Rational Behavior of Dictators - Evidence on Gender and Religiosity

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Abstract The dictator game (DG) is one of the simplest and most commonly used experimental games for examining economic and altruistic behaviors. Altruism became crucial in research on decisions in experimental and behavioral economy. This study extends existing research on the relationship between cognitive performance, measured by the Cognitive Reflection Test (CRT) and the DG, taking into account such factors as gender and declared religiosity. The research assesses whether gender and declared religiosity affect altruistic behavior measured in the DG's payoffs. 511 participants (master's students in economics) were asked to respond to six types of DGs and the CRT7 test. Correlation analysis, descriptive statistics, student t-tests, the Mann-Whitney test and Tobit regression analysis were conducted. Cognitive reflection was positively correlated with rational (selfish) behavior in the DG. Those dictators who scored high on the CRT (reflective dictators) kept more money for themselves than those who achieved lower scores on the CRT (altruistic, impulsive dictators). The results confirmed a distinct, inequity aversion attitude among altruistic, impulsive dictators and a selfish attitude among reflective dictators. The dictator's payoff was significantly related to the gender and declared religiosity of the participants. Women were more concerned about equal distribution of income than men (on average they shared 30% more than men) and religious agents shared 20%–30% more than non-believers.

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Introduction

Dual process theories assume that thought can arise as a result of two different processes. The first process (system 1) is automatic, fast and unconscious, while the second one (system 2) is relatively slow, controlled and computationally expensive (Kahneman 2011). The Cognitive Reflection Test (CRT) is designed to measure the tendency to overcome intuitive but incorrect responses arising from system 1 (impulsive players) and more thoughtful correct responses coming from system 2 (reflective players). Studies have shown that performance on the CRT is a good predictor of cognitive and rational thinking.

It is important to point out that the Dictator Game (DG) is one of the simplest and most commonly used experimental games to examine economic and altruistic behavior. In the DG, a proposer is given a sum of money to divide it between him and the responder. The responder has no option and must accept the offer (in contrast to the ultimatum game, where he or she has the option to accept or reject the allocation). The main goal of this study is to test the hypothesis that the CRT helps to predict rational (or selfish) behavior in a DG. Additionally, gender and self-declared religiosity of dictators were concentrated on. The following questions were asked: Does the altruistic behavior of dictators relate to their self-reported religiosity? Are the altruistic behaviors of dictators related to their gender?

This study aims to shed light on the relationship between rational behavior in the DG and cognitive abilities, which are measured using the CRT. Additionally, the authors investigate how gender and self-declared religiosity are related to altruism. Sharing in a DG is connected to emotional behavior. Therefore, more altruistic dictators (impulsive) should base their choices on intuitive and emotional thinking and share more willingly with other players. Reflective dictators (selfish), on the other hand, should behave more rationally and keep more money for themselves. The chief question to investigate is whether subjects characterized by different degrees of cognitive reflection (impulsive vs. reflective players) exhibit different distributional concerns, depending on the nature of the dictatorial situation.

The current article summarizes a further development of our research on dictator game and CRT (Czerwonka et al. 2018). It concentrates on gender and self-religiosity in relation to dictator game scores.

Background

It is worth mentioning that the first DG experiment in economics was introduced by Kahneman et al. (1986), who gave a choice to the subjects to evenly split a sum of USD 20 (USD 10 each) between them and another student or to

make a division (USD 18, USD 2) that favored themselves. Three-quarters of the students opted for the equal split. According to the rational framework of *homo economicus*, where agents are assumed to act in their own self-interest, proposers should maximize their profits and choose the uneven split. Studies have consistently demonstrated that most proposers share the money (although they offer less than in ultimatum games – around 15% of the stakes). The average DG allocations are above zero, typically around 20–30% of the initial gift (Engel 2011).

Moreover, thousands of participants in research labs around the world have been put in the role of dictator to explore the motives behind their unselfish behavior. A broad literature review on the DG was conducted by List (2007). The most popular theories explaining dictators' behavior are: altruism (Andreoni and Miller 2002; Bardsley 2007), model of inequity aversion (Fehr and Schmidt 1999) and the automatic negative reciprocity hypothesis (Halali et al. 2014). Clearly, the DG is the simplest game to elicit altruistic preferences. Interestingly, Andreoni and Miller (2002) conducted a series of DG experiments in which one agent could allocate tokens between him or herself and another agent for a series of different budgets. They found only a quarter of subjects were selfish money-maximizers, and the rest showed varying degrees of altruism. Andreoni and Miller (2002) stated that participants exhibited a significant degree of rationally altruistic behavior because 98% of them made choices consistent with utility maximization. They also concluded that altruism is rational, but there are many subtle influences other than the final allocation of money that are likely to affect moral behavior, such as altruism. Levitt and List (2007) described how much social, laboratory experiment revealed about a real world.

