



# Does one's cultural background relate to group identification and cooperation with strangers in social dilemmas?

Bachelor's thesis Sociology

2020-2021

## Abstract

Why individuals choose to cooperate or not in society has long been of interest to many scholars. It has been widely researched with the usage of experiments including social dilemmas. Group identification and the national culture with regards to individualism are often said to play an important role in increasing contributions by theorists and researchers, but this has been rarely tested. The goal of this research, therefore, is to answer the research question 'How does one's national culture in terms of individualism-vs-collectivism relate to feelings of group identification in social dilemmas and how does this relate to the contribution to the common good?'. To answer this question, experimental data of public good games is used including 192 participants from 44 different countries. This data has been quantitatively analyzed using various linear regression analyses. The results show that identifying more highly with the group leads to more contributions to the common good. There was, however, no relation found between the collectivism vs individualism dimension and group identification. Nevertheless, contrary to the expectations, it was found that coming from a more individualistic society leads to more contributions to the common good. The results implicate that when trying to increase contributions, one could try to increase group identification in societies.

*Key words:* Social Dilemma, Individualism, Collectivism, Group identification, Contribution.

J.L. Koutstaal (6439012)

Bachelor Sociology, Utrecht University

Supervisor: K. Otten

Date of Submission: 12<sup>th</sup> of June 2021

## Introduction

The sea levels are rising, the glaciers are melting and seas are getting stormier (Philippart et al., 2011). Furthermore, thousands of species are threatened to become extinct in the next hundred years (Cahill et al., 2013). All of these are said to be the effects of climate change. In most countries in the world, the consensus that climate change is real and can have devastating consequences is growing significantly (Capstick, 2013). In the Netherlands, 72 percent of the population recognizes climate change as a problem, and 60 percent of the population are worried about the consequences of climate change (Van der Grient et al., 2019). However, a much smaller percentage of the Netherlands is actually changing their behavior, even though 60 percent feel like they could make a change. Why are many people still choosing not to contribute to solving the race against climate change when they do believe it is a problem which they can help solve? Why people choose to contribute to solving societal issues or not has long been of interest to many scholars. In various cases, this has been tried to explain through the concept of social dilemmas.

Social dilemmas are situations in which one's personal interests are in conflict with the collective interest. This means that the approach that would maximize individual outcomes is not the same approach that would lead to the maximum collective outcomes (Parks & Vu, 1994). This leaves individuals in a dilemma, they have to choose between personal gain and sacrificing for the greater good. If all group members choose for their self-interest, which is considered the most tempting option, each person is worse off than when everyone would have cooperated. An example of such a situation is the earlier mentioned phenomenon of climate change, as it suits the criteria for being a public good. Everyone benefits from having a clean environment, whether they contributed to it or not (Irwin & Berigan, 2013). However, if no one contributes to maintaining a clean environment, everyone will suffer the consequences of climate change.

But why does a person choose to cooperate or not? Or what can society do to get as many people to cooperate as possible? A factor that is often mentioned in this regard is group identification (e.g. De Cremer & Van Vugt, 1999; Klandermans, 2002; Kramer et al., 2001). The idea behind this is that when people identify with their group more strongly, they are more likely to invest in the common good. There are multiple explanations for why this would be the case. A first possible explanation is that group identification makes the distinction between people's personal gain and the gains of the group as a whole blurry. This entails that there are no clear differences anymore between personal gain and collective gains or gains of others. The group identification is presumed to make the psychological distance between the

individual and the other members of the group smaller, which makes them perceive the others as more similar in regards to achievements and goals (De Cremer & Van Vugt, 1999).

A second explanation, provided by Kramer et al. (2001), claims that group identification is linked with social as well as psychological processes that in turn lead to an increase in people's trust in their group members. Furthermore, these processes are expected to lead to a greater chance that individuals will choose to cooperate. The behavior of an individual is largely based on beliefs on what the consequences will be when choosing for cooperation or personal gain. People typically only want to cooperate if they trust their group members to also cooperate. Group identification can influence these beliefs and thereby influence the behavior of an individual in a social dilemma situation. An important remark here is the question if this effect is still evident in anonymous situations, in which people do not have group members that they already know. This is fairly important to investigate because a lot of cooperation in daily life occurs between strangers, and not with people that you choose yourself. An example of such a situation would be what an individual decides to do with their rubbish, do they cooperate and throw it in the bin or do they choose not to cooperate and throw it on the ground? Another relevant example in the current Covid-19 pandemic is the question of whether or not individuals choose to wear their face masks in order to protect themselves and others. Due to this abundance of cooperation with strangers in everyday life, it is important to find solutions to increase group identification and thereby cooperation with strangers. Hence in this research group identification and cooperation will be investigated in an anonymous setting.

Thereafter, assuming group identification can play a substantial role in the contribution towards common goods, the question remains why some individuals have a higher degree of group identification than others. Some scholars look at the role of culture in the search for explanations (Chen et al., 1998; Jetten et al., 2002; Parks, & Vu, 1994). Considering people and their actions are embedded in the culture from which they are, it could be suspected that culture can influence the degree to which people identify with groups (Velez-Agosto et al., 2017). More specifically, Hofstede's dimension of individualism could be helpful in the research of contributions to the common good. Hofstede states that there are differences between cultures that he considers individualistic and cultures that he considers collectivistic (Hofstede, 2011). In short, in individualistic cultures, people tend to prioritize personal goals, while in collectivistic cultures collective goals are seen as more important (Jetten et al., 2002). Furthermore, in individualistic societies ties between individuals are loose, which means that the expectation in society is that everyone looks after her/himself,

and perhaps looks after the immediate family. For collectivistic cultures, however, Hofstede (2011) argues that people are integrated into strong ingroups which also often include extended family members. Where in individualistic cultures it is important to be able to speak your mind, in collectivistic cultures the emphasis lies more on the maintenance of harmony in the group.

Considering these differences, it is quite clear that being part of a collectivistic or an individualistic culture could play a role in people's tendencies regarding group identification. However, this raises the question if people from collectivistic cultures and their tendencies to have a higher group identification also apply in an anonymous setting of an experiment, which will be tested in the current research. Furthermore, it could also be that coming from a collectivistic or individualistic culture has a direct effect on the contribution to the common good because collectivistic cultures do not focus as much on the individual but on the collective. This suggests that they could be less focused on personal gain in social dilemmas and more concerned with what would benefit their group.

This leads to the following research question: 'How does one's national culture in terms of individualism-vs-collectivism relate to feelings of group identification in social dilemmas and how does this relate to the contribution to the common good?'. It is scientifically relevant to research this because next to providing additional knowledge about these topics, it offers a quite new perspective. Most current research either includes group identification and ignores culture, focuses on culture but leaves out group identification, or is quite outdated (e.g. Chen et al., 1998; De Cremer & Van Vugt, 1999; Jetten et al., 2002; Parks & Vu, 1994). This while both of these concepts are said to be playing a big role in the contribution to the common good (e.g. De Cremer & Van Vugt, 1999; Parks & Vu, 1994). Furthermore, most research regarding social dilemmas does not include group identification, let alone the underlying causes of group identification, which makes this research stand out (e.g. Batson et al., 1995; Titlestad et al., 2019). The combination of researching culture as well as group identification in a social dilemma situation with experimental data, and the association with cooperation in social dilemmas is what makes this research of even more value.

