

# Group Identity Project: Pre-Analysis Plan \*

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## Abstract

While previous research in experimental economics has established that individuals react to changes in the applicable social norms, the question to when individuals comply with social norms has been neglected. In this study, we examine how group identification affects compliance with identity-dependent social norms. In our online experiments, we manipulate group identification by varying the moral similarity between the subjects and an artificial social group, while keeping all other factors including the identity-dependent social norms fixed. Our experimental design allows us to test how moral similarity affects group identification and how group identification affects norm compliance in a decontextualized setting.

**Keywords:** Moral Similarity, Group Identity, Social Norms

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# 1 Introduction

*”... because identity is fundamental to behavior, choice of identity may be the most important “economic” decision people make.”*

(Akerlof & Kranton, 2000, p.717)

In recent times, Social Identity Theory (Tajfel, Turner, Austin, & Worchel, 1979) has received significant attention in economics. The reason for this newfound interest in Social Identity Theory is that it helps us understand behaviors that cannot be fully explained by standard economic theories (Akerlof & Kranton, 2000). The idea that individuals are members of specific social groups and gain utility from complying, or disutility from violating, the associated social norms (Chang, Chen, & Krupka, 2019) provides a parsimonious explanation for many seemingly anomalous phenomena. Experimental evidence suggests that such a model might provide the micro-foundations for social preferences (Kimbrough & Vostroknutov, 2016; Krupka & Weber, 2013), peer effects (Gächter, Gerhards, & Nosenzo, 2017), framing (Chang et al., 2019), and promise-keeping (Krupka, Leider, & Jiang, 2016). In each of those studies, the researchers showed that the behavior was consistent with the social norms of the salient social identity and that the treatment variations influenced behavior by changing the applicable social norms. While it became clear that people, on average, respond to changes in the applicable social norms, it is less clear which subset of individuals responds to such changes. For this reason, Kimbrough and Vostroknutov (2016) introduced an experimental task that allows researchers to approximate a general preference for norm compliance, which they labeled norm sensitivity. We extend their research by examining how group identification affects the norm sensitivity towards social norms of the same group. This is an important research question since it sheds light on when social identities are likely to impact behavior and how we acquire social identities in the first place.

According to Tajfel et al. (1979), *“... the essential criteria for group membership, as they apply to large-scale social categories, are that the individuals concerned defined themselves and are defined by others as members of the group.”*. Accordingly, Tropp and Wright (2001) define in-group identification as *“the degree to which the ingroup is included in the self”*. Past research linked high levels of group identification to increased levels of social preferences (Y. Chen & Li, 2009) and coordination (R. Chen & Chen, 2011). Furthermore, group identification is one of the key variables in conceptualizations of Social Identity Theory and Self-Categorization Theory (Akerlof & Kranton, 2000; Schubert & Otten, 2002). In line with this research, we predict that high levels of group identification lead to high levels of compliance with group norms.

In our study, we manipulate group identification by either highlighting the similarity or dissimilarity between the preferences of an individual and a social group. Hereby, we use preferences that we believe are particu-

larly relevant to the formation of new social groups: Moral preferences.<sup>1</sup> According to Haidt (2012) “*Moral systems are [...] interlocking sets of values, virtues, norms, practices, identities, institutions, technologies, and evolved psychological mechanisms that work together to suppress or regulate self-interest and make cooperative societies possible*”. Due to the connection between morality and social norms, we presume that moral similarity is an essential factor in the selection of social identities. In particular, we predict that high moral similarity between an individual and a social group leads to high group identification.

We use Moral Foundations Theory (Graham et al., 2011) to conceptualize morality. In particular, we focus on the aggregated measure Progressivism. The main advantage of Moral Foundations Theory over other conceptualizations of morality is that it has a broader scope. It not only takes into account harm and fairness considerations but also aspects related to authority, in-group, and purity. Prior work in economics has already used Progressivism or closely related indices. For example, Clark et al. (2017) discovered that Progressivism influences behavior in Prisoners Dilemma and Trust Games, while Enke (2018) showed that Progressivism is relevant in voting decisions. In psychology, Dehghani et al. (2016) showed that higher moral similarity, based on Moral Foundations Theory and in particular in the domains of purity, leads to less social distancing in social networks and laboratory experiments.

