. and R. Tietze (1990). Ultimatum bargaining behavior, a survey and comparison of experimental results. *J. Econ. Psychol.* 11, 417-449.
- Habyarimana, J., Humphreys, M., Posner, D., & Weinstein, J. M. (2007). Why does ethnic diversity undermine public goods provision? *American Political Science Review*, 101(4), 709-725.
- Hackfort, D., & Schwenkmezger, P. (1993). *Anxiety*. In R.N. Singer, M. Murphey, & L. K. Tennant (Eds.). *Handbook of research on sport psychology* (pp. 328-364). New York: Macmillan.
- Hamilton, R. A., Scott, D., & MacDougall, M. P. (2007). Assessing the effectiveness of self-talk interventions on endurance performance. *Journal of Applied Sport Psychology*, 19(2), 226-239.
- Hardy, J. (2006). Speaking clearly: A critical review of the self-talk literature. *Psychology of Sport and Exercise*, 7(1), 81-97.
- Hardy, L., Jones, J. G., & Gould, D. (1996). *Understanding psychological preparation for sport: Theory and practice of elite performers*. John Wiley & Sons Inc.
- Harrell, T. H., Chambless, D. L., & Calhoun, J. F. (1981). Correlational relationships between self-statements and affective states. *Cognitive Therapy and Research*, 5(2), 159-173.
- Harvey, D., Van Raalte, J. L., & Brewer, B. W. (2000). The effects of ST on golf performance. *Psychology of Sport & Exercise*.

- Hatzigeorgiadis, A., & Biddle, S. J. (2008). Negative self-talk during sport performance: Relationships with pre-competition anxiety and goal-performance discrepancies. *Journal of Sport Behavior, 31*(3), 237.
- Hatzigeorgiadis, A., Theodorakis, Y., & Zourbanos, N. (2004). Self-talk in the swimming pool: The effects of self-talk on thought content and performance on water-polo tasks. *Journal of Applied Sport Psychology, 16*(2), 138-150.
- Hilbig, B. E., & Zettler, I. (2009). Pillars of cooperation: Honesty–Humility, social value orientations, and economic behavior. *Journal of Research in Personality, 43*(3), 516-519.
- Hoffman, E., McCabe, K., & Smith, V. L. (1996). Social distance and other-regarding behavior in dictator games. *The American Economic Review, 86*(3), 653-660.
- Holt, N. L., & Hogg, J. M. (2002). Perceptions of stress and coping during preparations for the 1999 women's soccer world cup finals. *The Sport Psychologist, 16*(3), 251-271.
- Horton, P. C. (1981). *Solace: The Missing Dimension in Psychiatry*. University of Chicago Press, Chicago.
- Kahneman, D. (2003). A psychological perspective on economics. *The American economic review, 93*(2), 162-168.
- Kahneman, D., Knetsch, J. L., & Thaler, R. (1986). Fairness as a constraint on profit seeking: Entitlements in the market. *The American economic review, 72*8-741.
- Kazdin, A. (Ed.), 2000. *Encyclopedia of Psychology*. Oxford University Press, New York.
- Kirschenbaum, D. S., Ordman, A. M., & Tomarken, A. J. Holtzbauer, R. (1982). Effects of differential self-monitoring and level of mastery on sports performance: Brain power bowling. *Cognitive Therapy and Research, 6*(3), 335-342.
- Lelieveld, G. J., Van Dijk, E., Van Beest, I., & Van Kleef, G. A. (2013). Does communicating disappointment in negotiations help or hurt? Solving an apparent inconsistency in the social-functional approach to emotions. *Journal of personality and social psychology, 105*(4), 605.
- Mamassis, G., & Doganis, G. (2004). The effects of a mental training program on juniors pre-competitive anxiety, self-confidence, and tennis performance. *Journal of Applied Sport Psychology, 16*(2), 118-137.
- Manz, C. C. and Sims, H. P., Jr (1989). *Superleadership: Leading Others to Lead Themselves*, Prentice-Hall, New York.
- Masten, C. L., Morelli, S. A., & Eisenberger, N. I. (2011). An fMRI investigation of empathy for 'social pain' and subsequent prosocial behavior. *Neuroimage, 55*(1), 381-388.