Furthermore, this research could have implications for society because it could give insights into why individuals act a certain way in their community. If culture or/and group identification turn out to increase people's contribution to society, then governments might want to try to increase the group identification in their areas through certain policies in the hope to increase the contributions. Additionally, if more people contribute to the common

good, as explained in the social dilemma, then society as a whole is better off. Hence everyone profits from higher contributions to the common good.

This research question will be investigated using experimental data about public good games (Tan, 2008) in which the cooperation behavior of participants coming from individualistic and collectivistic cultures and the amount that they identify with their assigned group is investigated. This way it can be tested if people from different cultural backgrounds also differ in their contribution to the common good and if group identification plays a role in this process. By investigating social dilemmas in such an experimental setting, it can be realistically replicated how a person would act in such a situation. This can have implications for the real world because research shows that behavior in experimental settings can predict behavior in real-life settings (Rustagi et al., 2010). Social dilemmas in turn can be applied to a lot of situations in everyday society such as the earlier mentioned problem of climate change. These experiments can thus tell a lot about how and why people do or do not cooperate, which can aid the understanding of human behavior.

## **Theoretical framework**

### **Individualism vs collectivism and group identification**

We start with outlining the main ideas about individualism vs collectivism and group identification. The individualism vs collectivism perspective itself argues that in individualistic societies a person is seen as its own separate entity, where in collectivistic societies the identity of a person is seen as part of a larger crowd or collective (Jetten et al., 2002). In fact, Hofstede & McCrea (2004) even argue that being from an individualistic or collectivistic culture refers to the extent to which people are integrated into groups or not, in which collectivistic cultures entail strong and cohesive groups whereas in individualistic cultures ties between individuals are loose. These characteristics alone point at a bigger group identification for people from collectivistic cultures.

While Hofstede's perspective does state that people from collectivistic cultures do have a stronger identification with their own group, it remains the question whether people from collectivistic cultures also identify strongly when they have to cooperate in new groups with members that they do not know yet. In other words, will their identification tendencies in the context of their own group have spillover effects in other, more anonymous contexts? Spillover effects occur when institutions influence the behavior and state of individuals beyond the scope of the institution, meaning the norms of those institutions also persist in

other domains of life with different structures (Engl et al., 2018; Peysakhovich & Rand, 2016).

The research of Peysakhovich & Rand (2016) suggests that this might be the case for people from collectivistic cultures in their group identification, as the researchers found evidence for spillover effects of norms. The research of Engl et al. (2018) also found clear proof for spillover effects. They did, however, argue that the influence of an institution is stronger in the context of the institution itself, and less strong outside of the institution. These results suggest that the collectivistic norms and the corresponding feelings of group members, namely the tendency to identify with groups, is likely to persist in anonymous settings, at least to some extent.

There is also research available on group identification for these different cultural groups. For example, the research of Jetten et al. (2002) showed that participants that considered themselves more collectivistic also identified with the group more highly in comparison to people who considered themselves more individualistic. The last research that will be discussed regarding this topic, namely the research of Kelly (1993), is in correspondence with this result. Their research also showed that collectivistic groups are more strongly associated with higher degrees of group identification than individualistic groups.

Hofstede's perspective on the relationship between individualism-collectivism and group identification combined with the spillover effect and the discussed literature leads to the following hypothesis:

*H*<sub>1</sub>. Being from a country that has a more collectivistic culture is associated with a stronger tendency to identify with new groups of strangers.

### **Group identification and cooperation**

There are also a few theories and perspectives regarding the consequences of group identification. One of these is *social identity theory*, which states that when people themselves identify with a group this has the effect that in multiple social situations they perceive themselves and others as members of that specific group rather than that they see themselves as unique individuals. Accordingly, the norms and values that are considered important for the group members are the ones that their group considers important. Members act in a way that benefits the group, therefore it is not the personal gain but the collective gain that is considered important (Jetten et al., 2002). Thus the identification leads to cooperation and therefore more contribution to common good.

Another theory, namely *self-categorization theory* is quite similar to *social identity theory*, as it theorizes on how categorization occurs, which has consequences that are of interest for this study. It namely argues that the more a person is being depersonalized, and thereby increasingly seen as part of the group instead of as an individual, the more she or he starts to lose self-interest. Thus seeing oneself more as part of the group leads to more concerns about the interests of the group. This can be expected to be associated positively with cooperation because that will lead to more contributions to the common good which is in the interest of the group (Batson et al., 1995). Together these two theories form the social identity perspective which hereby argues that group identification leads to more cooperation in terms of contributions to the common good.

Multiple researchers have investigated how group identification establishes. Furthermore, the connection between group identification and the contribution to the common good has also been explored. First of all, De Cremer & Van Vugt (1999) argued that individuals who identify strongly with their group contribute more to the common good in public good dilemmas, in field dilemmas as well as in laboratory settings. They further suggested that it is possible to motivate 'selfish' individuals to cooperate through increasing the quality of the group membership. Multiple other researches have also shown that group identification can lead to more contributions to the common good (e.g. Fisher & Wakefield, 1998; Kerr & Kaufman-Gilliland, 1994; La Barbera & Ferrara, 2012).

Brewer & Kramer (1986) also showed a positive effect of group identification on the contribution to the common good. However, they stated that the group-size is relevant in this regard. In small groups the feeling that one's own contribution would make a difference is substantial, which increases the tendency to sacrifice personal gain, while in large groups this feeling is less present. This is relevant because, as will be explained later, the experiments of the current research only consists of small groups of three persons, which increases the chance of finding a positive effect of group identification on cooperation. Another similar finding, of Kramer et al. (2001), showed that social categorization leads to more cooperation. They found this occurred because social categorization positively affects trust. People perceive their group members as more positive, more cooperative and also more trustworthy.

Altogether, the discussed literature and theories, while they sometimes slightly differ in their views and reasonings, clearly point to a positive relation between group identification and contributions to the common good. This leads to the second hypothesis:

*H*<sub>2</sub>. Having stronger feelings of group identification is associated with larger contributions to the common good.

### **Individualism vs collectivism and cooperation**

When looking at the link between culture and cooperation, Hofstede's dimension of collectivism vs individualism states that collectivism entails that group members are working together to achieve collective goals. In contrast, in individualistic cultures the emphasis is more on personal goals. Additionally, when the personal goal is in conflict with the collective goals, people from individualistic cultures feel it is allowed to choose the personal goal. In collectivistic cultures however, individuals feel obliged to prioritize the collective goals. Therefore it could be expected that there could be more cooperation found among people from collectivistic societies than in individualistic societies (Chen et al., 1998).

This again raises the question of whether such effects also persist and thus spill over to other, more anonymous contexts. The research of Peysakhovich & Rand (2016) suggests that this might be the case. They argue that individuals from environments where cooperation is the norm, are also more cooperative in other situations, such as more anonymous settings. Furthermore, the research of Engl et al. (2018) also found in their research that spillover effects of cooperative behaviors do exist. Because people from collectivistic cultures do have environments in which cooperation is the norm, these results thus suggest that they will also be more cooperative in other situations, for example the current context of the public good game.

Another phenomenon that is in line with this spillover effect is the minimal group paradigm. This paradigm, that is validated by multiple researchers, argues that the categorization of people into groups even when it is based on random criteria can lead to more contributions to the common good (Hertel & Kerr, 2001). Therefore this suggests that group identification and thereby contributions are not bound to the individuals' cultural group which usually is the context in which these concepts are measured, but that it can also be extended to new, minimal groups.

