Do cognitive load and time pressure influence donating behavior?

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Student name: Myrthe van der Leegte

Student ID: s1061240

Supervisor: Dr. E.W. de Kwaadsteniet

Abstract

Existing research regarding prosocial behavior is conflicting. One stream of research argues that humans are intuitively selfish and only make moral decisions when they have time to overthink their thoughts. The other stream states that humans are intuitively altruistic and only make more selfish choices when they have time to evaluate their decisions. As it was not clear which theory was right, this research tried to gain more insight into the process of prosocial decision-making. If it would be possible to stimulate prosocial behavior through environmental factors (cognitive load/time pressure), this might have a positive influence on tackling social problems, for example by letting people behave more generously towards charities. Using a 2 (cognitive load/no cognitive load) x 2 (time pressure/no time pressure) between subject design ($N = 155$), we examined the effects of cognitive load and time-pressure on donating behavior. None of our results were significant. Therefore, we could not draw a clear conclusion based on the results we found. Since existing studies contradict each other and we found no significant result, more research is needed.

Keywords:

moral decision-making;

cognitive load;

time pressure;

donating;

self-interest;

pro-social behavior;

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‘As a student, I lived with twenty-one other girls. It was hard to keep everything tidy, as it was really easy to point to someone else when it was messy. Twice a year, the fire service came by and the house had to be perfectly clean by then; otherwise we would have to pay a fine. If we would clean together, it would not take a lot of time. However, some of my roommates never cleaned anything at all and therefore the same girls always took responsibility. I still wonder why certain people felt prompted to respond while others reaped the benefits without feeling guilty.’

The previous anecdote is one of the examples that got me thinking about different levels of helpfulness of people around me. The interesting thing about the girls, who never cleaned anything at all, was that they actually donated relatively large amounts of money to several charities. Why do certain individuals have the tendency to act cooperatively in some situations, while acting more self-interested in other circumstances? The subsequent question is whether this difference in prosocial behavior can be explained by environmental factors, such as time pressure and cognitive load.

I can imagine that if you have more time and more cognitive capacity available to overthink your decisions, you will take more information into account, such as how your choices affect your reputation. Van Dijk (2015) discussed the concept of ‘indirect reciprocity’. This concept assumes that people obtain a positive reputation when they show prosocial behavior (cooperation) and a negative reputation when they do not. Van Dijk (2015) refers to Milinski, Semman and Krambeck (2002) for an example. Milinski and colleagues (2002) found evidence for the fact that people are more likely to work together with people who donate to charities like UNICEF. When you have to make a moral decision while you are in a rush or when

you have a lot of other things on your mind, I would expect that you would neither have time, nor cognitive capacity to oversee all of the possible (social) consequences. In this case, you might rely on your instinct and this might result in less cooperative decisions. Furthermore, earlier research has shown that prosocial behavior leads to certain benefits for the person himself, such as lower stress levels, reduced risk of diseases and an increase in self-esteem (Wilson & Musick, 1999; Thoits & Hewitt, 2001). When a person has the time and capacity to overthink whether his or her decision might lead to the realization of certain benefits it could increase the chance of helping someone else. On the other hand, the time to overthink decisions could also make you realize that acting selfishly (instead of cooperatively) leads to more benefits. For instance, you might realize that you could spend your money on a new bike instead of a charity.

Since there is not much scientific evidence of the impact of time pressure and cognitive load on moral decision-making, I would like to provide more information regarding this research area. The overall question is 'Would people make more cooperative choices when they have time to overthink their decision (and therefore time and capacity to take more information into account) than when their choice is more intuitively based?' If it would be possible to stimulate prosocial behavior through such situational factors, this might have a positive influence on tackling social problems, for example by letting people behave more generously towards charities. A lot of charities, such as Amnesty International, Unicef and WarChild, try to raise as much money as they can to help people in need; for example to supply food or medicine, improve water and sanitation facilities, protect children from violence or direct assistance to provide education. If we gain more insight into the circumstances in which people make more cooperative or more selfish choices and if we know how

to influence this process, it might be possible to collect more money to invest in charitable causes. Because it is impossible to investigate all the possible prosocial behavior scenarios and our findings might be useful for charities, I will narrow my view to 'donating behavior'.