In this study, we experimentally test our two main predictions: Higher moral similarity between an individual and a social group increases group identification, and higher group identification increases the compliance with the group norms of the considered social group. To answer those research questions, we conduct one online survey and two online experiments: The Rule Elicitation Survey, the Behavioral Experiment, and the Norm Elicitation Experiment. We use the data we obtain from the Rule Elicitation Survey to define two social groups with distinct moral positions but identical normative prescriptions. Subsequently, we use these social groups as our main treatment manipulation in the two experiments. In the Behavioral Experiment, we measure how our treatment manipulation influences group identification and compliance with group norms. In contrast, in the Norm Elicitation Experiment, we measure how our treatment manipulation affects the associated group norms. It should be noted that we speculate that any change in behavior can not be explained by changes in the group norms, but instead by changes in the desire to comply with them.

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<sup>1</sup>In contrast, prior research mostly focused on preferences that are uncorrelated with the choice at hand (Y. Chen & Li, 2009).

## 2 Experimental Design

### 2.1 Prescreening

We first identify the moral type of potential participants by prescreening them. In particular, we are interested in the progressivism index of each participant. This index describes the degree to which a subject has a stronger inclination towards the individualizing moral foundations (Harm/Care, and Fairness/Reciprocity) compared to the communal moral foundations (Ingroup/Loyalty, Authority/Respect, and Purity/Sanctity). Hereby, the index can either be positive or negative. In the following, we will call individuals with a positive progressivism index individualizing subjects and individuals with a negative progressivism index communal subjects. To prescreen the participant, we pay participants £1.20 to complete a survey that only contains the Moral Foundations Questionnaire (see Appendix A.1), a questionnaire about the participant’s socio-demographic characteristics (see Appendix A.2), and a questionnaire about the participants user experience during the experiment (see Appendix A.3).

### 2.2 Creation of the Social Groups

Before we can run the Behavioral Experiment and the Norm Elicitation Experiment, we need to define two real social groups that have distinct moral positions but prescribe the same behavior in an experimental task. For this reason, we conducted the Rule Elicitation Survey before the registration of this Pre-Analysis Plan.

In the Rule Elicitation Survey, we re-invited prescreened individuals to participate in another survey. We continued until we obtained ten answers of individualizing subjects and ten answers of communal subjects. In the study, we asked the participants for a description of the rule from the ball sorting - rule following task (Kimbrough & Vostroknutov, 2018). Participants first read about the rule following task. In this task, the subjects are asked to allocate 20 balls into either of two buckets: the yellow bucket or the blue bucket. At the end of the task, the subjects earn £0.05 for each ball that they placed into the blue bucket and £0.10 for each ball that they placed into the yellow bucket. While allocating balls into the yellow bucket is payoff dominant, subjects may refrain from doing so since the instructions state: *“The rule is to put the balls in the blue bucket”*. In our survey, the participants did not play this game. Instead, we asked them: *“If you had to describe the rule to other study participants, how would you describe it?”*. They could choose between the following two options: *“The rule is to put the balls in the blue bucket”* and *“The rule is to put the balls in the yellow bucket”*. The study finished with questions about the participants’ user experience during the survey (see Appendix A.3).

After the participants finished the survey, we sorted them into either the individualizing group, which only includes individuals with a positive progressivism index, or the communal group, which only contains individuals with a negative progressivism index. Subsequently, we compared the description of the rule of the rule following task between the individualizing group and the communal group. As anticipated, we discovered no difference in what participants told us is the rule. In both cases, the mode rule is “*The rule is to put the balls in the blue bucket*”. However, due to this survey, we now have a statement about the rule that we can communicate to other subjects. Furthermore, we can describe that statement as coming from different subjects who are from a specific social group with a distinct moral position without deception.