There are also researchers that have focused on the direct association between culture and cooperative behavior. One of which is the research of Parks & Vu (1994), where a comparison between an individualistic and a collectivistic culture, namely Vietnam and the United States, was made in order to research their cooperative behavior in an experimental setting. As the result of several public good games that were played, it was found that the subjects from the collectivistic culture were much more cooperative. Vietnamese participants cooperated in high rates, even when their partner applied an strategy of always defecting. The results from the research of Chatman & Barsade (1995) are in correspondence with this finding. They found in their research that the collectivistic subjects were regarded as much



more cooperative in comparison to the more individualistic subjects in the randomized experimental setting of the research.

Lastly, the research of Chen et al. (1998) also included cooperation in individualistic and collectivistic cultures. They firstly showed that people in collectivistic cultures have stronger group boundaries which implies that collectivistic groups would therefore show a greater interest in participating in collective action (Hofstede, 2011). This is in correspondence with other results of this study that showed that people from collectivistic cultures are indeed more cooperative, whereas people from individualistic cultures tend to be more competitive.

The further elaboration of Hofstede's dimension of individualism vs collectivism points in the direction of collectivism being associated with more contributions to the common good. This is confirmed by the results of the discussed literature and also again by the findings on the spillover effect and the minimal group paradigm, therefore it leads to a third hypothesis:

*H<sub>3</sub>*. One's national culture in terms of being more collectivistic it associated with a greater contribution to the common good.

Finally, it remains the question if people from a collectivistic culture have bigger contributions to the common good due to their group identification or that these are two separate processes. Because the existing research and also the perspective of Hofstede seem to at least partially point to the former, this leads to a fourth and last hypothesis:

*H<sub>4</sub>*. The relationship between one's national culture in terms of individualism-vs-collectivism and contributions to the common good is mediated by one's feelings of group identification.

## **Data & Methods**

### **Dataset**

In this research, existing experimental data conducted at Utrecht University in the Experimental Laboratory for Sociology and Economics (ELSE) will be used (Otten, 2020). This experiment was conducted during October and November 2019 and provides data consisting of a sample of 192 participants. The average age is 24 years, with 95.8 percent of participants being between 18 and 33. Furthermore, 66.1 percent of participants are female, 32.3 percent male and 1.6 percent consider themselves neither. The participants come from 44

different countries, but Dutch people are overrepresented with 87 Dutch participants and 105 participants from other countries. The sample consists of mostly students, namely 84.4 percent. The participants were on average paid 15 euros, with a minimum of 5 and a maximum of 22 euros, depending on their behavior in the game. The participants were recruited at Utrecht University, with the use of the internet recruitment system ORSEE, which in multiple ways lowered the chance of selection biases occurring, among other things through the use of impersonal software for the recruitment (Greiner, 2015). This sample is favorable for the current research because participants come from very differing countries in terms of collectivism versus individualism, in addition to it being a reasonably large sample for such an experimental design.

## Experiment

In the experiment, the participants played a total of 20 rounds of public good games with peer punishment. There were two conditions in the experiment, in the first condition participants were sorted into groups consisting of three members with similar normative views while in the other condition three participants with different normative views were put together. However, these conditions are not of interest for the current study and have already been examined (Otten et al., 2020), therefore there will be no further elaboration on this. In both conditions, the participants first played 10 rounds with their assigned group. Thereafter one group member per group was exchanged with a member of another group. These new groups then played an additional set of 10 rounds.

Each round of the public good game starts with each individual, of a group consisting of  $N$  members, receiving an endowment  $E$ . With this endowment the individual needs to decide how much to keep and how much to contribute to the public good,  $c_i$ , where  $c_i \in \{0, 1, \dots, E\}$ . The public good consists of all the contributions made by the individuals. From this public good each individual gets a return per point that was contributed to the public good ( $m_i < 1$ ). All the returns taken together make up the multiplication factor of the public good  $M$ , with  $N > M > 1$ . What makes this game a social dilemma is that the individual return of a contribution is always less than 1, which makes it tempting for the individual to contribute nothing. However, the multiplication factor is always bigger than 1, which makes it most profitable for the group when all the individuals contribute fully, meaning that they contribute their full endowment. After all the players decided how much they want to contribute, each player's payoffs and contributions are communicated to the rest of the group which thereby ends the first stage. In the second stage the participants get the opportunity to assign the other

group members with punishment points. Because this is not relevant for the current study there will be no further elaboration on this, but see Otten et al. (2020) for more details.

Besides playing the public good games, the participants' viewpoint about differing topics such as group identification and normative views were recruited through questions and statements. The concepts were measured at various timepoints. The statements regarding group identification, which are of importance for the current study, were asked after the first and after the second set of 10 rounds, to see whether or not these attitudes changed during the procedure. Finally, the participants were also asked some questions regarding background information such as gender and nationality after the experiment (Otten, 2020).

## **Measures**

### *Individualism vs collectivism*

In order to answer the research question, several key concepts need to be operationalized using the aforementioned dataset. Firstly, coming from a more collectivistic or a more individualistic culture will be measured using the variable in the dataset about the nationalities of the respondents. The different nationalities will be placed on a scale of individualism ranging from 0 – 100, 0 meaning very collectivistic and 100 meaning very individualistic, in accordance to Hofstede's research which was executed between 1967 and 1973 (Hofstede Insights, n.d.). Participants from countries that are not included in the Hofstede research will be excluded from the analysis, which entails two participants, one from Cameroon and one from the Dutch Antilles. Furthermore, while England is only included in the Hofstede's research as part of the United Kingdom, the participant from England will get the score of the United Kingdom. In the case of participants that provided two nationalities, the two scores on the scale of individualism will be averaged, unless only one of the nationalities is included in the research.

Although Hofstede's dimension of individualism is widely used and also widely accepted, some scholars advocate for a revised version due to validity issues such as a lack of face validity for some of the items and also due to a lack of internal reliability of his IND-COLL index (Minkov et al., 2017). An alternative can be found in the revision of Minkov et al. (2017) which entails an updated and more recent version of the measure, based on a large sample including over 52.000 respondents from 56 countries that is said to adequately represent the national cultures. This measure provides scores on the scale of individualism where a score of -291 means very collectivistic and a score of 182 entails a very individualistic culture. This revision will be used as a second measure for coming from a

more collectivistic or a more individualistic society. This will be operationalized in the same way as the prior scale of individualism with regards to missing values and double nationalities.

Due to the scales of the two measures of individualism being large and not intuitively scored, next to them also having differing maximum and minimum scores, it becomes difficult to interpret and compare the potential effect sizes of analyses including these variables. Therefore it is chosen to include standardized versions of these measures in the analyses instead of the unstandardized versions. The descriptive statistics of both the standardized and unstandardized versions of these two measures of individualism can be found in Table 1.

### *Group identification*

Secondly, group identification will be measured using the six statements regarding group identification included in the dataset. These statements are: 'I identify with other members of this group', 'I feel strong ties to this group', 'I am like other members of this group', 'This group is an important reflection of who I am', 'I feel proud to be a member of this group' and 'I would like to continue working with this group'. The participants were asked twice to which extent they agreed with these statements on a Likert scale of 1 (strongly disagree) to 7 (strongly agree), once after the first 10 rounds of public good games and once after the second 10 rounds. In the first set of 10 rounds, the participants were assigned to a group of strangers and in the second set of 10 rounds, one group member is exchanged for a member of another group. For the current study only the scores that were provided after the first 10 sets of public good games will be used, because the interest of this study is to see how people identify with new groups in anonymous settings which is the situation in the first set of rounds.