As I mentioned earlier, I can imagine that if people have more time and more cognitive capacity available to overthink their decisions, they will take more information into account, such as how their choices affect their reputation. Since there is not a lot of information available regarding this line of thought, I would like to examine whether people act differently when they have more time to overthink their decision compared to people who have to make a quick decision. Possibly, decision-making can be influenced by the way the information is processed. Haidt (2001) presents two different streams of reasoning: unconscious and conscious reasoning. He stated that intuition is an unconscious, automatic, effortless, fast process, whereas conscious reasoning takes more time and is more effortful. The goal of this research is to further examine whether people will donate more when they make an intuitively based or a well-considered decision. 'Are humans intuitively altruistic or do they show more altruistic behavior when they have more time to reflect on their choice?' Earlier research has been done regarding this question, but the research results are conflicting. One stream of research states that humans are intuitively selfish and only make moral decisions when they have time to overthink their thoughts (Kahneman, 2011; Moore & Loewenstein, 2004). The other stream states that humans are intuitively altruistic and only make more selfish choices when they have time to evaluate their decisions (Masicampo & Baumeister, 2008; Warneken & Tomasello, 2006; Rand, Greene, Nowak, 2012).

To look into this matter more deeply, researchers have focused on the way in

which individuals process information during decision-making (Kahneman, 2011; Moore & Loewenstein, 2004; Rand et al., 2012). Kahneman (2011) makes a distinction between two information-processing systems. System 1 takes care of fast, intuitive choices and judgments are made without a lot of effort and control. System 2 forms a framework for effortful mental activities. When we have to overthink our decisions or need concentration for certain choices, we use system 2. According to Kahneman (2011), individuals who are cognitively busy tend to make more selfish choices compared to individuals who have enough cognitive capacity left. Masicampo and Baumeister (2008) also argue that our brain is initially selfish, but due to self-control we are able to inhibit self-interested urges. System 2 takes care of self-control, such as staying polite in situations in which you are actually really angry (Kahneman, 2011). However, since cognitive resources are scarce, we are often not able to control these urges and as a consequence we will then behave more self-interested (Masicampo & Baumeister, 2008). To sum up, when system 2 is already busy with something else (for example ignoring the temptation of cookies on the table), there is not enough capacity left to control other urges. Therefore, people will make decisions via our fast and intuitive system 1. Because we are initially selfish (according to Masicampo & Baumeister, 2008), these intuitive choices will be more self-centered. The nature of human beings might explain a natural tendency to act egocentrically when a decision has to be made really quickly.

The above-mentioned research of Kahneman (2011) and Masicampo and Baumeister (2008) is in line with research of Moore and Loewenstein (2004) in which they explain two similar mental processes. Moore and Loewenstein (2004) discuss an automatic process, which proceeds fast and involuntary and is based on self-interest and a more controlled slower process, which takes for example social responsibilities

into account. Several researchers (Gilbert, Krull & Malone, 1990; Shiv & Fedorikhin, 1999) show that it is harder for individuals to correct judgments and decisions that are made automatically when individuals are under high cognitive load instead of low cognitive load. Shiv and Fedorikhin (1999) showed that people who had to remember a seven-digit sequence while they were offered a choice between a chocolate cake or a fruit salad, were more tempted to choose the chocolate cake compared to individuals who only had to remember two digits. Shiv and Fedorikhin (1999) showed that participants scored the cake higher on the affective dimension and lower on the cognitive dimension and the fruit salad higher on the cognitive dimension and lower on the affective dimension. This implies that they preferred the fruit salad when they had more cognitive capacity available and therefore probably took more information into account such as their willpower. On the contrary, when they chose on the basis of their intuition and desires; they tended to choose the chocolate cake. Through this research it became clear that the participants were not able to control their urges anymore when they were under cognitive load.

Based on the above-mentioned research of Shiv and Fedorikhin (1999), it seems that people make use of a more intuitive way of thinking when they have to remember a difficult letter sequence. If we combine this finding with the article of Moore and Loewenstein (2004), in which they discuss that people act more selfishly when they make fast and intuitively based decisions, people are likely to make more selfish choices when they have to remember a letter sequence compared to individuals who have more cognitive capacity available to overthink their decisions. Moral decisions are made when people make use of controlled mental processes (Moore & Loewenstein, 2004).