The Dictator Game and Gender

Research investigating the influence of gender suggests that women generally share more than men. In Eckel and Grossman's (1998) study, women shared more than men in an anonymity environment (USD 1.6 vs. USD 0.82 from USD 10). Bolton and Katok (1995) created a less anonymous situation. Women still shared more, but relatively less than in previous study (USD 1.23 vs. USD 1.13 from USD 10). This indicated that women are strongly influenced by information about a receiver. Furthermore, Andreoni and Vesterlund (2001) outlined that women were more egalitarian while men were more focused on their profit. Dickinson and Tiefenthaler (2002) conducted a similar experiment with a slight difference. The receiver did not belong to the dictators' group but was an anonymous third party. Again, women shared more than men.

Dufwenberg and Muren (2006) researched gender differences in decision making during DGs (originally, the version of the game was introduced by Cason and Mui in 1997). In this case, three-person male and female groups could decide how much they shared among themselves plus one person from the outside. In some cases, women split the amount equally among all four people. This never happened in male groups. On the contrary, the studies of Ben-Ner et al. (2004) indicated that there were no differences in shared portion if the gender of the receiver was unknown. However, women donated less to other women than to men in situations when the sex was revealed.

It is worth emphasizing that Chowdhury et al. (2017) showed how framing of the experiment influences the results. Framing means that the dictator decides what portion of his/her endowment is to be shared with the third party. In the taking game, the recipient owns some money and the dictator decides how much to take from him/her. The research showed that females allocated significantly more under the taking frame compared to the giving frame, whereas, males showed exactly the opposite behavior. This occurs since a taking frame makes males significantly more selfish and females significantly more egalitarian compared to a giving frame.

The Dictator Game and Self-Declared Religiosity

Results regarding the relationship between scores in DGs and self-religiosity are not transparent. Duhaime (2015) and Malhotra (2010) demonstrated that religiosity is connected with pro-social behavior and altruism (Pessi 2011; Chau et al. 1990). Paciotti et al. (2011) revealed that dictators who were involved in religious practices shared 6–10% more than those who were not involved. Everett et al. (2016) found evidence for generalized religious pro-sociality and against religious parochialism. Christian (religion) participants were more pro-social than atheists and transferred more money to both Christian and atheist recipients in DGs. Interesting results were obtained by Ben-Ner et al. (2004) when they found that the shared amount was positively correlated with self-reported religiosity, but negatively correlated with the frequency of church activities.

Cognitive Reflection Test (CRT)

The reflective and impulsive approach was also investigated by Tversky and Kahneman (1974) in the domain of behavioral economy. They revealed that due to bounded rationality, people are unable to make decisions rationally. They stated that processing of cognitive information is conducted by system 1 or system 2. System 1 operates quickly, automatically and intuitively without requiring a lot of time or effort while system 2 requires engagement in effortful, demanding and reflective mental activities. System 2 is slower, more deliberate and analytic than system 1 (Frederick 2005; Evans 2008). The CRT is designed to measure the tendency to override a predominant response alternative that is incorrect and engage in further reflection that leads to a correct response (Toplak et al. 2011). Studies have shown that the CRT predicts susceptibility to decision-making biases and heuristics (Duttie and Inukai 2015; Oechssler et al. 2009; Toplak et al. 2011, 2014) and risk-taking behavior (Frederick 2005; Czerwonka 2019). Additionally, studies have shown that it is not just a mathematical test but measures something above and beyond general skills, namely cognitive reflection (Campitelli and Gerrans 2014).

The CRT and the DGs

Some studies have explored the relationship between cognitive performance and dictator decisions. Chen et al. (2013) pointed out that subjects who perform better on

math tests are more generous in the DG, while subjects with higher grades tend to be more selfish in dictator decisions. Ben-Ner et al. (2004) found a negative relationship between being generous in a DG and performance on cognitive tests. However, Brandstätter and Güth (2002) argued that bargaining behaviors in the context of DGs or ultimatum games are less of an intellectual problem than they are a motivational and emotional problem.