Furthermore, the answers that participants provided regarding these six statements will be merged into one scale ranging from 1 (low group identification) to 7 (high group identification) using the mean scores on the six different statements. None of the six items of the scale will be excluded due to the high Cronbach's Alpha of 0.93, which means that the scale has a very high internal consistency. See Appendix 1 for the table of the reliability analysis of this scale. While this scale also includes different aspects that together represent the concept of group identification this scale can be considered a valid measure for group identification in lab experiments (Leach et al., 2008).

### *Contribution to the common good*

Lastly, the contribution to the common good will be measured using a variable in the dataset regarding the participants' mean contribution to the common good, which entails the average score of the 10 rounds, ranging from a contribution of 0 (zero contribution) to 20 (highest contribution). This variable again provides two different mean scores per participant, one mean score of the contribution of the first set of rounds and one for the second set of rounds. Again only the scores of the first part of the experiment will be used for the current research because these provide insights into how group identification in anonymous settings associates with contributions to the common good.

In total, our sample for the analyses consists of 190 participants, except for the sample for the analyses concerning the revised version of individualism. Because the research behind this measure (Minkov et al., 2017) includes less countries than Hofstede's measure (Hofstede Insights, n.d.), this leads to more missing values, which leaves us with a sample of 180 participants for the analyses that include this measure. See Table 1 for the descriptive statistics of all variables included in this research.

### **Analyses**

In order to test the hypotheses and thereby answer the research question, statistical analyses will be conducted using SPSS. This will be executed with the usage of several linear regression analyses. For every analysis we will firstly present the regression coefficient as well as the significance level. Furthermore, the t-value and the degrees of freedom of every analysis will be displayed. Lastly, in the case of significant relationships, the effect size will also be discussed.

To assess the first hypothesis regarding the association between individualistic vs. collectivistic cultures and group identification a linear regression will be used including group identification as the dependent variable and individualism as the independent variable. To test the second hypothesis about group identification and contributions to the common good another linear regression will be conducted, this time including contributions as the dependent variable and group identification as the independent variable. The last simple linear regression that will be used is to assess the third hypothesis regarding the association between culture and contributions to the common good, which again includes contribution as the dependent variable with individualism as the independent variable. To test the fourth and last hypothesis regarding the association between contribution and individualism which is potentially mediated by group identification, a multiple linear regression analysis will be run including

contribution as dependent variable, individualism and group identification as independent variables. If the effect of individualism on contributions is lower in this complete model in comparison to the model of hypothesis three without group identification, there can be spoken of a mediation via group identification.

Furthermore, all discussed regression-analyses will be run without control variables as well as with the addition of age, the experimental condition, being female and being a student as control variables. The control variables age, female and student are included because they are potential confounders in the expected relationships. The experimental condition is added as control variable because it is a factor that is not included in the research and by adding it to the analysis its possible influence on the researched relationships can be ruled out.

Finally, three out of the four earlier conducted analyses, including individualism as a variable, will be run again, this time using the measure of the revised model of individualism of Minkov et al. (2017) in order to compensate for potential shortcomings of the original model of Hofstede.

**Table 1.**

*Descriptive Statistics*

	N	Minimum	Maximum	Mean	Std. Deviation
Contribution	190	2.90	20.00	13.88	4.70
Group identification	190	1.00	7.00	3.78	1.55
Individualism	190	13.00	91.00	63.01	23.94
Individualism standardized	190	-2.09	1.17	0.00	1.00
Age	190	18.00	68.00	24.07	6.48
Experimental condition	190	0.00	1.00	.50	-
Female	190	0.00	1.00	.66	-
Student	190	0.00	1.00	.85	-
Individualism revised	180	-291.00	182.00	89.11	102.05
Individualism revised standardized	180	-3.73	0.91	0.00	1.00

## Results

In order to answer the hypotheses and thereby the research question, a number of statistical analyses were conducted. To guarantee that the results were not limited to the measures used, some hypotheses were tested multiple times using two different measures for the individualism vs collectivism dimension. First of all, the aforementioned four hypotheses were tested with Hofstede's model of individualism as the measure, once without control variables and once with control variables to see if these control variables influence the possible relations between the dependent and independent variables. Secondly, the hypotheses that include the variable of individualism were tested again using a different measure of individualism, namely that of Minkov et al. (2017), due to potential limitations of Hofstede's model. The results of these different measures will also be discussed.

### **Analyses using Hofstede's model of individualism**

First of all, the analyses conducted using Hofstede's model of individualism as a measure will be discussed. Hypothesis 1, which postulates that coming from a country that has a more collectivistic culture is associated with a stronger tendency to identify with new groups of strangers, was tested using a linear regression analysis including group identification as dependent variable and individualism as independent variable. The results of this analysis can be found in Table 2. It was found, as can be seen in Model 1, that the degree of individualism has no significant relationship with group identification ( $B = 0.00$ ,  $t(189) = -.02$ ,  $p = .984$ ). With the addition of the control variables, see Model 2, there is still a lack of relation ( $B = 0.03$ ,  $t = .22(189)$ ,  $p = .826$ ). Based on this analysis, which did not show that coming from a more individualistic country relates to less group identification, the first hypothesis cannot be confirmed.

**Table 2.***Linear regression with group identification as dependent variable*

Variable	Model 1		Model 2	
	B	s.e.	B	s.e.
Individualism	0.00	.11	.03	.11
Age	-	-	.01	.02
Condition	-	-	.04	.22
Female	-	-	.06	.24
Student	-	-	-.61	.36
Constant	3.78***	.11	3.90***	.75
R <sup>2</sup>	.00		.03	
N	190		190	

\*\*\*p &lt;.001, \*\* p &lt;.01, \*p &lt;.05, two-tailed

Next, hypothesis 2, which states that having stronger feelings of group identification is associated with larger contributions to the common good, was tested using a linear regression analysis, in this case with contributions as the dependent variable and group identification as the independent variable. The results of this analysis can be found in Table 3, in the first model. As the table shows, there is a positive and largely significant relationship between group identification and the contributions to the common good ( $B = 1.15$ ,  $t(189) = 5.62$ ,  $p < .001$ ). Due to the variables being non-binary, it was chosen not to use Cohen's D for the interpretation of the effect sizes. Instead, the participants with the highest and the lowest score on the independent variable will be compared on their score on the dependent variable. Regarding the effect size of the relation between group identification and contributions, it was found that the difference between the participant with the highest score and the participant with the lowest score on group identification was almost 7 contribution points ( $((7-1) * 1.15 = 6.9)$ ). Because a difference of almost 7 out of 20 points is quite substantive, the effect size can therefore be considered as moderate or even large.

With the addition of the control variables, it was found that being female also had a significant but negative relation with contributions to the common good ( $B = -1.79$ ,  $t(189) = -2.65$ ,  $p = .009$ ). However, the addition of being a female and the other control variables did not change the main relationship of group identification, which retained its significance and size ( $B = 1.17$ ,  $t(189) = 5.71$ ,  $p < .001$ ). Because this relation implies that having a higher group identification leads to more contributions, hypothesis 2 cannot be rejected.



To answer hypothesis 3 and thereby the prediction that one's national culture in terms of being more collectivistic is associated with a greater contribution to the common good, the linear regression that was conducted included contributions as the dependent variable and individualism as the independent variable. These results can also be found in Table 3, in the second model. It was found that individualism has a non-significant relation with the contributions to the common good ( $B = 0.57$ ,  $t(189) = 1.69$ ,  $p = .093$ ). This largely remains the same when the four control variables are added to the analysis ( $B = 0.61$ ,  $t(189) = 1.60$ ,  $p = .074$ ), although the significance level is getting closer to the commonly used cut-off point of 0.05. Furthermore, again being a female has a significant and negative relationship with contributions to the common good ( $B = -1.71$ ,  $t(189) = -2.37$ ,  $p = .019$ ). Based on these results which did not show that coming from a less individualistic country relates to more contributions to the common good, hypothesis 3 cannot be confirmed.