By contrast, Rand and colleagues (2012) argued and showed that participants

act more pro-socially when they made use of automatic mental processes as compared to controlled mental processes. Rand and colleagues (2012) examined the same research question as we have drafted, but they only manipulated time pressure to make a distinction between intuition and reflection and did not take cognitive load into account . Their research question was: ‘are people intuitively selfish and only change their way of thinking to a more cooperative one by reflecting their choices or are people intuitively prosocial and change their way of thinking to a more self-interested one, when they realize that selfish behavior would provide many more benefits to the self?’.

The thought that time pressure effects moral decision making is in line with research of Kahneman (2011) in which he states that reflective responses need more time for consideration and intuitive choices can be made relatively fast. Rand and colleagues (2012) showed that participants contributed more money to a common project when they had to decide fast compared to when they were forced to take more time for their decision. People can intuitively help other people, but when they have the chance to evaluate their decision, they might change their mind. As Rand and colleagues (2012) assume that people make more prosocial choices when they use automatic processes, the seven-digit task of Shiv and Fedorikhin (1999) should result in more cooperative decisions compared to when they have to do a task that requires less mental capacity. Besides the before-mentioned research, Dickert, Sagara and Slovic (2011) also found that individuals tended to donate more to children who were having a severe disease when they were under high cognitive load compared to individuals who were under low cognitive load.

Warneken and Tomasello (2006) did not make any reference to cognitive load or time pressure, but also stated that humans are intuitively altruistic. They explored

social behavior of children around 18 months old. According to them, children around this age are too young to internalize altruistic norms and moral behavior. Furthermore, reciprocity and reputations are concepts that they do not yet understand. If they show altruistic behavior, this should thus be intuitively based. Warneken and Tomasello (2006) examined the presence of prosocial behavior of children around 18 months old in ten different settings. One of their experiments examined whether the children would pick up a clothespin if the researcher let it fall and was unable to reach it. In all of their experiments, children showed spontaneously, unrewarded, helping behavior. Other research showed that even if 18 months old children had to cross several obstacles (and therefore the behavior was costly to themselves), they still picked up the fallen object and gave it to the experimenter (Warneken, Hare, Melis, Hanus, & Tomasello, 2007). Besides the presence of altruistic behavior regarding young children, Warneken and colleagues (2007) found that chimpanzees showed altruistic behavior as well. As there is no indication that chimpanzees reward their children for showing prosocial behavior and children of 18 months old are too young to understand concepts of altruism, Warneken and Tomasello (2009) concluded that prosocial behavior is intuitively based. A lot of research found evidence for intuitively altruistic behavior. Therefore, it is important to examine this side of story as well.

Since the research results regarding automatic or controlled processes and prosocial behavior are contradictory, it is necessary to replicate these research findings to complement the available knowledge. As stated before, charities could benefit from gaining more insight into how and when individuals make more cooperative or more selfish choices. By manipulating the decision time and cognitive load, it is possible to examine whether individuals donate more or less when they make use of system 1 or 2. As there is almost no research about the connection

between cognitive load, time pressure and donations, this research might provide new insights into the psychology of prosocial behavior. However, the fact that there is not a lot of research done and the fact that the scarce scientific evidence is conflicting makes it hard to formulate one-sided predictions regarding this experiment. For this reason, I will test both theories that I have described above.

The first set of hypotheses, which are based on, the first stream of reasoning (Kahneman, 2011) will be as follows:

H1. Individuals donate less money when they have to make a decision:

H1a. under time pressure compared to individuals who have to make the same decision without being under time pressure.

H1b. when they are cognitively busy compared to individuals who have to make the same decision, but are not cognitively busy.

However, as stated before, Rand, Greene and Nowak (2012) concluded from their time pressure experiments that humans are intuitively altruistic. Dickert and colleagues (2011) found similar results using cognitive load. Since other research found evidence for intuitively altruistic behavior as well (Warneken et al., 2006; Warneken et al., 2007; Warneken et al., 2009), it is important to also examine this side of the story. Based on this second stream of research, the following hypotheses are formulated:

H2. Individuals donate more money when they have to make a decision:

H2a. under time pressure compared to individuals who have to make the same decision without being under time pressure.