- Mayer, J. D., & Salovey, P. (1997). *What is emotional intelligence?* In P. Salovey, & D. Sluyter (Eds.), *Emotional development and emotional intelligence: Implications for educators* (pp. 3–31). New York, NY: Basic Books.
- McRae, K., Ochsner, K. N., Mauss, I. B., Gabrieli, J. J., & Gross, J. J. (2008). Gender differences in emotion regulation: An fMRI study of cognitive reappraisal. *Group processes & intergroup relations, 11*(2), 143-162.
- Meichenbaum, D. (1977). Cognitive behavior modification. *Cognitive Behaviour Therapy, 6*(4), 185-192.
- Neck, C. P., & Manz, C. C. (1992). Thought self-leadership: the influence of self-talk and mental imagery on performance. *Journal of Organizational Behavior, 13*(7), 681-699.
- Neo, W. S., Yu, M., Weber, R. A., & Gonzalez, C. (2013). The effects of time delay in reciprocity games. *Journal of Economic Psychology, 34*, 20-35.
- Norrish, J. M., & Vella-Brodrick, D. A. (2008). Is the study of happiness a worthy scientific pursuit?. *Social Indicators Research, 87*(3), 393-407.
- Nouri, E., & Traum, D. (2013). Prediction of Game Behavior Based on Culture Factors. In *Proceedings of the International Conference on Group Decision and Negotiation*.
- Novaco, R. W. (1976). The functions and regulation of the arousal of anger. *American Journal of Psychiatry, 133*(10), 1124-1128.
- Nowak, M. A., Page, K. M., & Sigmund, K. (2000). Fairness versus reason in the ultimatum game. *Science, 289*(5485), 1773-1775.
- Oosterbeek, H., Sloof, R., & Van De Kuilen, G. (2004). Cultural differences in ultimatum game experiments: Evidence from a meta-analysis. *Experimental Economics, 7*(2), 171-188.
- Papaioannou, A., Theodorakis, Y., Ballon, F., & Auwelle, Y. V. (2004). Combined effect of goal setting and self-talk in performance of a soccer-shooting task. *Perceptual and Motor Skills, 98*(1), 89-99.
- Payne, B. D., & Manning, B. H. (1990). The effect of cognitive self-instructions on preservice teacher's anxiety about teaching. *Contemporary educational psychology, 15*(3), 261-267.
- Pillutla, M. M., & Murnighan, J. K. (1996). Unfairness, anger, and spite: Emotional rejections of ultimatum offers. *Organizational behavior and human decision processes, 68*(3), 208-224.
- Pruitt, D. G., & Kimmel, M. J. (1977). Twenty years of experimental gaming: Critique, synthesis, and suggestions for the future. *Annual review of psychology, 28*(1), 363-392.

- Raalte, J. L. V., Brewer, B. W., Lewis, B. P., Linder, D. E., Wildman, G., & Kozimor, J. (1995). Cork! The effects of positive and negative self-talk on dart throwing performance. *Journal of Sport Behavior*, 18(1), 50.
- Robazza, C., Pellizzari, M., & Hanin, Y. (2004). Emotion self-regulation and athletic performance: An application of the IZOF model. *Psychology of Sport and Exercise*, 5(4), 379-404.
- Rokke, P. D., & Rehm, L. P. (2001). Self-management therapies. In K. S. Dobson (Ed.), *Handbook of cognitive-behavioral therapies* (pp. 173–210, 2nd ed.). New York, NY: Guilford.
- Rosin, L., & Nelson, W. M. (1983). The effects of rational and irrational self-verbalizations on performance efficiency and levels of anxiety. *Journal of Clinical Psychology*, 39(2), 208-213.
- Sanfey, A. G., Rilling, J. K., Aronson, J. A., Nystrom, L. E., & Cohen, J. D. (2003). The neural basis of economic decision-making in the ultimatum game. *Science*, 300(5626), 1755-1758.
- Sarlo, M., Lotto, L., Palomba, D., Scozzari, S., & Rumiati, R. (2013). Framing the ultimatum game: gender differences and autonomic responses. *International Journal of Psychology*, 48(3), 263-271.
- Schunk, D. H. and Zimmerman, B. J. 2003. 59–78. Hoboken, NJ: John Wiley & Sons. Self-regulation and learning. In I.B. Weiner (Series Ed.), W.M. Reynolds, & G.E. Miller (Vol. Eds.), *Handbook of psychology: Vol. 7. Educational psychology*.
- Schuermans, J., Comijs, H., Emmelkamp, P. M., Gundy, C. M., Weijnen, I., Van Den Hout, M., & Van Dyck, R. (2006). A randomized, controlled trial of the effectiveness of cognitive-behavioral therapy and sertraline versus a waitlist control group for anxiety disorders in older adults. *The American journal of Geriatric Psychiatry*, 14(3), 255-263.
- Shannon, V. R., Gentner, N. B., Patel, A., & Muccio, D. (2012). Striking gold: mental techniques and preparation strategies used by Olympic gold medalists. *Athletic Insight*, 4(1), 1.
- Simons, J. S., & Gaher, R. M. (2005). The Distress Tolerance Scale: Development and validation of a self-report measure. *Motivation and Emotion*, 29(2), 83-102.
- Suleiman, R. (1996). Expectations and fairness in a modified ultimatum game. *Journal of Economic Psychology*, 17(5), 531-554.
- Summerville, A., & Chartier, C. R. (2013). Pseudo-dyadic “interaction” on Amazon’s Mechanical Turk. *Behavior research methods*, 1-9.