### 2.3 The Behavioral Experiment

The Behavioral Experiment consists of three parts and a concluding questionnaire. We introduce our participants to the moral positions of a social group, measure their group identification, and examine how far they comply with rules associated with the social group. Hereby, it should be noted that we only re-invite prescreened individuals with a positive progressivism index. We exogenously vary the moral similarity between our subjects and the social group, by assigning them to one of two between subject-treatments: The individualizing or the communal treatment. The only difference between those two treatments is that we introduce our participants to the individualizing group in the individualizing treatment and the communal group in communal treatment.

In the first part, we introduce our participants to one of the two social groups: Either to the individualizing group or the communal group. Each participant is randomly assigned to one of the two social groups with equal likelihood. We introduce the selected social group to the participants of the Behavioral Experiment by communicating the moral position of its members. While the moral position might change depending on which social group is selected, everything else remains the same. This includes the name of the social group, which independent of treatment will always be called “*Group A*”. To communicate the moral position of Group A, we inform the subjects about the rounded average answer that the members of the group gave us to five questions of the Moral Foundations Questionnaire.<sup>2</sup> To ensure that the participants familiarize

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<sup>2</sup>The five questions were selected in the following way: For each of the five moral foundations, we chose one item out of the Relevance Section of the questionnaire. We always chose the item that had the highest factor loading on the particular moral foundation according to the confirmatory factor analysis of Graham et al. (2011). This selection procedure resulted in the following five questions (we display the moral foundation responsible for the inclusion in square brackets): 1. Whether or not someone cared for someone weak or vulnerable [Harm/Care] 2. Whether or not some people were treated differently from others [Fairness/Reciprocity] 3. Whether or not someone’s action showed love for his or her country [Ingroup/Loyalty] 4. Whether

themselves with the moral position of Group A, we instruct them to memorize the five questions and the answers of Group A. On the next page, we ask them to state the rating of one randomly selected question. If they choose the correct answer, they receive £0.50. Otherwise, they receive nothing. We only inform participants at the payment screen, whether their answer was correct.

In the second part, the participants are going to answer a continuous version of the *“Inclusion of Ingroup in the Self Scale”* (Tropp & Wright, 2001). On the screen, the participants can see two circles: A small circle, which is labeled “Self”, and a big circle, which is labeled “Group A”. Below the circles, the participants can see a slider bar. Moving the slider to the left moves the circles further apart, whereas moving the slider to the right moves the circles closer to each other. We ask the participants to *“... move the slider to a position in which the distance between the two circles most accurately describes your identification with Group A”*. We obtain two measures from this task: First, a measure of the distance between the centers of the circles. The normalized distance can take values ranging from minus one to plus one. Minus one indicates a very weak identification, whereas plus one indicates a very strong identification (both circles have the same center). Second, a measure of overlap between the two circles. This measure captures the percentage to which the self circle is contained in the Group A circle and can take values ranging from zero to one. Zero would indicate that there is no overlap between the two circles, whereas one would indicate that the self circle is within the area of the Group A circle. In our analysis, we will focus on the distance measure. However, some more exploratory analyses will utilize the overlap measure.

In the third part, the participants play a modified version of the ball sorting - rule following task (Kimbrough & Vostroknutov, 2018). We already describe the regular version of this task in a previous chapter (see Chapter 2.2). However, instead of using the rule of Kimbrough & Vostroknutov *“The rule is to put the balls in the blue bucket”*, we use the following rule *“According to the members of Group A, the rule is to put the balls in the blue bucket”*. This rule is based on the mode description that we obtained from the members of Group A. The major difference between the rules is that the rule from Kimbrough & Vostroknutov has no obvious source except the experimenter. In contrast, our rule originates from the members of Group A. Consequently, we measure group norm sensitivity, instead of a generalized norm sensitivity. It should be noted that we randomize the position (left or right) of the blue and the yellow bucket for each subject.