H2b. when they are cognitively busy compared to individuals who have to make the same decision, but are not cognitively busy.

Method

Pilot

Prior to the experiment, we conducted a pilot study to examine how participants evaluated several charities regarding the willingness to donate. In total, 64 individuals participated in the pilot, of which 32 males and 32 females. The participants were between 21 and 72 years old (M = 30.51, SD = 13.90) and were asked to fill in a short questionnaire on the site 'Qualtrics'. Every participant got to see 10 different charities (De Nederlandse Hartstichting, Nationaal Ouderenfonds, Diabetesfonds, Ronald McDonalds Kinderfonds, Amnesty International, Warchild, Artsen Zonder Grenzen, KNFG Geleidehonden, Hersenstichting, Het Wereld Natuurfonds) and had to indicate, on a 9-point Likert scale, to what extent he or she was willing to donate to the different charities (*1 = I am not interested in donating to this charity at all, 9 =I am very interested in donating to this charity*).

Amnesty International was scored as the most neutral charity to which the participants were willing to donate (M = 5.81, SD = 2.42). Compared with the other charities, a relatively big part (34,4%) of the participants scored in the middle of the 9-point Likert scale (this means that they scored a 4, a 5 or a 6) when these participants were rating their willingness to donate to Amnesty International. Only a small percentage (7.8%) of the participants indicated that they were not interested in donating to this charity at all. Additionally, only a small percentage (9.4%) of the participants stated that they were very willing to donate to Amnesty International. We can conclude that the average participant was neutral towards donating to Amnesty International. If a charity is seen as relatively neutral (compared to charities to which participants would never or always donate), our manipulation of time pressure and cognitive load is more likely to affect the results. To conclude, as most of the

participants did not extremely like or dislike Amnesty International, we decided to use this charity in our main experiment.

Participants and design

In this research we investigated whether cognitive load and time pressure increased or decreased the amount of money participants were willing to donate to Amnesty International. Participants were recruited at the Social Sciences faculty of the University of Leiden. In total, 127 female and 28 male participants participated (N = 155). They were between 16 and 29 years old (M = 20.87, SD = 2.38). We used a 2 (cognitive load high/cognitive load low) x 2 (time pressure/no time pressure) between subjects design. The dependent variable was the amount of money participants donated. The participants were randomly distributed among the four conditions. 24 participants were removed out of the dataset, as they took more time than allowed to indicate their donation (if and how much they were willing to donate) in the time pressure condition.

Procedure

As stated before, 155 participants were recruited. They were recruited in and around the university and were asked to participate in an experiment that would take 45 minutes. They could choose between receiving 1 credit + €1.50 or €5.00. Our experiment was combined with another experiment about accountability and sanctioning decisions, but because the tasks were not comparable we did not expect a carryover effect between the two parts. Participants could receive €1.50 for our part of the experiment and €3.50 or a credit for the other part. Every participant made the experiment in a computer cubicle without anyone else being present. Before the experiment began, participants were asked to fill in their participant number, age and gender. Participants were told that the €1.50 that they were said to receive at the end

of the experiment could be partially or totally donated to Amnesty International if they wanted that. Participants were divided among four different conditions (time pressure, cognitive load, time pressure and cognitive load, control condition). The participants in the cognitive load condition were shown a letter sequence in the beginning and were asked to enter this sequence after the question about donating to Amnesty International. The participants in the time pressure condition had to make their decision within 10 seconds. The third group of participants had to remember both the letter sequence and was put under time pressure. The fourth condition consisted of participants who were asked if and how much they wanted to donate without asking to remember a letter sequence and without a time limit (control condition.

Materials

Our experiment was conducted in the lab of Leiden University. Our experiment took about 15 minutes, but as we worked together with 2 other researchers, the participants needed approximately 45 minutes to complete the whole experimental session.

We made use of the same cognitive load digit sequence as Dickert and colleagues (2011) to manipulate cognitive load. This digit sequence was as follows 'DKZZVHTRKJ'. To manipulate time pressure, we gave the participants who had to make a fast choice, 10 seconds to decide. Rand and colleagues (2012) gave their participants the same amount of time to make a decision in the time pressure condition. The participants in the time pressure conditions saw a ticking clock at the bottom of the screen.