- Swart, M., Kortekaas, R., & Aleman, A. (2009). Dealing with feelings: Characterization of trait alexithymia on emotion regulation strategies and cognitive emotional processing. *PLoS ONE*, 4(6), e5751.
- Takagishi, H., Takahashi, T., Toyomura, A., Takashino, N., Koizumi, M., & Yamagishi, T. (2009). Neural correlates of the rejection of unfair offers in the impunity game. *Neuroendocrinology Letters*, 30(4), 496-500.
- Terada, K., & Takeuchi, C. (2017). Emotional Expression in Simple Line Drawings of a Robot's Face Leads to Higher Offers in the Ultimatum Game. *Frontiers in Psychology*, 8.
- Thaler, R. H. (1988). Anomalies: The ultimatum game. *The Journal of Economic Perspectives*, 2(4), 195-206.
- Theodorakis, Y., Weinberg, R., Natsis, P., Douma, I., & Kazakas, P. (2000). The effects of motivational versus instructional self-talk on improving motor performance. *The sport psychologist*, 14(3), 253-271.
- Thomas, P. R., & Fogarty, G. J. (1997). Psychological skills training in golf: The role of individual differences in cognitive preferences. *The Sport Psychologist*, 11(1), 86-106.
- Theodorakis, Y., Weinberg, R., Natsis, P., Douma, I., & Kazakas, P. (2000). The effects of motivational versus instructional self-talk on improving motor performance. *The sport psychologist*, 14(3), 253-271.
- Tingley, D. H., Lee, J. J., & Renshon, J. (2015). *Physiological responses to shifting bargaining power: Micro-foundations of commitment problems*. Working Paper. Available at <<http://www.jonathanrenshon.net>>. Accessed 29 January.
- Tomasino, B., Lotto, L., Sarlo, M., Civai, C., Rumiati, R., & Rumiati, R. I. (2013). Framing the ultimatum game: the contribution of simulation. *Frontiers in human neuroscience*, 7.
- Van Raalte, J. L., Vincent, A., & Brewer, B. W. (2016). Self-talk: Review and sport-specific model. *Psychology of Sport and Exercise*, 22, 139-148.
- Van 't Wout, M., Chang, L. J., & Sanfey, A. G. (2010). The influence of emotion regulation on social interactive decision-making. *Emotion*, 10(6), 815.
- Van 't Wout, M., Kahn, R. S., Sanfey, A. G., & Aleman, A. (2006). Affective state and decision-making in the ultimatum game. *Experimental brain research*, 169(4), 564-568.
- Xiao, E., & Houser, D. (2005). Emotion expression in human punishment behavior. *Proceedings of the National Academy of Sciences of the United States of America*, 102(20), 7398-7401.

Yamagishi, T., Horita, Y., Takagishi, H., Shinada, M., Tanida, S., & Cook, K. S. (2009). The private rejection of unfair offers and emotional commitment. *Proceedings of the National Academy of Sciences*, 106(28), 11520-11523.

Ziegler, M., Schmidt-Atzert, L., Buhner, M., & Krumm, S. (2007). Fakability of different measurement methods for achievement motivation: Questionnaire, semi-projective, and objective. *Psychology Science*, 49(4), 291.

Zinsner, N., Bunker, L. and Williams, J. M. 2001. "Cognitive techniques for building confidence and enhancing performance". In *Applied sport psychology: Personal growth to peak performance (4th Ed.)*, Edited by: Williams, J.M. 284-311. Mountain View, CA: Mayfield.

Appendix A- Questionnaire

This appendix provides an English translation of the items of the post-experimental questionnaire (Dutch in parentheses).

Open questions (UG & DG)

1. What was it like to say the sentence to yourself? (Hoe was het om het zinnetje tegen jezelf te zeggen?).
2. Did you really internalize the meaning of the sentence, or did you simply read it? (Kon je je goed inleven toen je het zinnetje tegen jezelf zei of was je het meer gewoon aan het opdreunen?).
3. In daily life, what would you say to yourself if you were dealing with an unfair offer? (Wat zou je in het dagelijks leven tegen jezelf zeggen als je te maken kreeg met iemand die jou een oneerlijk aanbod deed?).
4. How difficult was it to remain concentrated? (Hoe moeilijk was het om geconcentreerd te blijven?).
Not difficult at all 1 2 3 4 5 Very difficult
5. How annoying was it to say the sentence to yourself? (Hoe irritant was het om het zinnetje tegen jezelf te zeggen?).
Not annoying at all 1 2 3 4 5 Very annoying
6. How many of the participants in this room do you know by name? (Hoeveel van de in deze zaal aanwezige deelnemers ken je bij de voornaam?).
7. Have you ever participated in an experiment in which you made choices that affected your opponent's income? (Heb je al eens eerder meegedaan aan een experiment waarbij u keuzes moest maken die invloed hadden op opbrengsten van andere deelnemers?).
8. Is this experiment performed in your native language? (Is dit experiment uitgevoerd in je moedertaal?).
9. Are you familiar with game theory? (Ben je bekend met speltheorie?).