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or not someone showed a lack of respect for authority [Authority/Respect] 5. Whether or not someone violated standards of purity and decency [Purity/Sanctity]. In the individualizing treatment the rounded average ratings of Group A were 1. “Very relevant”, 2. “Very relevant”, 3. “Not very relevant”, 4. “Slightly relevant”, and 5. “Slightly relevant”. In the communal treatment the rounded average ratings of Group A were 1. “Somewhat relevant”, 2. “Somewhat relevant”, 3. “Somewhat relevant”, 4. “Somewhat relevant”, and 5. “Somewhat relevant”.

The questionnaire at the end of the experiment contains questions about the Behavioral Experiment (see Appendix A.4) and about the participants' user experience during the experiment (see Appendix A.3). Among others, it includes an alternative group identification measure, which was used by Y. Chen and Li (2009).

## 2.4 The Norm Elicitation Experiment

The Norm Elicitation Experiment consists of two parts and a concluding questionnaire. In it, we elicit all group norms that might be relevant in the Behavioral Experiment. In particular, we are interested in the group norms that are relevant in the modified rule following task. Since we only invite individualizing subjects to the Behavioral Experiment, we are only interested in the group norms of individualizing participants. Consequently, we only re-invite prescreened individuals with a positive progressivism index. Moreover, we use the same treatments as in the Behavioral Experiment. Participants are either assigned to the individualizing or the communal treatment.

In the first part, we introduce the participants to one of the two social groups: The individualizing or the communal group. This part is identical to the first part of the Behavioral Experiment (see chapter 2.3)

In the second part, we use the Krupka & Weber method (Krupka & Weber, 2013) to elicit the group norms from the modified rule following task of the Behavioral Experiment. To do so, we inform our participants that they have to evaluate potential behaviors that may have occurred in a past experiment. We first inform our subjects that the participants of the other experiment were introduced to the same social group in Part 1 and about the modified rule following task. Subsequently, we present the general procedure of the norm elicitation. We inform the participants that they have to evaluate the social appropriateness of five different allocations. Each subject is asked how socially appropriate is it to put 0, 5, 10, 15, and 20 balls into the blue bucket while placing the remaining balls into the yellow bucket. In each case, they will choose between the following six ratings: "Very socially appropriate", "Socially appropriate", "Somewhat socially appropriate", "Somewhat socially inappropriate", "Socially inappropriate", and "Very socially inappropriate". After all participants of a treatment have selected their rating, we will randomly choose one allocation for all subjects, and we will determine the mode social appropriateness rating. If a subject selects the same social appropriateness rating as the mode social appropriateness rating of those subjects, who are assigned to the same treatment, they receive an additional payment of £2. Otherwise, they receive nothing. Before participants make their final choice, we communicate the meaning of Progressivism in an intuitive way and thus establish common knowledge about the boundaries of their matching group.

The questionnaire at the end of the experiment only contains questions about the participants' user experience



during the experiment (see Appendix A.3).

### 3 Experimental Procedure

We are going to conduct all our surveys and experiments online using the experimental software oTree (D. L. Chen, Schonger, & Wickens, 2016) and the online recruitment platform prolific.co (Palan & Schitter, 2018). Hereby, we only invite subjects to the prescreening survey who fulfill the following three requirements: They must be a U.S. national, they must have between 10 and 1000 previous submissions, and they must have an approval rate of at least 90%. Furthermore, we will only re-invite those participants to the Behavioral and Norm Elicitation Experiment, who, according to our prescreening survey, have a positive progressivism index. For their participation in the Behavioral or Norm Elicitation Experiment, our subjects will receive £1.60. We will collect data until we obtained 160 observations in each treatment of the Behavioral Experiment and 100 observations in each treatment of the Norm Elicitation Experiment.<sup>3</sup>

## 4 Analysis

### 4.1 Confirmatory Analysis

We begin by evaluating the group norms and whether our treatment manipulation induced higher group identification. Subsequently, we turn to our main research question and examine if group identification influences compliance with group norms. If not specified otherwise, we use a significance threshold of 5%.

First, we test that group norms do not differ by treatment and whether the norms are linearly increasing in the number of balls placed in the blue bucket. Both issues inform our subsequent analysis.