To our knowledge, few studies have combined cognitive reflection with experimental games (Ponti and Rodriguez-Lara 2015; Calvillo and Burgeno 2015). Ponti and Rodriguez-Lara (2015) conducted DGs and the CRT 3 in a single research setup. The more rational players (ones who got two and three answers correct in the CRT 3) behaved less altruistically compared to intuitive, impulsive players. They found that impulsive dictators showed a marked inequity aversion attitude and gave more money to responders, compared to reflective dictators, who behaved more selfishly and kept more money for themselves. They showed that more rational players behaved less altruistically compared to intuitive, impulsive players. Calvillo and Burgeno (2015) obtained similar results but with another experimental game called the ultimatum game. They pointed out that reflective agents (ones who scored high in the CRT) behaved more rationally and were more willing to accept unfair offers in the game than intuitive agents (ones who scored low on the CRT).

Prompted by the paucity of evidence in this field, this experiment aims to explore the relationship between rational behavior in the DG and cognitive abilities using a version of the experiment extended to seven questions (CRT 7). This paper expands existing research by combining the cognitive abilities of players tested with the CRT with different types of dictators who had not yet been tested with the CRT. Six versions of the DG varied in the amount of money (EUR 2.5 vs. EUR 25), the anonymity of the receiver (anonymous vs. charity organization), and the position of the dictator (giving vs. taking). A recent study by Baron et al. (2015) showed that the expanded version of the CRT provides greater internal consistency than the original three-item version. Therefore, this study used the expanded version of the CRT (CRT 7) with the aim of creating a more reliable measure of cognitive reflection.

To achieve the goal, the design and the experimental evidence of Ponti and Rodriguez-Lara (2015) and Calvillo and Burgeno (2015) was borrowed.

Research Data and Methodology

Participants

Six different courses on undergraduate and postgraduate studies in finance at the Warsaw School of Economics (SGH) were investigated during March, April and May in the summer semester of 2016. The courses embraced finance, behavioral finance, financial analysis, banking, derivatives and corporate taxes. The composition of the panel was sufficiently diversified in terms of gender (186 dictators were women and 193 dictators were man) and reflectiveness. Having both genders studying the same major provided a proper picture of the

general behavior of genders. Comparing men and women from different majors would present an incorrect picture of reflectiveness in relation to each other. A total of 511 surveys were completed in 12 subsequent student groups. In other words, 511 students were asked to participate in six variations of DGs and take the CRT. After removing incomplete surveys, 379 surveys were analyzed. The total number of games was 2274.

Participants were given the following written instructions: This is an experimental game called the Dictator Game. You are asked to play six variations of this game: ABCDEF. They differ from each other by the amount of the endowment, role of the dictator (if he/she is giving or taking money) and if a third party is known or unknown. Your pages with answers will be coded with numbers. At the end of the experiment, two numbers will be chosen randomly. The decisions made by the first random number (player/dictator) will be executed. This means that this first random dictator will be given the indicated share of the endowment and will pass the remaining share to charity or to an anonymous third player from the next playing group. The second random number is a player who will be given the share of the endowment that was allocated by the first random dictator in the previous group (Dictators E and F).

In all statistical tests, the significance level equaled 0.05.¹ The sample consisted of 185 (49%) women and 193 (51%) men. The age of the participants ranged from 21 to 24 years old ($M = 21.74$, $SD = 2.33$).² As all of the students were Polish, there were no issues with racial/ethnic background or social class in the survey.

Materials and Procedure

In the study, participants participated in a set of DGs, completed the CRT 7 (Toplak et al. 2014), and answered three demographic questions on gender, religion, and age. Participants completed six variations of the game (A, B, C, D, E and F), which varied by the amount of money available for sharing (Table 1).

Dictators A, B, C and D remained the most basic versions of the games where players could decide how much endowment to share with a third party. Dictators A and B played with PLN 10 (approximately EUR 2.5). Dictators C and D played with PLN 100 (approximately EUR 25). The games also varied in terms of the anonymity of the receiver. Dictators A and C shared their stakes with random, anonymous players from the next student group. Dictators B and D were told that they would share the stake with a well-known Polish charity organization (Polish Humanitarian Action). Games E and F assumed the taking frame³ where the recipient owed money and the dictator decided on how much to take from him/her.

To ensure that participants took the decision seriously, they were informed that a subset of participants chosen randomly would be paid according to the

¹ All data were calculated using STATISTICA 12 software.