Questions added to the DG-questionnaire

10. What sentence did you have to say to yourself? (Welk zinnetje moest je precies tegen jezelf zeggen?).
11. Can you describe your thoughts when you said the sentence to yourself? (Zou je willen omschrijven waar je aan dacht terwijl je het zinnetje tegen jezelf zei?).
12. Can you describe your thoughts when you received a low offer from a proposer? (Kun je in het kort proberen te omschrijven wat je dacht wanneer je een laag aanbod van de andere deelnemer kreeg?).

13. To what extent do you agree with the following statements? (In welke mate ben je het eens met de volgende stellingen):

13a. When a proposer gave me a low offer, I was angry (Als de ander me weinig aanbod, was ik boos)

Strongly disagree 1 2 3 4 5 Strongly agree

13b. When a proposer gave me a low offer, I felt powerless (Als de ander me weinig aanbod, voelde ik mij machteloos).

Strongly disagree 1 2 3 4 5 Strongly agree

13c. By saying the sentence to myself, I could better deal with my negative feelings (Door het zinnetje tegen mezelf te zeggen, kon ik beter met mijn negatieve gevoelens omgaan).

Strongly disagree 1 2 3 4 5 Strongly agree

Demographics (UG en DG)

14. What is your age? (Wat is uw leeftijd?)

15. What is your gender? (Wat is uw geslacht?)

16. What is your nationality? (Wat is uw nationaliteit?)

17. Are you a student? (Bent u student?)

This is the end of the experiment. Please stay seated until we are ready for the payout (Dit is het einde van het experiment. Blijft u alstublieft op uw plek zitten totdat wij klaar zijn voor de uitbetaling).

Thank you very much for participating! (Hartelijk dank voor uw deelname!).

Appendix B - Instructions used in the DG experiment [ENGLISH]

This appendix provides an English translation of the printed instructions used in the experiment and screens with further instructions on self-talk.

INSTRUCTIONS

You are now participating in a scientific experiment.

After you have read the following instructions, you can earn money. How much you earn depends on your own choices and the choices of other participants. It is thus very important that you read these instructions carefully. These instructions are the same for all participants.

You are not allowed to talk to other participants during the experiment. Please turn off your mobile phone and put it away. If you have questions, please approach the experiment leader.

During the experiment we speak of points rather than Euros. Your earnings are calculated in points. At the end of the experiment, the total number of points you have earned will be converted to Euros. The exchange rate is:

20 Points = 1 Euro

In addition to these earnings, you will receive €2,50 for being present here. At the end of the experiment, you will receive your earnings in **cash**, other participants will not be able to see how much you have earned.

During the experiment you will be matched with several other participants. This matching is done randomly. At no point before, during or after the experiment will you be informed of the identity of those you were matched with. The reverse also holds: others will never be informed about whether or when they were matched with you.

We describe in detail how the experiment proceeds on the following page.

The Experiment

The experiment consists of two parts. At the end you will also be asked to fill in a short questionnaire.

Part 1

This part of the experiment consists of 10 identical rounds. Each participant is assigned randomly to one of two roles – proposers or responders – and will stay in that role for all of the ten rounds.

At the beginning of each round proposers receive a starting sum of 20 points. Proposers are matched with a new responder on every round and no proposer will ever be matched with the same responder twice. Proposers choose how many of the 20 points they want to offer to the responder that they are matched with. Proposers keep the remaining points for themselves. The offer has to be an integer with a minimal value of 1 and a maximal value of

20. Proposers submit their offer via the computer. Choices always have to be confirmed by clicking on the “Continue” button.

Responders receive the offer from the proposer via the computer and receive the amount of points that they are offered.

This part consists of 10 rounds in total. Every round proceeds precisely as described above. However, **each proposer gets matched with a different responder in every round. Everybody stays in the same role over these 10 rounds.** We will ensure that nobody is matched with the same player twice. **You thus send a certain number of points to a different responder 10 times or you receive 10 offers from 10 different proposers, depending on whether you are a proposer or a responder in part 1.** You and the other participants will remain reciprocally anonymous.

Part 2

Part 2 proceeds in the same way as part 1, only now the roles are changed. Participants who were proposers in part 1 are responders in part 2, and vice versa. There are 10 rounds again and everyone keeps the same role over these rounds. Again, everyone is matched with another participant 10 times according to the same rules as in part 1. It is possible that in part 2 you will be matched with a participant with whom you were already matched in part 1. However, as the matching is random, neither you nor the other player will know that you have already been matched in part 1.

All further information will be provided to you on the screen. Please read this additional information carefully and follow the instructions.