To address the first issue, we compare the measured group norms. In particular, we assess if the perceived

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<sup>3</sup>The sample size in the Behavioral Experiment is based on the following power calculation: We used data from Kimbrough and Vostroknutov (2018) to calculate an expected effect size of 0.3. Subsequently, we used G-Power (Faul, Erdfelder, Lang, & Buchner, 2007) to calculate the minimal required sample size for a one-tailed Wilcoxon-Mann-Whitney test with a parent distribution min ARE, a effect size of 0.3, an  $\alpha$ -error probability of 0.05, a power of 0.80 and an even allocation between treatments. Based on this power calculation, we require at least 160 subjects per treatment. The sample size of the Norm Elicitation Experiment, is based on samples used in related studies (Chang et al., 2019). The reason for this is that we do not expect any treatment effects and thus only use this experiment to obtain the groups norms.

group norms of individualizing subjects during the modified rule following task are identical in the individualizing and communal treatment. Each group norm is estimated from elicited social appropriateness ratings for five actions (place 0, 5, 10, 15, or 20 balls into the blue bucket). We predict that the two group norms are not significantly different from each other, because the only source of variation in the modified rule following task is the origin of the rule. It either comes from a Group A that is characterized by a positive or a negative progressivism index. However, the rule, and thus the implied social norms, should be perceptible in each case.

**Hypothesis 1 (Group Norms)** *According to individualizing subjects, the group norms present in the modified rule following task are identical in the individualizing and the communal treatment.*

**Analysis:** We follow Krupka and Weber (2013) in converting the categorical social appropriateness ratings obtained from the individualizing and communal treatment of the Norm Elicitation Experiment into numerical ratings. We code the rating “Very socially inappropriate” as -1, the rating “Socially inappropriate” as -0.6, the rating “Somewhat socially inappropriate” as -0.2, the rating “Somewhat socially appropriate” as 0.2, the rating “Socially appropriate” as 0.6 and finally the rating “Very socially appropriate” as 1. To compare the two group norms with each other, we use the same approach as Chang et al. (2019). We use five two-sided Wilcoxon-Mann-Whitney tests to compare each of the five social appropriateness values between the two group norms. Due to the inflated likelihood of type-1 errors, we apply the Bonferroni Correction to our statistical significance threshold of  $\alpha = 0.05$ . The new threshold becomes  $\alpha = 0.01$ . As in Chang et al., we will consider two norms to be different from each other if the majority of social appropriateness ratings (in our case three) are significantly different from each other.

To address the second issue, we evaluate the relationship between social appropriateness and norm compliance. We test that the social appropriateness is linearly increasing with the number of balls placed in the blue bucket since the rule dictates that individuals should place “*the balls*” and consequently all balls into the blue bucket. Thus placing less than 20 balls into the bucket constitutes partial compliance and should be perceived as proportionally less socially appropriate. Furthermore, related research (Chang et al., 2019) showed that in Dictator Games the equal split is the socially most appropriate action and that ratings decrease as the distance to this allocation increases.

**Hypothesis 2 (Group Norms)** *According to the measured group norms, the social appropriateness is linearly increasing in the number of balls placed in the norm compliant bucket.*

**Analysis:** In an Ordinary Least Squares regression model with standard errors clustered at the individual, we regress the social appropriateness of an action against the number of balls in the norm compliant bucket.

We predict that the coefficient will be positive and significant.

Second, we evaluate whether our treatment manipulation was successful and induced higher group identification. In particular, we compare the group identification between individualizing subjects that we assigned to the individualizing group (high moral similarity) with those that we assigned to the communal group (low moral similarity). We predict that the group identification will be significantly higher for subjects that have a high rather than a low moral similarity with the assigned social group.

**Hypothesis 3 (Group Identification)** *Group identification is significantly higher for individualizing individuals that are assigned to the individualizing treatment compared to those that are assigned to the communal treatment.*

**Analysis:** We use the distance measure of the “inclusion of the ingroup in the self task” to compare the group identification of individualizing participants, who are either assigned to the individualizing or the communal treatment. Hereby, we use a one-sided t-test and a one-sided Wilcoxon-Mann-Whitney test. Our hypothesis is supported if the group identification is significantly higher in the individualizing treatment compared to the communal treatment.