Results

In this research we took a closer look at the impact of cognitive load and time pressure on donating behavior. Since hypotheses 1 and 2 discuss the same issues, although in opposite direction, it is possible to answer both hypotheses with one Univariate ANOVA. H1 predicts that individuals donate less money when they have to make a decision under time pressure or when they are cognitively busy compared to individuals who are not 'suffering' under these conditions. H2 predicts results in the opposite direction.

Because it took 24 participants in the time pressure condition more time to make a decision than allowed (10 seconds), we removed these participants from our dataset. The average amount of time (in seconds) it took the remaining participants in the time pressure condition to make their decision was really close to the 10 seconds they were given to make their decision (M = 9.33, SD = 1.22). The average amount of time it took participants in the condition without time pressure to make their decision was much higher (M = 18.41, SD = 11.85). With regard to the cognitive load manipulation, 58 out of 80 participants managed to remember the letter sequence 'DKZZVHTRKJ' when asked afterwards. The other participants only remembered part of the sequence or added letters that the original sequence did not contain. There were no participants who did not fill in anything at all.

When analyzing the amount of money people donated, we found that more than half (59.4%) of the participants donated less than half of the €1.50 they received at the beginning of the task. About a quarter (28.4%) of the participants did not donate anything at all. By contrast, also about a quarter of the participants donated the total amount of €1.50 (25.8%). The participants who donated more than half of the €1.50, but not everything was a relatively small group (14.8%).

Univariate ANOVA

The Univariate ANOVA with 'amount of donated money' as the dependent variable, and 'time pressure' and 'cognitive load' as independent variables, did not show a significant main effect of time pressure ($F(1,127) = 1.16$, $p = .28$) or cognitive load ($F(1,127) = .117$, $p = .73$). As neither time pressure, nor cognitive load influenced the amount of money people donated, we have to reject both H1 and H2.

Table 1. Average donations by Cognitive Load and Time Pressure (2 x 2)

	No cognitive load	Cognitive Load
Time pressure	84.23 (60.01)	75.17 (55.85)
No time pressure	60.54 (53.43)	76.67 (62.97)

Note. Higher scores denote higher mean donations. Standard deviations are given in parentheses.

Discussion and conclusion

This research was done to examine the effects of time pressure and cognitive load on donating behavior. Previous research distinguished two different streams of reasoning. Kahneman (2011) argued that human beings are self-interested and only make moral decisions when they have time to overthink their decisions. On the contrary, Rand and colleagues (2012) argued and showed that people donated more when they were experiencing time pressure. Because these lines of reasoning were conflicting, both theories were tested. H1 indicated that individuals would donate less money when they had to make a decision under time pressure or when they experienced cognitive load compared to individuals who had to make the same decision, but were not experiencing time pressure and/or cognitive load. H2 predicted results in the opposite direction, such that individuals would donate more money when they had to make a decision under time pressure or when they experienced

cognitive load compared to individuals who had to make the same decision, but were not experiencing time pressure and/or cognitive load. To explore hypotheses 1 and 2, we conducted an experiment with four different conditions (time pressure, cognitive load, both time pressure and cognitive load, control) and investigated the impact of these conditions on the amount of money people donated to charity. Contrary to our expectations, we found no effects at all. The participants who were under cognitive load or time pressure (or both) did not show a significantly different pattern concerning donating behavior than participants in the control group. These results are neither in line with the literature of Kahneman (2011), nor in line with the literature of Rand and colleagues (2012) on which H1 and H2 were based.

As the ideas of Kahneman (2011) and Rand and colleagues (2012) are conflicting and we did not find any result that is in line with either one of these streams of reasoning, there are a number of explanations that might explain why we found no result at all. First of all, to my knowledge, there is no experimental research that supports Kahneman (2011) in his reasoning that human beings are self-interested and only make moral decisions when they have time to overthink their decisions. Since Kahneman (2011) does not refer to any published articles in which this idea is corroborated by empirical data, it is hard to say how he came to this conclusion. Possibly he conducted an unpublished experiment in which time pressure or cognitive load was manipulated in a different way. For example, participants could have had more or less time to overthink their decision in the time pressure condition compared to the no time pressure condition. Furthermore, Kahneman (2011) talks about moral decision-making, but not particularly about donating behavior. It might be possible that the role of intuition in moral decision-making also depends on specific contexts. As Kahneman (2011) probably might have focused on different kinds of moral

behavior, this might have led to different results.