Click on “Continue” on the screen if you are ready to continue.

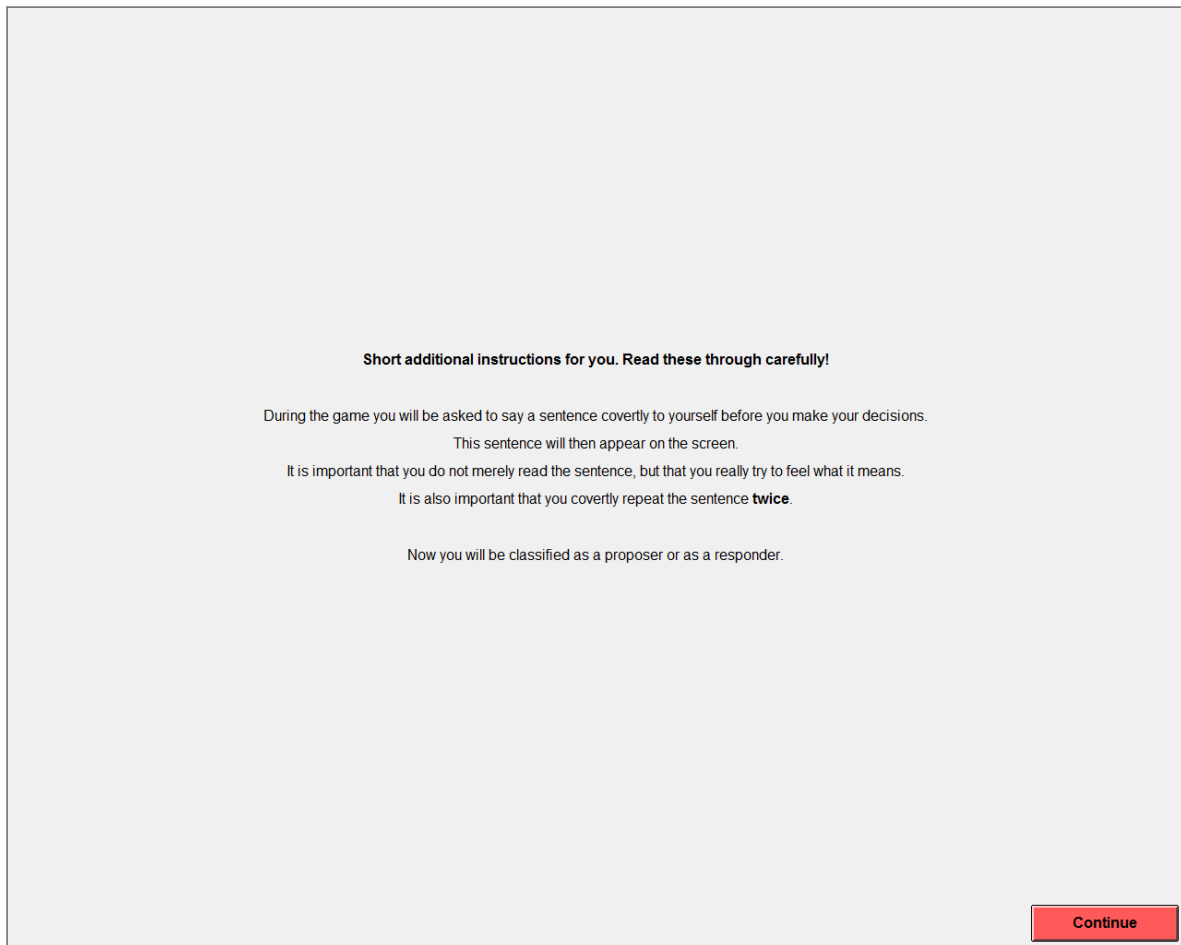


Figure 2. Additional instructions for participants in either of three self-talk conditions. Shown on their computer screens before playing their first DG or UG.