Third, we turn to our main research question. Due to Hypothesis 3, we expect compliance with group norms will be higher in the individualizing treatment compared to the communal treatment.

**Hypothesis 4 (Norm Compliance)**

**Hypothesis 4a** *Compliance with the group norms is higher in the individualizing treatment compared to the communal treatment.*

**Hypothesis 4b** *This treatment effect is mediated by changes in group identification.*

**Analysis 4a:** We determine the social appropriateness ratings for action that were not included in the Norm Elicitation Experiment by linear interpolation and estimate one conditional (fixed-effect) logit model (McFadden, 1974) for each treatment of the Behavioral Experiment. In each case, we regress the choices of the subjects against the monetary earnings that result from an action ( $x_1$ ) and the social appropriateness of an action ( $x_2$ ). Subsequently, we compare the weight of norm compliance in terms of money (the ratio of  $\beta_2$  and  $\beta_1$ ) between both treatments. We predict that the ratio is higher in the individualizing treatment compared to the communal treatment. Furthermore, if Hypothesis 1 is supported, we compare the number of balls placed in the blue bucket of the modified rule following task between the individualizing and the communal treatment using a one-sided Wilcoxon-Mann-Whitney test. We predict that the number of balls in the blue bucket will be significantly higher in the individualizing treatment.

**Analysis 4b:** The previous analysis does not take into account our measure of group identification and thus cannot identify the direct effect of group identification on norm compliance. For this reason, we estimate two additional conditional (fixed-effect) logit models. In the first model, we regress the choices of the all subjects in the Behavioral Experiment against the monetary earnings that result from an action ( $x_1$ ), the social appropriateness of an action ( $x_2$ ), and an interaction between social appropriateness of an action and a communal treatment dummy ( $x_3$ ). In the second model, we regress the choices of the all subjects in the Behavioral Experiment against the monetary earnings that result from an action ( $x_1$ ), the social appropriateness of an action ( $x_2$ ), the social appropriateness of an action weighted by the decision maker’s group identification ( $x_3$ ), and an interaction between social appropriateness of an action and a communal treatment dummy ( $x_4$ ). We hypothesize that the coefficient of  $x_3$  in the second specification is significant and positive. Furthermore, we hypothesize that a Vuong test comparing the goodness-of-fit between both specifications, suggests that the second specification has a better model fit. Lastly, if Hypothesis 1 and 2 are supported, we will also take into account the censored nature of our norm compliance measure. In a Tobit regression, we regress the number of balls placed in the norm compliant bucket against our measure of group identification ( $x_1$ ) and a communal treatment dummy ( $x_2$ ). We predict that the coefficient of  $x_1$  is significant and positive.

## 4.2 Exploratory Analysis

In addition to the previously described confirmatory analysis, we also intend to investigate three more exploratory research questions: 1.) Are our finding robust to different measures of group identification? 2.) Are our findings robust to different measures of norm compliance? 3.) How exactly are moral similarity and group identification related?

First, in the confirmatory analysis, we exclusively utilized the distance measure of the inclusion of the ingroup in the self task. However, we could have also used the overlap measure of the inclusion of the ingroup in the self task or the group identification measure of the questionnaire. In the exploratory analysis, we intend to replicate the confirmatory analysis with the other two measures.

Second, in the confirmatory analysis, we exclusively conceptualized group norm compliance as the number of balls placed in the norm compliant bucket. However, we could have also defined group norm compliance as a binary variable that is one if the individual places more balls in the norm compliant bucket than a certain threshold and zero otherwise. In particular, we will re-conceptualize group norm compliance as placing at least one ball, ten balls, or 20 balls in the norm compliant bucket. We intend to replicate the confirmatory analysis with each of those measures.