An explanation of why our findings differ from Rand and colleagues (2012) could be found in the fact that their experimental design was slightly different than ours. Participants who participated in the time pressure experiments of Rand and colleagues (2012) were told that they would receive a $0.50 show-up fee for participating and that they could earn an additional $0.40 depending on their answers during the experiment. In our experiment, participants could choose between receiving 1 credit and €1.50 or €5.00. Due to our description, participants might have seen donating the 'promised €1.50' as a loss in our experiment. On the contrary, participants might have seen the money in the experiment of Rand and colleagues (2012) as a potential gain. People are loss averse (Kahneman & Tversky, 1984). This means that people are more averse to a loss of a certain amount of money than they see a gain of the same amount as attractive. It might be possible that participants in the control condition would have donated differently compared to participants who were under cognitive load of experiencing time pressure when they would have seen the €1.50 as a potential gain.

Another difference between the design of Rand and colleagues (2012) and our design is that their experiment contained a social dilemma and our experiment was about donating to a charity. Individuals who participated in the experiment of Rand and colleagues (2012) were told that they were one of the four group members that participated in the same experiment. They were asked how much money they were willing to contribute to a public good. The amount of money every member contributed, would be summed up, doubled, and split evenly among the four group members. If they all contributed their $0.40 cent, they would receive $0.80 cent at the end of the experiment. However, if the other 3 group members would contribute their

$0.40 cent and you would keep it, you would end with $1.00 dollar. As mentioned in the introduction, Van Dijk (2015) discussed the concept ‘indirect reciprocity’, which assumes that people obtain a positive reputation when they show prosocial behavior (cooperation) and a negative reputation if they do not. Since other group members were involved in the experiment of Rand and colleagues (2012), reputation could have played a bigger role. When participants would receive less than expected, they would know that someone else in the group did not act cooperatively. When person X would keep the money to himself and the other group members contributed their money to the public good, this would mean that person X would receive most of the money in the end, but also that all the other group members would receive less than they might have expected. According to Van Dijk (2015), people are aware of the positive effects of reputation. People are more likely to donate when they feel as if other people will know their contribution afterwards. Since our experiment was anonymous and there were no other group members that participated in the same experiment, participants in our experiment might not have taken their reputation into account or at least to a lesser extent. This might have caused a smaller difference in donations in our time pressure and/or cognitive load condition.

Besides ‘indirect reciprocity’, Van Dijk (2015) wrote about ‘direct reciprocity’. This concept implies that people behave cooperatively towards non-relatives when these non-relatives behaved in a similar way towards them at an earlier moment. Based on evolutionary occurrences, reciprocity and mutual cooperation appear to be highly beneficial (Van Dijk, 2015). Rand and colleagues (2012) argue that people develop their intuitions regarding prosocial behavior through daily life experiences. Trivers (1971) explains how certain daily life experiences shape behavior. If, for example, person X finds out that person Y (involved in the same task

or situation), acts in his own advantage and thereby distorts a smaller outcome for person X, the reciprocal relationship might be cut off (Trivers, 1971). Therefore, acting egocentrically puts future acts of help at risk. However, avoiding these kind of situations is not only for the benefit of person Y, but also for person X, since cutting of future acts of aid for person Y also means cutting of future reciprocal help for person X. Since acting egocentrically (as described in the example above) is assumed to be disadvantageous (Trivers, 1971), and mutual cooperation has been proven to be beneficial based on evolutionary insights (Van Dijk, 2015), people might have developed a natural tendency to act pro-socially. However, the context might play a role in prosocial decision-making as well. For instance, I can imagine that people have a stronger (natural) tendency to cooperate when there is a chance of meeting the other people who are involved in the same task. Since participants in the experiment of Rand and colleagues (2012) were told that they were one of the four group members who participated in the same experiment, this might have had an impact on how these participants made their decision. When other group members are involved, people might have a stronger (natural) tendency to act cooperatively, because acting cooperatively creates the chance that the other people involved will act prosocial towards them in the future as well (direct reciprocity). In our experiment we examined if and how much people were willing to donate to a charity. Direct reciprocity cannot have played a role in our experiment, since there were no other group members involved and because charities do not directly return a favor (Van Dijk, 2015). Furthermore, in the experiment of Rand and colleagues (2012), participants could receive a higher return, because the total amount of contributed money would have been doubled and equally shared among the group members. Since our participants donated to a charity and there was no possibility of getting any

money back, this might have resulted in different choices.