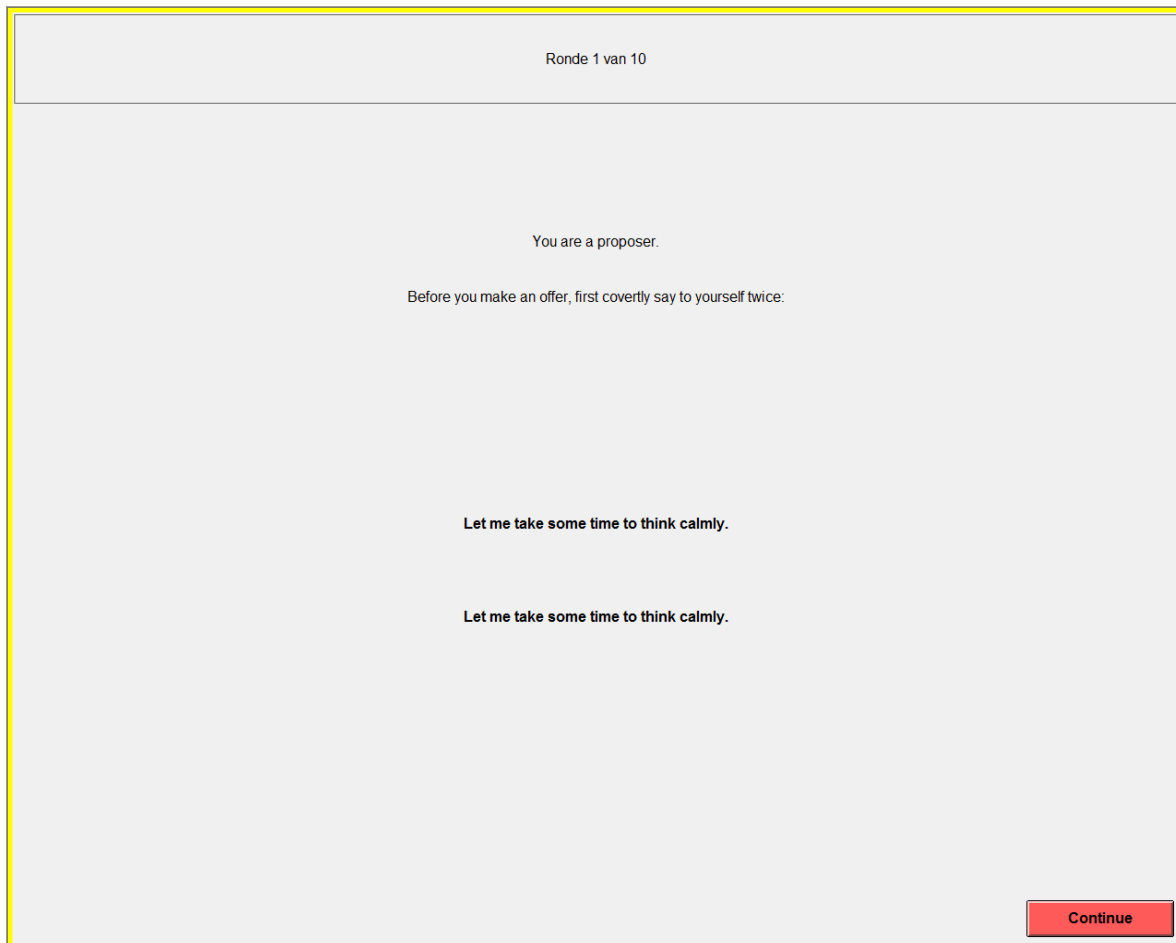


Figure 3. Self-talk instructions for proposers in the neutral self-talk condition. This instruction was shown on the computer screen before making an offer.



Instructies

U neemt nu deel aan een wetenschappelijk experiment.

Nadat u de volgende instructies hebt gelezen, kunt u geld verdienen. De hoeveelheid hangt af van uw eigen keuzes en van de keuzes van andere deelnemers. Het is dus heel belangrijk dat u deze instructies precies doorleest. Deze instructies zijn hetzelfde voor alle deelnemers.

Het is tijdens het experiment niet toegestaan dat u met andere proefpersonen spreekt. Zet uw mobiele telefoon uit en stop die in uw tas. Als u iets wilt vragen, richt u zich dan tot de experimentleider.

Tijdens het experiment spreken we niet van Euro's maar van punten. Uw opbrengst wordt ook in punten berekend. Aan het einde van het experiment wordt het totaal aantal punten dat u hebt verdiend weer omgerekend naar Euro's. Daarbij geldt dat:

20 Punten = 1 Euro

Daarbovenop ontvangt u €2,50 omdat u bent komen opdagen. Aan het einde van het experiment krijgt u uw verdiensten **contant** uitbetaald zonder dat anderen kunnen zien hoeveel u heb verdiend.

Tijdens het experiment wordt u aan verschillende andere deelnemers gekoppeld. Die koppeling gebeurt op basis van toeval. Op geen enkel moment voor, tijdens of na het experiment krijgt u de identiteit te horen van de aanbieders aan wie u gekoppeld was. Omgekeerd geldt hetzelfde: andere deelnemers komen dus ook niet te weten wanneer ze aan u gekoppeld waren.

Op de volgende pagina's beschrijven we hoe het experiment precies verloopt.

Het Experiment

Het experiment bestaat uit twee delen. Aan het eind krijgt u verder nog een korte vragenlijst.

Deel 1

Dit deel van het experiment bestaat uit 10 identieke rondes. De deelnemers worden op basis van toeval verdeeld over twee rollen – aanbieders en ontvangers – en blijven in dezelfde rollen over de 10 rondes.