Third, we want to explore the relationship between moral similarity and group identification in more depth. In an Ordinary Least Squares regression and a Tobit regression model, we regress each measure of group identification against an index for moral similarity and a treatment dummy. Hereby, we conceptualize moral similarity in various forms: In the first specification, we will use the absolute difference between the progressivism score of the individual and the assigned social group. In the second specification, we calculate the Euclidean Norm between the moral position of the individual and the social group in the five-dimensional space defined by Moral Foundations Theory (each foundation is weighted equally). Third, we calculate the Chebychev distance between the moral position of the individual and the social group in the five-dimensional space defined by Moral Foundations Theory (only the most salient dimension determines the index). Fourth, we calculate the absolute difference in each of the five moral foundations of the individual and the assigned social group and include all five measures. In addition, we will also consider different conceptualization of the position of Group A: The position will either be set to the moral position implied by the five questions that are used to introduce Group A or to the actual moral position of the members of Group A according to the complete Moral Foundations Questionnaire. Lastly, we will also consider alternative functional specification of moral similarity: We will utilize each moral similarity measure in its regular form, as a squared variable (the marginal effect of moral similarity on group identification increases with moral similarity) and as a logarithmic variable (the marginal effect of moral similarity on group identification decreases with moral similarity).

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# A Appendix

## A.1 Moral Foundations Questionnaire

In the following section, we present the Moral Foundations Questionnaire (Graham et al., 2011). The questionnaire consists of two parts: The moral relevance section and the moral judgment section. In the moral relevance section, the participants are asked: “When you decide whether something is right or wrong, to what extent are the following considerations relevant to your thinking?”. In each case the participants had to choose between the following five options: “Extremely relevant” [5], “Very relevant” [4], “Somewhat relevant” [3], “Slightly relevant” [2], “Not very relevant” [1], “Not at all relevant” [0]. The participants are confronted with the following considerations:

1. Whether or not someone suffered emotionally
2. Whether or not some people were treated differently than others
3. Whether or not someone’s action showed love for his or her country
4. Whether or not someone showed a lack of respect for authority
5. Whether or not someone violated standards of purity and decency
6. Whether or not someone was good at math
7. Whether or not someone cared for someone weak or vulnerable
8. Whether or not someone acted unfairly
9. Whether or not someone did something to betray his or her group
10. Whether or not someone conformed to the traditions of society
11. Whether or not someone did something disgusting
12. Whether or not someone was cruel
13. Whether or not someone was denied his or her rights
14. Whether or not someone showed a lack of loyalty
15. Whether or not an action caused chaos or disorder
16. Whether or not someone acted in a way that God would approve of



In the moral judgment section, participants are asked to “Please read the following sentences and indicate your agreement or disagreement:”. In each case the participants have to choose between the following five options: “Strongly agree” [5], “Moderately agree” [4], “Slightly agree” [3], “Slightly disagree” [2], “Moderately disagree” [1], “Strongly disagree” [0]. The participants were confronted with the following statements:

1. Compassion for those who are suffering is the most crucial virtue
2. When the government makes laws, the number one principle should be ensuring that everyone is treated fairly
3. I am proud of my country’s history
4. Respect for authority is something all children need to learn
5. People should not do things that are disgusting, even if no one is harmed
6. It is better to do good than to do bad
7. One of the worst things a person could do is hurt a defenseless animal
8. Justice is the most important requirement for a society
9. People should be loyal to their family members, even when they have done something wrong
10. Men and women each have different roles to play in society
11. I would call some acts wrong on the grounds that they are unnatural
12. It can never be right to kill a human being
13. I think it’s morally wrong that rich children inherit a lot of money while poor children inherit nothing
14. It is more important to be a team player than to express oneself
15. If I were a soldier and disagreed with my commanding officer’s orders, I would obey anyway because that is my duty
16. Chastity is an important and valuable virtue