The last of the linear regression analyses including Hofstede's dimension of individualism is a multiple regression for hypothesis 4. This hypothesis states the expectation that the relationship between one's national culture in terms of individualism-vs-collectivism and contributions to the common good is mediated by one's feelings of group identification. The analysis for this last hypothesis includes contributions as the dependent variable and individualism and group identification as the independent variables, see Model 3 of Table 3. The addition of group identification as a potential mediator between the association of individualism and contributions did not change the relation between these two, as displayed in Model 2, as it remains non-significant although it is again close to being significant according to the common standards for significance levels ( $B = 0.58$ ,  $t(189) = 1.83$ ,  $p = .069$ ).

With the addition of the control variables this association again did not change ( $B = 0.58$ ,  $t(189) = 1.85$ ,  $p = .066$ ). Furthermore the relationship of group identification with contributions, even with the control variables, appeared in the same way compared to the analysis of Model 1 in Table 3 ( $B = 1.17$ ,  $t(189) = 5.72$ ,  $p < .001$ ), with the effect size also remaining the same. Considering including group identification did not change the relationship between individualism and contributions to the common good, we conclude that group identification did not mediate this relationship, and we can therefore not confirm hypothesis 4.

**Table 3.***Linear regressions with contributions as dependent variable*

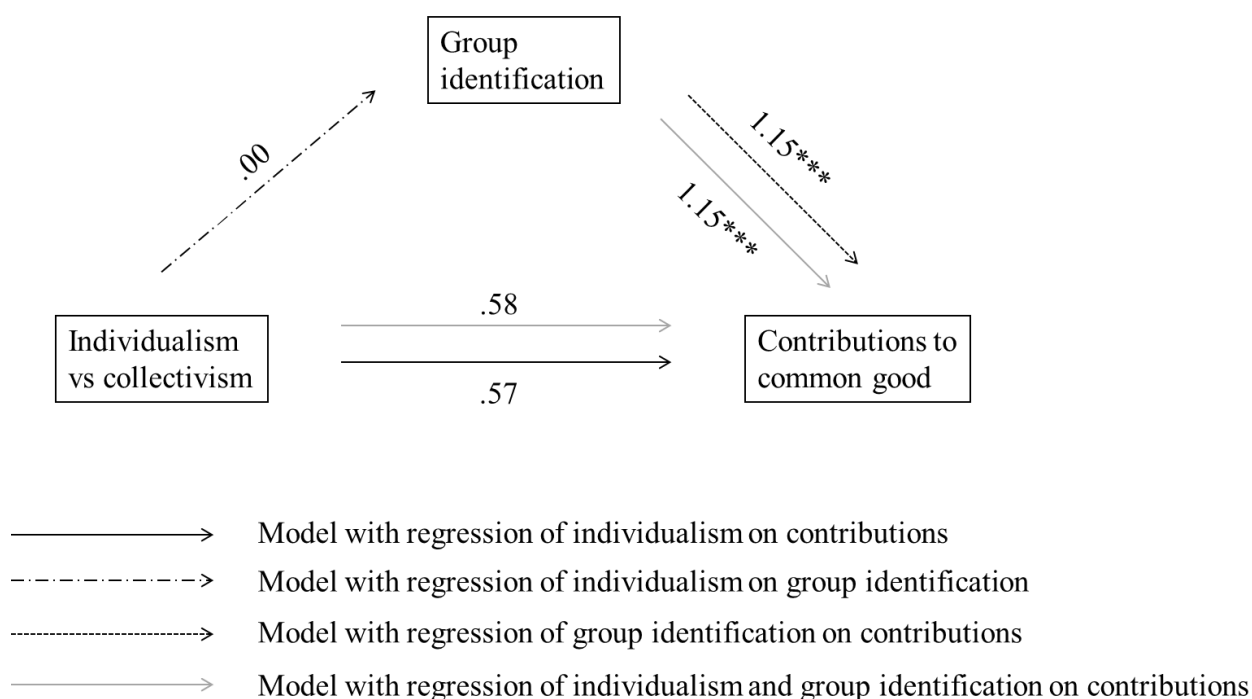
Variable	Model 1				Model 2				Model 3			
	Without controls		With controls		Without controls		With controls		Without controls		With controls	
	B	s.e.	B	s.e.	B	s.e.	B	s.e.	B	s.e.	B	s.e.
Individualism	-	-	-	-	.57	.34	.61	.34	.58	.31	.58	.31
Group identification	1.15***	.20	1.17***	.21	-	-	-	-	1.15***	.20	1.17***	.20
Age	-	-	-.03	.06	-	-	-.02	.06	-	-	-.04	.07
Condition	-	-	.62	.63	-	-	.70	.67	-	-	.66	.62
Female	-	-	-1.79**	.67	-	-	-1.71*	.73	-	-	-.79**	.67
Student	-	-	.16	1.00	-	-	-.79	1.08	-	-	-.07	1.00
Constant	9.54***	.83	7.60***	2.23	13.88***	.34	15.80***	2.25	9.54***	0.83	11.25***	2.23
R <sup>2</sup>	.14		.18		.02		.05		.16		.20	
N	190		190		190		190		190		190	

\*\*\*p &lt; .001, \*\* p &lt; .01, \*p &lt; .05, two-tailed

Based on the aforementioned analyses, only a significant relation between group identification and contributions was found which entails that only hypothesis 2 will not be rejected. The other three hypotheses cannot be confirmed based on these current analyses due to a lack of association between coming from a less individualistic culture and group identification and contributions to the common good. In Figure 1, these results are summarized in a path model.

### Figure 1.

*Path model of regression coefficients of Table 2 and Table 3 without control variables*



### Analyses using a revised version of the model of individualism

Due to the potential limitations of Hofstede's model of individualism vs collectivism, the hypotheses including this variable, which entails hypotheses 1, 3, and 4, were conducted again, this time using a revised version by Minkov et al. (2017). The analyses for these hypotheses were conducted in the same manner as previously, except for the fact that the independent variable of Hofstede's model of individualism was replaced with Minkov's model of individualism.

For hypothesis 1 this entailed a simple linear regression with group identification as the dependent variable and individualism as the independent variable. The results of this analysis can be found in Table 4, Model 1. The results show that there is no relationship

between group identification and individualism ( $B = 0.07$ ,  $t(179) = .64$ ,  $p = .523$ ), meaning that coming from a less individualistic culture did not lead to more group identification. Therefore hypothesis 1 can, again, not be confirmed by these results.

Hypothesis 3 was conducted again using linear regression with contribution as the dependent variable and this time the revised model of individualism as the independent variable. The results are displayed in Table 4, in Model 2. It was found that there is a significant and positive relation between individualism and contributions ( $B = 0.91$ ,  $t(179) = 2.61$ ,  $p = .010$ ), which implies that coming from a more individualistic culture relates to more contributions to the common good. In terms of the size of this effect, the difference between the participants with the highest and the lowest scores on the measure of individualism is a little more than 4 contribution points out of 20 ( $(0.91 \times 3.73) = 4.22$ ), which is again quite substantial. This is not in line with the hypothesis, which expected a negative association whereby coming from a less individualistic culture would relate to more contribution. Therefore, while a significant relationship is found, this hypothesis cannot be confirmed based on this analysis due to it being in the wrong direction. Interestingly, the direction of relation including Hofstede's measure of individualism was the same although the results of Hofstede's measure were not significant. In the discussion, there will be a further elaboration on this unexpected result of higher contributions by participants from more individualistic countries.