Aan het begin van elke ronde krijgen aanbieders een startbedrag van 20 punten. Aanbieders worden elke ronde gekoppeld aan een andere ontvanger en ze zullen nooit twee keer met dezelfde ontvanger spelen. Aanbieders kiezen hoeveel van de 20 punten ze willen aanbieden aan de ontvanger aan wie ze gekoppeld zijn. De overige punten mogen ze zelf houden. Het aanbod moet een heel getal zijn, minimaal 1 en maximaal 20. Aanbieders geven hun beslissing door via de computer. Keuzes moeten altijd bevestigd worden door op de “Ga verder” knop te klikken.

Ontvangers krijgen het aanbod van de aanbieder door via de computer en ontvangen dan het aantal punten dat hen is aangeboden.

In totaal zijn er in dit deel tien rondes. Iedere ronde verloopt precies zoals hierboven beschreven is. **Alleen wordt iedere aanbieder in elke ronde aan een andere ontvanger gekoppeld. Iedereen houdt dezelfde rol in deze 10 rondes.** We letten er hierbij op dat niemand tweemaal aan dezelfde deelnemer gekoppeld wordt. **U stuurt dus 10 keer een aantal punten naar een andere ontvanger of ontvangt 10 aanboden van 10 verschillende aanbieders, afhankelijk van of u aanbieder of ontvanger bent in deel 1.** U en de andere deelnemers blijven wederzijds anoniem.

Deel 2

Deel 2 verloopt hetzelfde als deel 1, alleen worden de rollen nu omgewisseld. De deelnemers die in deel 1 aanbieder waren worden nu ontvanger, en vice versa. Er zijn weer 10 rondes en iedereen houdt dezelfde rol tijdens deze rondes. Iedereen wordt weer 10 keer gekoppeld aan een andere deelnemer en de regels van het spel blijven hetzelfde. Het is mogelijk dat u in deel 2 gekoppeld wordt aan een persoon aan wie u ook eens gekoppeld was in deel 1, maar de koppeling is willekeurig zodat u en de ander niet weten wanneer dit het geval is. Alle verdere informatie krijgt u via het scherm.

Zorg dat u deze informatie ook goed leest en opvolgt.

Klikt u op de “Ga verder” knop op het scherm als u klaar bent om verder te gaan.

Appendix B - Instructions used in the UG experiment [ENGLISH]

This appendix provides an English translation of the printed instructions used in the experiment.

INSTRUCTIONS

You are now participating in a scientific experiment.

After you have read the following instructions, you can earn money. How much you earn depends on your own choices and the choices of other participants. It is thus very important that you read these instructions carefully. These instructions are the same for all participants.

You are not allowed to talk to other participants during the experiment. Please turn off your mobile phone and put it away. If you have questions, please approach the experiment leader.

During the experiment we speak of points rather than Euros. Your earnings are calculated in points. At the end of the experiment, the total number of points you have earned will be converted to Euros. The exchange rate is:

20 Points = 1 Euro

In addition to these earnings, you will receive €2,50 for being present here. At the end of the experiment, you will receive your earnings in **cash**, other participants will not be able to see how much you have earned.

During the experiment you will be matched with several other participants. This matching is done randomly. At no point before, during or after the experiment will you be informed of the identity of those you were matched with. The reverse also holds: others will never be informed about whether or when they were matched with you.

We describe in detail how the experiment proceeds on the following page.

The Experiment

The experiment consists of two parts. At the end you will also be asked to fill in a short questionnaire.

Part 1

This part of the experiment consists of 10 identical rounds. Each participant is assigned randomly to one of two roles – proposers or responders – and will stay in that role for all of the ten rounds.

At the beginning of each round proposers receive a starting sum of 20 points. Proposers are matched with a new responder on every round and no proposer will ever be matched with the same responder twice. Proposers choose how many of the 20 points they want to offer to the responder that they are matched with. Proposers keep the remaining points for themselves. The offer has to be an integer with a minimal value of 1 and a maximal value of 20. Proposers submit their offer via the computer. Choices always have to be confirmed by clicking on the “Continue” button.

Responders receive the offer from the proposer via the computer and choose whether or not to accept it. If the responder accepts the offer, the responder earns the number of points that has been offered and the proposer keeps the remaining points. If the responder rejects the offer, then both the proposer and the responder do **not** receive any points for that round.

This part consists of 10 rounds in total. Every round proceeds precisely as described above. However, **each proposer gets matched with a different responder in every round. Everybody stays in the same role over these 10 rounds.** We will ensure that nobody is matched with the same player twice. **You thus send a certain number of points to a different responder 10 times or you receive 10 offers from 10 different proposers, depending on whether you are a proposer or a responder in part 1.** You and the other participants will remain reciprocally anonymous.

Part 2

Part 2 proceeds in the same way as part 1, only now the roles are changed. Participants who were proposers in part 1 are responders in part 2, and vice versa. There are 10 rounds again and everyone keeps the same role over these rounds. Again, everyone is matched with another participant 10 times according to the same rules as in part 1. It is possible that in part 2 you will be matched with a participant with whom you were already matched in part 1. However, as the matching is random, neither you nor the other player will know that you have already been matched in part 1.