The questions are either included to measure the Harm/Care foundation (Q1, Q7, Q12, Q17, Q23, Q28), the Fairness/Reciprocity foundation (Q2, Q8, Q13, Q18, Q24, Q29), the Ingroup/Loyalty foundation (Q3, Q9, Q14, Q19, Q25, Q30), the Authority/Respect foundation (Q4, Q10, Q15, Q20, Q26, Q31), the Purity/Sanctity foundation (Q5, Q11, Q16, Q21, Q27, Q32) or as attention checks (Q6, Q22). Each foundation is determined

by calculating the mean score of all the contained items. The scores that correspond to each answer are displayed in square brackets above. In addition, we are going to calculate the individualizing index by averaging the score of the Harm/Care and Fairness/Reciprocity foundations and the communal index by averaging the scores of the Ingroup/Loyalty, Authority/Respect and Purity/Sanctity foundations. Lastly, we will also calculate the progressivism index by subtracting the individualizing index from the communal index (Clark et al., 2017). This index can take on values ranging from  $-5$  (not at all individualizing & extremely communal) to  $+5$  (extremely individualizing & not at all communal).

## A.2 Socio-Demographic Questionnaire

In the following section, we present the socio-demographic questionnaire that we will use in our prescreening survey. Each item consists of three components: In the first line, we label the item. Subsequently, we present the question that we use ("Q") and the possible answers among which the participants can choose ("A"). It should be noted that all questions are optional.

1. **Age:**

Q: "What is your age?"

A: Any integer number

2. **Gender:**

Q: "What is your gender?"

A: "Male", "Female" or "Other"

3. **Ethnicity:**

Q: "Which of the following best describes your ethnicity?"

A: "White", "Black", "Hispanic", "Asian" or "Other"

4. **Degree:**

Q: "What is your highest obtained degree?"

A: "None", "High school diploma", "Bachelor's degree", "Master's degree" or "Doctorate degree"

5. **Employment Status:**

Q: "What is your current employment status?"

A: "Full time employed", "Part time employed", "Unemployed", "Self-employed", "Student", "Housewife / husband" or "Retired"

**6. Income:**

Q: "Approximately, how high is your yearly income in US Dollar (after taxes)?"

A: "\$0 - \$10,000", "\$10,000 - \$25,000", "\$25,000 - \$50,000", "\$50,000 - \$75,000", "\$75,000 - \$100,000", "\$100,000 - \$150,000", "More than \$150,000"

**7. Community:**

Q: "Which type of community do you live in?"

A: "Urban", "Suburban" or "Rural"

**8. Religion:**

Q: "How would you describe your religious views?"

A: "Christian", "Jew", "Buddhist", "Muslim", "Hindu", "Atheist" or "Other"

**9. Politics:**

Q: "How would you describe your political affiliation?"

A: "Very liberal", "Liberal", "Moderate", "Conservative" or "Very conservative"

### A.3 User Experience Questionnaire

In the following section, we present the user experience questionnaire that we will use in our online experiments. Each item consists of three components: In the first line, we label the item. Hereby, we also note if the item is optional. Subsequently, we present the question that we use ("Q") and the possible answers among which the participants can choose ("A").

**1. Device**

Q: "What device did you use during this study?"

A: "Desktop PC", "Notebook", "Tablet", "Cellphone" or "Other"

**2. Browser:**

Q: "What browser did you use during this study?"

A: "Chrome", "Safari", "Firefox", "Other" or "Unknown"

**3. Understanding Problems (optional):**

Q: "If you had any problems of understanding during the experiment, please let us know in this field:"

A: Open form text input

**4. Technical Problems (optional):**

Q: "If you had any technical problems during the experiment, please let us know in this field:"

A: Open form text input

**5. Comments (optional):**

Q: “Do you have any further comments?”

A: Open form text input

## **A.4 Behavioral Questionnaire**

In the following section, we present the questionnaire that we will use in the Behavioral Experiment. Each item consists of three components: In the first line, we label the item. Subsequently, we present the question that we use (“Q”) and the possible answers among which the participants can choose (“A”).

**1. Alternative Group Identification Measure:**

Q: On a scale from 1 to 10, please rate how closely attached you felt to Group A throughout the experiment (1: Not at all / 10: Very strongly).

A: Any integer number between 1 and 10 (including 1 and 10).

**2. Reason for Rule Following:**

Q: In Part 3, why did or didn’t you follow the rule to put all the balls into the blue bucket?

A: Open form text input