Van Dijk (2015) describes that the emergence of cooperation has been demonstrated by use of the repeated prisoner's dilemma game. In such repeated games it is beneficial for both players to reciprocate each other's cooperation. In the prisoner's dilemma, a participant has to choose whether to cooperate or to defend. The outcome of his choice depends on the choice of the other person involved. By choosing to defect, the participant maximizes his own outcome. By choosing to cooperate, the collective outcome is maximized. In repeated settings, the highest outcome will be reached when both players reciprocate each other's cooperation (Van Dijk, 2015). In one-shot games, on the contrary, it would be economically logical when people would act self-centered, since there is no possibility for the other player to strike back. When person X chooses to cooperate, person Y will earn the highest outcome by choosing to defend and when person X chooses to defend, person Y should also choose to defend, because choosing to cooperate in this situation would lead to the lowest possible outcome. In fact, it does not matter what person X chooses, because person Y is always be better off by choosing to defect. However, research showed that a relatively big part of the participants cooperated in this situation (Van Dijk, 2015). Van Dijk (2015) argues that cooperation in one-shot Prisoner's Dilemma games might be due to wishful thinking and non-consequential reasoning. Since there were three other group members involved in the experiment of Rand and colleagues (2012), participants might have had the feeling that their action could influence what the other group members would contribute to the common good. Van Dijk (2015) argues that even if people do not really hold the belief that they are able to change the choice of others, they sometimes act as if they do. When people do not know what others will do, acting in a way they would like other people to act might be the best

option. Since participants in the experiment of Rand and colleagues (2012) did not know how much the other 3 group members would contribute, it might be possible that the participants tried to achieve mutual cooperation. If they act cooperatively, the other group members might act similarly. Since our design did not include other group members, such magical thinking could not have interfered the decision-making process in our design.

Furthermore, we chose Amnesty International as the charity in the main experiment, because it was scored as the most neutral charity to which participants were willing to donate. However, several individuals mentioned that they participated to earn money for themselves. Their goal of participating was gaining money. They had to pay for example for their gasoline. This might explain why more than half of the participants donated less than half of the €1.50 they received (59.4%). Because these individuals already had a really strong preference for gaining money before they even started the experiment, this might have influenced the results. In future research it might be better to inform participants differently. On the other hand, a relatively big part of the participants who donated more than half of the €1.50 donated everything (25.8% of 40.6%). This might be due to the amount of money people could donate. As the amount of money was relatively small (€1.50), people might have felt the urge to donate everything instead of for example only €0.80. Since there is no evidence available that underpins this line of thought, further research is needed.

To conclude, existing research regarding intuition and prosocial behavior is conflicting. Because it was not clear which theory was on the right track, this research tried to replicate previous research of Rand and colleagues (2012) regarding time pressure and tried to gain more insight into the process of decision-making when participants experienced cognitive load. If it would have been possible to stimulate

prosocial behavior through environmental factors (cognitive load/time pressure), this might have had a positive influence on tackling social problems, in this case donating to Amnesty International. However, none of our results were significant. Therefore, it was hard to draw a clear conclusion based on the results we found. Since existing studies contradict each other and we found no significant result, more research is needed. It is an interesting challenge to figure out when and in what way human beings make prosocial decisions and secondly, how we can influence these decisions. For future researchers, it will be important to take a closer look at the limitations mentioned above. People might show more or less prosocial behavior when their reputation is at stake compared to when nobody is watching. This might also be the case when people are struggling financially compared to when people have more than enough money to spend or when the amount of money that can be donated is small compared to a large amount. These aspects need more attention in future research. To conclude, despite the fact that we did not find significant results in a specific direction, this research can be seen as a good starting point for further research.

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