² Throughout the paper, n denotes the number of participants; M denotes the average; SD denotes the standard deviation, and Me denotes the median.

³ As pointed out in the background, giving frame means that dictator decides what portion of his / her endowment is shared with third party. Taking frame means that dictator decides what portion of endowment that is owned by a third party is shared with dictator.

Table 1 Types of dictators used in the study

Game	Amount [PLN]	Interaction object	Possible action
Dictator A	10	anonymous person	donate money
Dictator B	10	well-known charity organization	donate money
Dictator C	100	anonymous person	donate money
Dictator D	100	well-known charity organization	donate money
Dictator E	10	another anonymous person	request money
Dictator F	100	another anonymous person	request money

Source: own assumptions for experiment conducted on students in Warsaw School of Economics in the 2016 summer semester (379 of 511 surveys were completed and analyzed)

decisions they had made. After completing the dictator decisions, participants provided answers to the CRT 7.

According to their CRT 7 scores, the participants were categorized into reflective and impulsive dictators. Dictators were divided into two types: impulsive (ones who scored 0–3 correct CRT answers) and reflective (ones who scored 4–7 correct CRT answers). High scores on the CRT tests suggested that a responder used a more cognitive rather than intuitive method of making decisions. Using the Kahneman (2011) approach, system 1 results in a low score on the CRT while system 2 results in a more thoughtful high score on the CRT.

After completing the CRT 7, participants answered a three-item survey about their age, gender and self-declared religiosity. The approach to religion item contained 10 Likert-type scales, where 0 meant atheist and 10 meant deeply believing and regularly taking part in church practices. This item did not investigate the particular religion, only the responder's approach to his or her religion.⁴

All tasks were completed on paper. Most participants needed about 15 min to complete the study. Subsequently, answers were coded into numbers in order to carry out the selection of two random numbers. As indicated in the written instruction given to players, in each group a random selection of two players was performed. The decisions of the first random player were executed and the second random player received the share of endowment indicated by the random first player in the previous group.

Hypothesis

Altruism is connected with emotional behavior. The automatic negative reciprocity hypothesis leads to the prediction that more altruistic dictators (impulsive) base their choices on intuitive and emotional thinking and share more willingly with other players. Reflective dictators behave more rationally and keep more money for themselves. Therefore, the chief question to investigate is whether subjects characterized by different degrees of cognitive reflection (impulsive vs. reflective players) exhibit different distributional concerns, depending on the nature of the dictatorial situation. The main null hypothesis to test can be formulated as follows:

⁴ This study investigated only a self-declaration of the agents' religiosity and not their true behaviour.

H_0 : In all situations, the behavior of reflective and impulsive dictators is the same.

Apart from the main hypothesis, two additional hypotheses were formed:

H_{01} : The altruistic behavior of dictators is not related to their gender.

H_{02} : The altruistic behavior of dictators is not related to their declared religiosity.

Results

All results for this research presented in the tables are based on the author's own calculations derived from the data obtained from 379 fully completed surveys. First, data were summarized on CRT 7 performance. Table 2 reports dictators' CRT 7 scores and partitions the dataset by relying on definitions of reflective (dictator answered four and more questions correctly) and impulsive (dictator answered less than four questions correctly) dictators. 122 of 379 dictators (32.2%) were impulsive, whereas, 257 dictators (67.8%) were reflective.

The CRT and Dictators

The Mann-Whitney (MW) non-parametric test was used to test the null hypothesis that there was no difference in behavior between reflective and impulsive dictators. Again, the results in Table 3 indicates that a higher score on the CRT (reflective dictators) will result in less generous behavior in dictator situations. This, in turn, implies that reflective subjects end the game with more money than impulsive subjects in dictator situations (A: (0.80 vs. 0.69, MW-test 3.56, $p < 0.001$), C (0.87 vs. 0.79, MW-test: 3.68, $p < 0.001$), and D (0.56 vs. 0.49, MW-test: 1.95, $p = 0.05$)).

Gender of the Dictator

The present study shows that women appeared to be more generous dictators (Table 4). In every type of game, women offered more to other random players and to charity than the men did. The strongest difference was achieved in games with a known receiver, which was the charity organization (Dictator B and Dictator D). In these cases, woman donated on average over 30% more than the men did.