Lastly, hypothesis 4 was tested using a multiple linear regression analysis with contribution as the dependent variable and group identification and individualism as the independent variables. The addition of group identification to the analysis did not largely change the effect size or the significance level ( $B = 0.83$ ,  $t(179) = 2.55$ ,  $p = .012$ ). This analysis furthermore revealed a positive and very significant relation of group identification and contributions to the common good ( $B = 1.14$ ,  $t(179) = 5.38$ ,  $p < .001$ ), meaning that more group identification relates to more contributions to the common good. The effect size of this relation is again about 7 contribution points ( $(7-1) \times 1.14 = 6.84$ ) and thereby quite big. Because coming from a more or less individualistic culture has an association with contributions but in the wrong direction and the addition of group identification as a mediator did not change the effect size, there is no case of mediation nor a relation like expected and therefore hypothesis 4 cannot be confirmed based on these results.

**Table 4.**

*Linear regressions with revised version of Hofstede's model with group identification (Model 1) and contribution (Model 2 and 3) as dependent variables*

Variable	Model 1		Model 2		Model 3	
	group identification		contribution		contribution	
	B	s.e.	B	s.e.	B	s.e.
Group identification	-	-	-	-	1.14***	.21
Individualism	.07	.12	.91**	.35	.83*	.32
Constant	3.75***	.14	13.81***	.35	9.54***	.86
R <sup>2</sup>	.00		.04		.17	
N	180		180		180	

\*\*\*p <.001, \*\* p <.01, \*p <.05, two-tailed

In summary, the analyses with the revised version of the individualism measure showed that coming from a more individualistic country does not relate to fewer contributions to the common good, which makes that hypothesis 1 cannot be confirmed. Furthermore, the analyses showed that being part of a more individualistic culture relates to more group identification, which was not in line with the hypotheses, and therefore hypotheses 3 and 4 cannot be confirmed. The analyses, however, did show a significant relation between group identification and contributions, which is in line with hypothesis 2, which cannot be rejected based on these results.

Overall, it could be stated that although the revised version of Hofstede's model of individualism did have, with regards to significance levels, different outcomes this did not influence the results on the hypotheses as hypotheses 1, 3, and 4 still could not be confirmed. Furthermore, the findings regarding hypothesis 2 were very similar regarding significance and effect size in comparison to the results of analyses of Hofstede's measure. Concluding, in all the analyses in which the relation between group identification and contributions was researched, with control variables and with the addition of the two different measures of individualism, a very significant and positive association was found that stayed relatively stable in all situations.

## Conclusion

In this study, the following research question was investigated: ‘How does one's national culture in terms of individualism-vs-collectivism relate to feelings of group identification in social dilemmas and how does this relate to the contribution to the common good?’. In order to answer this question four hypotheses were formulated which were tested using experimental data. First of all, Hofstede's dimension of individualism vs collectivism with the addition of the spillover effect together stated that coming from a more collectivistic culture is associated with more group identification. Therefore, we expected that one's national culture in terms of being more individualistic would be positively associated with group identification (H1). However, we did not find support for this hypothesis as no relationship was found. Additionally, based on the social identity perspective which argues that a higher degree of group identification is associated with more cooperation, we expected that group identification is positively associated with contributions to the common good (H2). This hypothesis was supported by the results of this study. Furthermore, Hofstede's dimension with the addition of the minimal group paradigm as well as the spillover effect states that the more collectivistic one's national culture is, the more an individual contributes to the common good. This leads to the expectation of a negative relation between the degree of individualism in one's culture and contributions to the common good (H3). However, this hypothesis was not confirmed as the revised measure of individualism showed a positive relation, and Hofstede's measure showed no significant relationship between the two. Lastly, Hofstede's dimension seems to argue that the relation between culture in terms of individualism and contribution goes through group identification. Therefore, we expected a mediation effect of group identification on the negative relation between culture and contributions (H4). This was not in line with the results as the relation between culture and contributions, like mentioned before, was positive or non-existing and, no mediation was found.

To sum up, this research shows that, as expected, more group identification is associated with more contributions to the common good. Furthermore, it was also shown that culture in terms of individualism versus collectivism does correlate with contributions to the common good but only when using an updated version of Hofstede's model, and in an unexpected direction. Individualism versus collectivism was not related to group identification.

## Discussion

Looking back at the results of this study, only the expectation that a higher degree of group identification is positively associated with more contributions to the common good was supported. This is in line with the theoretical framework and thereby the social identity perspective that argued that group identification leads to more cooperation and thus more contributions to the common good.

It is surprising that coming from a more or less individualistic culture was not related to group identification because this was not at all expected based on Hofstede's theory on individualism vs collectivism and existing research which indicated a positive relation. In regards to an explanation for these results, it is not likely that the measure of individualism can explain the lack of effect because this hypothesis was tested using two different measures of individualism. However, a possible explanation can be found in the sample of this research because it included people with different cultural backgrounds but that are currently all living in the same country. It could be that the results would be different when people living in the country of their cultural background were used in the sample. It could also be the case that the earlier discussed spillover effect works for behavior and norms but not for feelings like group identification. This possibility will later be further elaborated on.

Another, perhaps even bigger surprise was the finding that more individualistic cultures do not negatively relate to more contributions to the common good. Namely, a significant and relatively large association was found but in the opposite direction. It turned out that coming from a more individualistic culture is associated with more contributions to the common good, especially when using the updated version of Hofstede's model. This goes against all the expectations of the theories and existing research. This is interesting because more individualistic societies are often portrayed as egocentric, which is not accurate according to these results. An explanation for these results can be found in that people from more individualistic cultures are more used to working together with people outside their families. They often work together with strangers and therefore settings like this experiment can lead to more cooperation for these individuals. People from more collectivistic cultures, however, are used to working together with their immediate family and they might be less tempted to work together in such experimental settings like the public good games. Future research could explore this potential relation. Furthermore, no mediation effect of group identification was found by both measures.

Interestingly, the results regarding hypotheses including one's national culture in terms of individualism vs collectivism are not in line with the expectations, while the results

of the hypothesis that does not include this variable are in line with the expectations. This entails that only the social identity perspective is supported through the results of this study, and thereby Hofstede's perspective, the spillover effect, and the minimal group paradigm are not. It is good to bear in mind that these results could be due to the limitations of the current study. However, if our findings are correct, it could also indicate that the idea of individualistic and collectivistic cultures, at least how Hofstede described it, might be at least partially outdated.

It is often up for discussion whether or not experiments can be useful in sociology. In this study, it is argued that using experiments can be of value for several reasons. First of all, experiments provide a situation in which one has complete control over the situation, which allows us to manipulate the exact conditions, and thereby confounding effects can be ruled out (Falk & Heckman, 2009). Furthermore, it makes it possible to directly observe behavior which is more difficult with other methods such as surveys. Therefore the internal validity of experimental research is high. However, using experiments can be at the expense of the external validity because it can be questionable how generalizable experimental results are to real-life settings of cooperation. Even though scholars such as Rustagi et al. (2010) argue in this regard that experimental settings can predict the behavior of an individual in everyday life, experimental research, like any research method still has its advantages and disadvantages. To conclude, experimental and non-experimental research in sociology are complementary and are both useful parts of the sociological approach.