All further information will be provided to you on the screen. Please read this additional information carefully and follow the instructions.

Click on “Continue” on the screen if you are ready to continue.



Instructies

U neemt nu deel aan een wetenschappelijk experiment.

Nadat u de volgende instructies hebt gelezen, kunt u geld verdienen. De hoeveelheid hangt af van uw eigen keuzes en van de keuzes van andere deelnemers. Het is dus heel belangrijk dat u deze instructies precies doorleest. Deze instructies zijn hetzelfde voor alle deelnemers.

Het is tijdens het experiment niet toegestaan dat u met andere proefpersonen spreekt. Zet uw mobiele telefoon uit en stop die in uw tas. Als u iets wilt vragen, richt u zich dan tot de experimentleider.

Tijdens het experiment spreken we niet van Euro's maar van punten. Uw opbrengst wordt ook in punten berekend. Aan het einde van het experiment wordt het totaal aantal punten dat u hebt verdiend weer omgerekend naar Euro's. Daarbij geldt dat:

20 Punten = 1 Euro

Daarbovenop ontvangt u €2,50 omdat u bent komen opdagen. Aan het einde van het experiment krijgt u uw verdiensten **contant** uitbetaald zonder dat anderen kunnen zien hoeveel u hebt verdiend.

Tijdens het experiment wordt u aan verschillende andere deelnemers gekoppeld. Die koppeling gebeurt op basis van toeval. Op geen enkel moment voor, tijdens of na het experiment krijgt u de identiteit te horen van de aanbieders aan wie u gekoppeld was. Omgekeerd geldt hetzelfde: andere deelnemers komen dus ook niet te weten wanneer ze aan u gekoppeld waren.

Op de volgende pagina's beschrijven we hoe het experiment precies verloopt.

Het Experiment

Het experiment bestaat uit twee delen. Aan het eind krijgt u verder nog een korte vragenlijst.

Deel 1

Dit deel van het experiment bestaat uit 10 identieke rondes. De deelnemers worden op basis van toeval verdeeld over twee rollen – aanbieders en ontvangers – en blijven in dezelfde rollen over de 10 rondes.

Aan het begin van elke ronde krijgen aanbieders een startbedrag van 20 punten. Aanbieders worden elke ronde gekoppeld aan een andere ontvanger en ze zullen nooit twee keer met dezelfde ontvanger spelen. Aanbieders kiezen hoeveel van de 20 punten ze willen aanbieden aan de ontvanger aan wie ze gekoppeld zijn. De overige punten mogen ze zelf houden. Het aanbod moet een heel getal zijn, minimaal 1 en maximaal 20. Aanbieders geven hun beslissing door via de computer. Keuzes moeten altijd bevestigd worden door op de “Ga verder” knop te klikken.

Ontvangers krijgen het aanbod van de aanbieder door via de computer en kiezen vervolgens of ze het wel of niet accepteren. Als de ontvanger het aanbod accepteert, dan verdient de ontvanger het aangeboden aantal punten en houdt de aanbieder de overige punten. Als de ontvanger de verdeling niet accepteert, dan verdienen de aanbieder en de ontvanger deze ronde beide **geen** punten.

In totaal zijn er in dit deel tien rondes. Iedere ronde verloopt precies zoals hierboven beschreven is. **Alleen wordt iedere aanbieder in elke ronde aan een andere ontvanger gekoppeld. Iedereen houdt dezelfde rol in deze 10 rondes.** We letten er hierbij op dat niemand tweemaal aan dezelfde deelnemer gekoppeld wordt. **U stuurt dus 10 keer een aantal punten naar een andere ontvanger of ontvangt 10 aanboden van 10 verschillende aanbieders, afhankelijk van of u aanbieder of ontvanger bent in deel 1.** U en de andere deelnemers blijven wederzijds anoniem.

Deel 2

Deel 2 verloopt hetzelfde als deel 1, alleen worden de rollen nu omgewisseld. De deelnemers die in deel 1 aanbieder waren worden nu ontvanger, en vice versa. Er zijn weer 10 rondes en iedereen houdt dezelfde rol tijdens deze rondes. Iedereen wordt weer 10 keer gekoppeld aan een andere deelnemer en de regels van het spel blijven hetzelfde. Het is mogelijk dat u in deel 2 gekoppeld wordt aan een persoon aan wie u ook eens gekoppeld was in deel 1, maar de koppeling is willekeurig zodat u en de ander niet weten wanneer dit het geval is.

Alle verdere informatie krijgt u via het scherm. Zorg dat u deze informatie ook goed leest en opvolgt.

Klikt u op de “Ga verder” knop op het scherm als u klaar bent om verder te gaan.