The results of the research are in line with the majority of the studies, which support the thesis that women are more altruistic than man, they share more with others, and they try to reduce inequalities in the distribution of income. In general, studies suggest that

Table 2 CRT 7 and dictator types

CRT 7 Responses	Score								Dictator type	
	0	1	2	3	4	5	6	7	Impulsive	Reflective
n	14	31	38	39	50	73	85	49	122	257
[%]	3.7	8.2	10.0	10.3	13.2	19.3	22.4	12.9	32.2	67.8

Source: own assumptions for experiment conducted on students in Warsaw School of Economics in the 2016 summer semester (379 of 511 surveys were completed and analyzed)

Table 3 Average results for each DG type divided by impulsive and reflective players

	Impulsive <i>n</i> = 122		Reflective <i>n</i> = 257		Mann-Whitney <i>U</i> test		
	M	SD	M	SD	Z	p value	r
Dictator A	0.69	0.33	0.80	0.28	3.56	< 0.001	0.18
Dictator B	0.39	0.35	0.41	0.39	0.31	0.758	0.02
Dictator C	0.79	0.27	0.87	0.23	3.68	< 0.001	0.19
Dictator D	0.49	0.34	0.56	0.35	1.95	0.051	0.10

Source: own assumptions for experiment conducted on students in Warsaw School of Economics in the 2016 summer semester (379 of 511 surveys were completed and analyzed)

men take a more selfish approach especially in terms of asset distribution. However, the university major of the dictator probably smoothens this effect. In business majors, all students (men and women) seem to be more profit-oriented despite their gender.

Religiosity of the Dictator

The study investigated the scores of dictators depending on their self-declared religiosity. Due to the answer format, the Kendall's tau coefficient was used to measure the correlation between the two quantities. Players could specify attitudes towards religion from 0 to 10, where 0 meant atheist and 10 meant deeply believing and regularly taking part in church practices.

As studies of Duhaime (2015) and Malhotra (2010) demonstrate, religiosity is connected with pro-social behavior. In this study, dictators who declared stronger religiosity shared more with other players and charity organizations. For Dictators A, B, C and D the Kendall's τ coefficient was negative, varying from -0.08 (Dictator C), -0.10 (Dictator A), to -0.11 (Dictator B and D). Negative results meant that self-declared strong believers completed the game with less money. In other words, dictators who declared stronger religiosity shared more with other players and charity organizations. The results were statistically significant.

Table 4 Game outcomes depending on gender

Game	Women <i>n</i> = 186		Men <i>n</i> = 193		Student t-test ^{a/}			
	M	SD	M	SD	t	df	p- value	r
Dictator A	0.75	0.30	0.78	0.31	-0.87	376.0	0.387	0.04
Dictator B	0.33	0.34	0.47	0.39	-3.83	373.1	<0.001	0.20
Dictator C	0.82	0.26	0.87	0.23	-2.08	369.1	0.038	0.11
Dictator D	0.48	0.33	0.60	0.36	-3.26	375.5	0.001	0.17

^{a/} A modified Cochran-Cox test was used for this student t-test. Source: own assumptions for experiment conducted on students in Warsaw School of Economics in the 2016 summer semester (379 of 511 surveys were completed and analyzed)

Robustness Check: Tobit Regression

Following Ponti and Rodriguez-Lara (2015), the differences in behavior in DGs between reflective and impulsive players were tested using Tobit regression. Calculations for the following model were conducted with R (version 3.4.0) and VGAM (version 1.04) statistical tools.

Table 5 reports the estimates after running a random-effect Tobin regression in each type of the game. For each game, two models were produced and presented in two columns. The first column presents outcomes for a model with one independent variable, type of dictator (impulsive or reflective). The second column model comprises two additional independent variables, the dictator's gender (a dummy variable was used for male) and the dictators' declared religiosity. The values in parentheses are the standard error for the variables. The bottom row presents p values for the Wald test used to test the null hypothesis, namely if there is no difference in behavior between reflective and impulsive dictators. Table 5 shows that in situations A and C the null hypothesis is rejected and states that the behavior of reflective and impulsive dictators differ. Reflective players keep more money than impulsive ones in A and C games.

The additional hypotheses, H_{01} and H_{02} , are also rejected. Male dictators were more selfish than female ones in situations B, C, and D. Attitude towards faith had an impact on the behavior of the dictators in situations B and D, where participants could share their money with Polish Humanitarian Action.