### *Implications*

The current study has some important implications for society as well as scientific implications. Starting with the scientific implications, if our results hold up, this research showed that the current ideas about the individualism versus collectivism dimension, at least in regards to cooperation, may be in need of revision. Our results suggest that individualistic cultures are less egocentric than is often thought because it is shown that coming from a more individualistic culture correlates with more contributions to the common good. For researchers, this might indicate that it is good to scientifically review the concept of individualism vs collectivism to see if it is still a good fit in comparing cultures nowadays.

Another implication, for the lack of relation between group identification and culture, has to do with the spillover effect. Earlier research did find spillover effects with regards to norms and behaviors. Our research, however, did not show spillover effects of group identification. This indicates that spillover effects might be more applicable for norms and



behaviors but not so much for subjective feelings or attitudes such as group identification. This would imply that the feelings of group identification that one has with people from their own group do not spill over to other more anonymous contexts. People from more collectivistic cultures have a higher degree of group identification with their own group, but the lack of a spillover effect means that they do not have higher identification when new groups of strangers are formed. This suggests that there are limits to the reach of spillover effects.

Furthermore, this study also showed that group identification is an important factor in social dilemma situations. Considering group identification has quite a large relation with the outcome of the social dilemma in terms of contributions to the common good, this is something that can be taken away from this study and can help explain behavior in social dilemmas. This factor can thereby be interesting to include in future research.

Concerning society, the most important implication of the aforementioned findings is that when trying to get people to cooperate in social dilemma situations such as the race against climate change, it is important to look at group identification. As society as a whole is better off if more people contribute to the common good, it is crucial to understand how one can achieve this. Because this research showed that higher degrees of group identification relates to higher contributions and thereby more cooperation, it might be an idea to try to increase the group identification of people in societies by focusing efforts on increasing the quality of group memberships (De Cremer & Van Vugt, 1999). This might be a good starting point, achievable for both individuals and on a policy level.

#### *Limitations and suggestions for future research*

There are several limitations to the current study, some of them being caused by the sample that consists of participants from different cultures but that are currently living in the Netherlands. Considering they are currently not living in their own country, it is questionable if they have the same norms and values as the dominant culture in their home country or that they have already largely adapted to the norms and values in the Netherlands. In addition, it could also be the case that individuals that move to another country are a select group of people who are not representative of the country and culture as a whole. It is also a possibility that the individuals in the sample moved to the Netherlands because they already have an affinity with the Dutch culture which also makes them a less representative sample. Lastly, some countries included in the research consist of only 1 participant which is also a threat to the generalizability of the results. This all could perhaps, partially, explain the lack of effect

and unexpected relations of culture in this study. Therefore, for future research, it is recommended to research the same concepts as the current study but with the usage of a different sample, consisting of people living in their own country and thus living in their own culture. This could for example be operationalized with the usage of an online experiment which makes it possible for all participants to participate in the same experiment from their own country. This way the chances that participants have adopted another culture can be ruled out.

A second limitation of the study is the usage of the concept of individualism versus collectivism as a tool to compare cultures. As earlier mentioned, Hofstede's model of individualism has been said to have some potential limitations, but also the concept of individualism vs collectivism as a whole has been critiqued by multiple researchers with regards to among other things contradictory conceptualizations and methodological issues (Fiske, 2002; Wong et al., 2018). Furthermore, the results of this study which were not in line with the theory behind the concept of individualistic and collectivistic cultures, confirm this doubt. The usage of this concept to compare individuals from different cultures could thereby have influenced the reliability of the results of this study. Accordingly, another suggestion for future research is to investigate the concept of individualism versus collectivism as a measure of culture. This because of the discussed critique in addition to our results which, if they are correct, indicate that the concept of individualism versus collectivism and the measure that comes with it might not be useful to explain differences between cultures, at least not with regards to cooperation. To rule out that the results of this study are not due to the sample or other limitations, it is good to dedicate a study to figure out the validity and reliability of the concept of individualism versus collectivism. This way it can be figured whether this commonly used way to compare cultures still fits.

Another limitation of this study, also already briefly touched upon, is the usage of an experimental research design. Despite the advantages of this method, disadvantages regarding external validity remain. The choice made in this research to only use experimental research can thereby influence the degree of generalizability of the results. Considering this limitation, another suggestion is to conduct additional research using another, non-experimental research method such as a combination of giving out surveys and observational research. This could be executed by firstly interviewing people about their cultural background and other relevant information and furthermore, observing people in their daily life and interpreting which degrees of group identification and contribution can be linked to their behavior. The results of the individuals, from more or less individualistic cultures, can then be compared in terms of

group identification and contributions. Although it might be time-consuming, this way the potential limitations of this study regarding external validity can be solved. If such additional research is conducted, perhaps a more accurate conclusion can be drawn based on the results of both studies. Furthermore, the disadvantages of both non-experimental and experimental methods could be solved by the usage of both.

The last issue that could be considered a limitation of this study is in line with the question of generalizability and is about the usage of public good games. It can namely be questioned if the behavior in a public good game can predict behaviors in real-life situations. One could worry if in real life people might be less aware of whether situations are social dilemmas and they might also be less aware of the choices they make and what consequences they might have. Also, the experiment was conducted under students who might have been aware of such games and how they are played, which could also question the results of the experiment. Research, like that of Rustagi et al. (2010), however, showed in this regard that the behavior of an individual in a public good game can actually predict their behavior in real life, therefore the usage of public good games does not limit the results of this study.

A final recommendation for follow-up research, which is in this case not based on current limitations, would be to research which factors can increase group identification because of the finding that group identification relates to more contributions to the common good. Therefore, it is important to know how one can get individuals to identify with groups more and thereby increase contributions to the common good in society. In order to investigate this, it is recommended to conduct a large-scale quantitative and exploratory research including various variables to find out their relations with group identification.

Our limitations notwithstanding, our study suggests that group identification is related to higher contributions for the common good and that such group identification is not bounded to one specific culture. Increasing group identification may thus be a viable strategy to increase contributions regardless of underlying cultural differences.

### References

- Batson, C. D., Batson, J. G., Todd, R. M., Brummett, B. H., Shaw, L. L., & Aldeguer, C. M. (1995). Empathy and the collective good: Caring for one of the others in a social dilemma. *Journal of personality and social psychology*, 68(4), 619.  
<https://doi.org/10.1037/0022-3514.68.4.619>