Discussion and Conclusions

This article contributes to the small literature that combines behavioral and experimental approaches with an analysis of altruism. The study offers detailed knowledge about how cognitive thinking, gender and religiosity influence subjects' decision-making

Table 5 Random-effect Tobit regression in game A, B, C and D

Game	Dictator A		Dictator B		Dictator C		Dictator D	
Intercept	0.791 (0.057)	0.843 (0.088)	0.257 (0.066)	0.323 (0.098)	0.867 (0.04)	0.876 (0.059)	0.461 (0.043)	0.481 (0.065)
DG type: <i>reflective</i>	0.248*** (0.068)	0.211** (0.071)	0.014 (0.08)	-0.098 (0.081)	0.157*** (0.047)	0.116* (0.047)	0.083 (0.052)	0.04 (0.053)
Gender: <i>male</i>		0.042 (0.066)		0.292*** (0.075)		0.098* (0.044)		0.154** (0.049)
Self-declared religiosity		-0.008 (0.01)		-0.024* (0.011)		-0.005 (0.006)		-0.013. (0.007)
p value (Wald test)	0.0003	0.0028	0.8566	0.2266	0.0008	0.0146	0.113	0.4489

The Wald test after each regression is used to test the behavioral hypothesis that reflective and impulsive subjects behave in the same manner. Significance level equals * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. Source: own assumptions for experiment conducted on students in Warsaw School of Economics in the 2016 summer semester (379 of 511 surveys were completed and analyzed)

processes. As Thaler (2015, p. 9) noted, we should stop assuming that abstract models of imaginary economic behaviors accurately describe real people's choices as there are many supposedly irrelevant factors that influence the decision-making process of humans.

The main finding is similar to the results reported in Calvillo and Burgeno 2015 and Ponti and Rodriguez-Lara 2015. There is no doubt that impulsive players (those who scored low on the CRT) have a proclivity towards more altruistic decisions in experimental situations, such as the DG. Reflective subjects (those who scored high on the CRT) tend to finish games with higher profits than impulsive agents. Such findings reject the hypothesis that the behavior of reflective and impulsive dictators is the same in all situations. Further analysis of gender and religiosity brought to light other factors that influence decisions. Consistent with Andreoni and Vesterlund (2001), women are more concerned about an equal distribution of income than the men are. In fact, in this study, women gave away on average 30% more of their initial stake than the men did. In addition, religiosity appeared to be related to players' altruistic behavior and decisions. Self-declared deeply religious agents shared 20%–30% more than non-believers. Overall, taking into account statistical modeling constraints, three factors influenced the behavior of dictators: cognitive reflection, gender and religiosity.

Regarding practical implications, the results indicate that behavioral factors, such as gender and religiosity, could influence the subject's decision-making process. Financial institutions as well as non-profit organizations could use this information to target a client profile and optimize their marketing strategies. The DG may be considered as research on the tendency to share assets and benefits among people. How to estimate this inclination would be useful for knowledge-based organizations. Certain character traits are required for leaders that manage social-type projects. The DG may help to identify such managers.

Financial constraints constituted the main limitation of the study. The agents were told that only a subset of participants would have an actual payoff. This means that the players might have made different decisions about sharing and taking if they had been certain about being paid. Furthermore, hypothetical choices in the laboratory environment may differ from those in real life. However, in this field of research, we are not aware of any study with an experimental game, such as the DG or ultimatum game, where participants' choices were fully paid.

Another limitation relates to the sample of participants, young students enrolled in finance courses, who might behave differently than the general population. Most literature says that economics and business students tend to behave differently than their colleagues from other disciplines. Economics students tend to behave more selfishly (Carter and Irons 1991; Gerlach 2017), lie more (López-Pérez and Spiegelman 2019) and are generally less trustworthy (Haucap and Müller 2014) than other students. Conducting the DG experiment at many universities would have an impact on generalization of the results of this study. However, the nature of experiments always narrows the population to a certain group, in this case it was the Warsaw School of Economics 2016 summer semester. A similar approach was taken by a precursor of the DG (Kahneman et al. 1986) who based his research on a homogenous group of students. Therefore, further development of the study should evolve towards a more diversified sample

consisting of students representing different majors. In parallel, it would be worth investigating how men and women change their reflectiveness and altruism depending on their social and educational background. This would require an experiment on a diversified mono-gender sample. Additionally, a more diversified sample in terms of age will reveal changes in decision-making over the players' lifetimes. In most situations, young people have low incomes and limited assets. During their lifetimes, their level of income and assets increases, which will probably result in a transformation of altruistic preferences.

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