- Brewer, M. B. & Kramer, R. M. (1986). Choice behavior in social dilemmas: Effects of social identity, group size and decision framing. *Journal of Personality and Social Psychology*, 50, 543-549. <https://doi.org/10.1037/0022-3514.50.3.543>
- Cahill, A. E., Aiello-Lammens, M. E., Fisher-Reid, M. C., Hua, X., Karanewsky, C. J., Yeong Ryu, H., ... & Wiens, J. J. (2013). How does climate change cause extinction?. *Proceedings of the Royal Society B: Biological Sciences*, 280, 1-9. <https://doi.org/10.1098/rspb.2012.1890>
- Capstick, S. B. (2013). Public understanding of climate change as a social dilemma. *Sustainability*, 5(8), 3484-3501. <https://doi.org/10.3390/su5083484>
- Chatman, J. A., & Barsade, S. G. (1995). Personality, organizational culture, and cooperation: Evidence from a business simulation. *Administrative science quarterly*, 40(3), 423-443.
- Chen, C. C., Chen, X. P., & Meindl, J. R. (1998). How can cooperation be fostered? The cultural effects of individualism-collectivism. *Academy of management review*, 23(2), 285-304.
- De Cremer, D., & Van Vugt, M. (1999). Social identification effects in social dilemmas: A transformation of motives. *European Journal of Social Psychology*, 29(7), 871-893.
- Engl, F., Riedl, A., & Weber, R. A. (2018). Spillover effects of institutions on cooperative behavior, preferences, and beliefs. *CESifo Working Paper*, 1-72.
- Falk, A., & Heckman, J. J. (2009). Lab experiments are a major source of knowledge in the social sciences. *Science*, 326(5952), 535-538. <https://doi.org/10.1126/science.1168244>
- Fisher, R. J., & Wakefield, K. (1998). Factors leading to group identification: A field study of winners and losers. *Psychology & Marketing*, 15(1), 23-40.
- Fiske, A. P. (2002). Using individualism and collectivism to compare cultures -A critique of the validity and measurement of the constructs: Comment on Oyserman et al. (2002). *Psychological Bulletin*, 128(1), 78-88. <https://doi.org/10.1037//0033-2909.128.1.78>
- Greiner, B. (2015). Subject pool recruitment procedures: organizing experiments with ORSEE. *Journal of the Economic Science Association*, 1(1), 114-125. <https://doi.org/10.1007/s40881-015-0004-4>
- Hertel, G., & Kerr, N. L. (2001). Priming in-group favoritism: The impact of normative scripts in the minimal group paradigm. *Journal of Experimental Social Psychology*, 37(4), 316-324. <https://doi.org/10.1006/jesp.2000.1447>
- Hofstede, G. (2011). Dimensionalizing cultures: The Hofstede model in context. *Online readings in psychology and culture*, 1-26.

- Hofstede, G., & McCrae, R. R. (2004). Personality and culture revisited: Linking traits and dimensions of culture. *Cross-cultural research*, 38(1), 52-88.  
<https://doi.org/10.1177/1069397103259443>
- Hofstede Insights. (n.d.). *Country comparison*. Hofstede Insights. <https://www.hofstede-insights.com/country-comparison/indonesia,the-netherlands/>
- Irwin, K., & Berigan, N. (2013). Trust, culture, and cooperation: A social dilemma analysis of pro-environmental behaviors. *The Sociological Quarterly*, 54(3), 424-449.
- Jetten, J., Postmes, T., & McAuliffe, B. J. (2002). 'We're all individuals': Group norms of individualism and collectivism, levels of identification and identity threat. *European Journal of Social Psychology*, 32(2), 189-207. <https://doi.org/10.1002/ejsp.65>
- Kelly, C. (1993). Group identification, intergroup perceptions and collective action. *European review of social psychology*, 4(1), 59-83. <https://doi.org/10.1080/14792779343000022>
- Kerr, N. L., & Kaufman-Gilliland, C. M. (1994). Communication, commitment, and cooperation in social dilemma. *Journal of personality and social psychology*, 66(3), 513. <https://doi.org/10.1037/0022-3514.66.3.513>
- Klandermans, B. (2002). How group identification helps to overcome the dilemma of collective action. *American Behavioral Scientist*, 45(5), 887-900.
- Kramer, R. M., Hanna, B. A., Su, S., & Wei, J. (2001). Collective identity, collective trust, and social capital: Linking group identification and group cooperation. *Groups at work: Theory and research*, 173-196.
- La Barbera, F., & Ferrara, P. C. (2012). Being European in a social dilemma: The effect of European identity on cooperation. *TPM: Testing, Psychometrics, Methodology in Applied Psychology*, 19(3), 165-175.
- Leach, C. W., van Zomeren, M., Zebel, S., Vliek, M. L. W., Pennekamp, S. F., Doosje, B., Ouwerkerk, J. W., & Spears, R. (2008). Group-Level self-definition and self-investment: A hierarchical (multicomponent) model of in-group identification. *Journal of Personality and Social Psychology*, 95(1), 144–165. <https://doi.org/10.1037/0022-3514.95.1.144>
- Minkov, M., Dutt, P., Schachner, M., Morales, O., Sanchez, C., Jandosova, J., ... & Mudd, B. (2017). A revision of Hofstede's individualism-collectivism dimension. *Cross Cultural & Strategic Management*, 24(3), 386-404. <https://doi.org/10.1108/CCSM-11-2016-0197>
- Otten, K., Buskens, V., Przepiorka, W., & Ellemers, N. (2020). Heterogeneous groups cooperate in public good problems despite normative disagreements about individual

- contribution levels. *Scientific reports*, *10*(1), 1-12. <https://doi.org/10.1038/s41598-020-73314-7>
- Otten, K. (2020, September 22). *Normative Disagreement and Public Good Provision in (Changing) Groups* [Dataset]. Retrieved from <http://public.yoda.uu.nl/lab/UU01/87KATL.html>
- Parks, C. D., & Vu, A. D. (1994). Social dilemma behavior of individuals from highly individualist and collectivist cultures. *Journal of Conflict Resolution*, *38*(4), 708-718.
- Peysakhovich, A., & Rand, D. G. (2016). Habits of virtue: Creating norms of cooperation and defection in the laboratory. *Management Science*, *62*(3), 631-647. <https://doi.org/10.1287/mnsc.2015.2168>
- Philippart, C. J., Anadón, R., Danovaro, R., Dippner, J. W., Drinkwater, K. F., Hawkins, S. J., ... & Reid, P. C. (2011). Impacts of climate change on European marine ecosystems: observations, expectations and indicators. *Journal of experimental marine biology and ecology*, *400*(1-2), 52-69. <https://doi.org/10.1016/j.jembe.2011.02.023>
- Rustagi, D., Engel, S., & Kosfeld, M. (2010). Conditional cooperation and costly monitoring explain success in forest commons management. *science*, *330*, 961-965. <https://doi.org/10.1126/science.1193649>
- Tan, F. (2008). Punishment in a linear public good game with productivity heterogeneity. *De Economist*, *156*(3), 269-293. <https://doi.10.1007/s10645-008-9094-1>
- Titlestad, K., Snijders, T. A. B., Durrheim, K., Quayle, M., & Postmes, T. (2019). The dynamic emergence of cooperative norms in a social dilemma. *Journal of Experimental Social Psychology*, *84*, 1-14. <https://doi.org/10.1016/j.jesp.2019.03.010>
- Van der Grient, R., Kamphuis, A., & de Vos, M. (2019). Publieksmonitor Klimaat en Energie 2019. Retrieved from <file:///C:/Users/jasmi/Downloads/Publieksmonitor+Klimaat+en+Energie+2019.pdf>
- Velez-Agosto, N. M., Soto-Crespo, J. G., Vizcarrondo-Oppenheimer, M., Vega-Molina, S., & Coll, C. G. (2017). Bronfenbrenner's bioecological theory revision: Moving culture from the macro into the micro. *Perspectives on Psychological Science*, *12*(5), 900-910. <https://doi.org/10.1177/1745691617704397>
- Wong, Y. J., Wang, S. Y., & Klann, E. M. (2018). The emperor with no clothes: A critique of collectivism and individualism. *Archives of Scientific Psychology*, *6*(1), 251-260. <https://doi.org/10.1037/arc0000059>

**Appendix 1.***Reliability analysis of scale*

<b>Construct</b>	<b>Total items</b>	<b>Cronbach Alpha</b>	<b>Mean inter-item correlation</b>
Group identification	6	.93	.68