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Ingroup Bias with Multiple Identities: The Case of Religion and Attitudes towards Government Size

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ABSTRACT

Group identity is known to exert a powerful socio-psychological influence on behaviour but to date has been largely explored as a uni-dimensional phenomenon. We consider the role of multiple dimensions of identity, asking what might happen to ingroup and outgroup perceptions and the resulting implications for cooperation. Carefully selecting two politically charged identity dimensions documented to have similar strength and to be largely orthogonal (religious belief and views about government size), we find that priming individuals to consider both dimensions rather than one has a noticeable effect on behaviour. Moving from one to two dimensions can produce a significant increase in ingroup allocations at the expense of fairness to outgroup individuals, although the effect varies as we switch from primarily considering religion to government size. Evidence suggests that the heterogeneity of such effects is related to the degree of “harmony” between groups in the dimensions concerned.

Introduction

Do you consider yourself Democrat or Republican? Religious, agnostic or atheist? How about your views on climate change, abortion, gun control? Meeting someone who shares your views on any of these issues or more can help construct a shared sense of identity and with it a tendency towards ingroup sentiment.^{1,2} Numerous studies have found that even quite tenuous forms of group identity can produce remarkable ingroup bias, with random allocations of a color or an arbitrary label often being sufficient.^{3,4} To date, a large body of work in this area has been directed towards uni-dimensional identity: the idea that individuals often fixate on a single salient dimension which defines themselves, e.g., race, gender, political affiliation or nationality etc. Nobel prize-winning economist and philosopher, Amartya Sen argues that this tendency for “us vs them” thinking has led to much bloodshed and suffering.⁵

However, in practice, identity is much more nuanced. There are infinitely many dimensions on which identity can be defined and it is hard to imagine anyone who has a narrow uni-dimensional focus in general. Attend a conference on gender issues and you may feel that your gender identity has become more important; later you may have a discussion on recent political events which instead brings your political affiliation to the forefront. Research has shown that priming different dimensions of identity can have disparate influences on performance in quantitative/verbal tests, cooperation and economic choices.^{6–11}

When multiple dimensions of identity are present, things become even more complex. How does one juggle the many ways in which one is similar or different to others and how does this influence decisions to help or hinder others? The way individuals react to and manage these cross-cutting and polarising dimensions of identity would have broad implications for harmony in society.¹² These issues motivate our study of how additional dimensions of identity influence individuals’ behaviour and the mechanisms behind them. While there has been some research in social psychology, political science and economics examining how the social and economic factors behind identities affect their relative strength^{13–17}, they do not directly manipulate the salience of different dimensions of identity. Hence, they do not speak to our research agenda of studying the psychological mechanisms behind effects of multiple identity dimensions.

More related to our work, is a literature on multiple categorisation which examines how multiple dimensions of social identities can have an effect on inter-group relations, see Prati et.al. for a review.¹⁸ Studies have found that when many non-overlapping (exogenous) dimensions of identity are salient, the complexity of identities, by reducing simple social categorisation, can lower inter-group friction. In other contexts, effects of multiple identities are however more nuanced. Nevertheless, most of such work has focused on the cognitive aspects of categorisation and neglected the social aspects of categories. When dimensions of identity themselves have moral and political connotations, effects can become even more complex. Without a controlled study it is not clear how multiple dimensions of identities might interact with their social content.

In this pre-registered study¹⁹, we experimentally investigate the impact of additional dimensions of identity on ingroup bias (or outgroup discrimination) in a context where identity dimensions are politically charged. We recruited a sample of 961 participants in America using the Prolific platform between 20th May and 9th June 2021. Based on responses to questions

posed, participants were classified into groups to make their identities salient. Subsequently, participants played a series of third party dictator games where they were asked to allocate resources between two different partners of known identity in a single dimension. For example, if this dimension was attitudes towards government size, one partner might be in favor of small government, the other in favor of large government. These allocations were then used to measure the extent of ingroup bias. We compare using separate treatments, the extent of bias when identities consist of two salient dimensions, to when identities consist of only a single salient dimension. Our two dimensions of identity — based on opinions about 1) government size and 2) religion — were carefully selected in line with past research which finds that these are two factors of *similar importance* and largely *orthogonal* in the respective political dimensions of economic and social conservatism/liberalism.²⁰ These dimensions of identity also speak to the recent increase in political polarization in America.^{21,22}

Our basic results mirror standard findings in that there are strong ingroup biases throughout — participants allocate more to those who share a common identity. However, there is some heterogeneity in the magnitudes of ingroup bias. When only a single dimension is salient, the amount of ingroup bias is significantly smaller for the religion dimension compared to the government dimension. These low levels of ingroup bias on the religion dimension are present despite strong group identity recorded in the post experiment survey. We refer to identity dimensions with mild levels of ingroup bias despite strong group identity as “harmonious”. Identity based on attitudes towards religion hence seem to be in a domain which is more harmonious than that based on attitudes towards government size.

Furthermore, we find that compared to when only a single dimension (either government or religion) is salient, making the second dimension salient as well also changes behaviour. Again, the domain of identities matters — our results suggest that the effect of adding a second dimension differs depending on how “harmonious” the initial single dimension was. When we consider allocations under the more harmonious dimension (religion), making a second less harmonious (or more discordant) dimension (government) salient results in a sharp increase in ingroup bias. In contrast, for allocations on the more discordant dimension (government), making the second dimension (religion) salient has muted effects. This is counter-intuitive as we might assume that adding a separate orthogonal dimension should never worsen ingroup biases in the first dimension. However, it seems that effects can go in the other direction, by changing the domain to a more discordant social context.

Results

To ground our discussion, we first describe the distribution of identity groups in our study. Table 1 shows that there are relatively strong levels of polarisation on each of the religion and government dimensions. 58% of participants disagree with the statement “*The world was created by a divine entity*” while 31% disagree with the statement “*Government intervention is good for society*”. There is a negligible relationship between these two dimensions of identity, phi-correlation = -0.17.

The world was created by a divine entity	Government intervention is good for society		
	Disagree	Agree	Total
Disagree	<i>n</i> = 139	<i>n</i> = 417	<i>n</i> = 556
Agree	<i>n</i> = 167	<i>n</i> = 238	<i>n</i> = 405
Total	<i>n</i> = 306	<i>n</i> = 655	<i>n</i> = 961

Table 1. Breakdown of participants who agreed/disagreed with the religion and government statements.

Treatment Effects

Here, we analyse the aggregate treatment effects. In particular, we compare levels of ingroup bias when the two dimensions of identity (religion and government) are salient, to the alternative when only one dimension of identity (either religion or government) is salient. Ingroup bias is measured as the difference between allocations made to an ingroup member versus an outgroup member.

Figure 1 compares ingroup bias for the religion and government dimensions separately. Observe that in all cases, ingroup bias is significantly positive ($p < 0.001$ for all cases, one-sided sign test) — allocations towards ingroup members are significantly greater than that towards outgroup members. This is consistent with the existence of strong identity effects relating to religious belief and views about government size. In the post-experiment survey, we measured their identity strength by eliciting their feelings of closeness to their ingroup on an 11-point Likert scale (0 to 10), see the Appendix for more details. On average, participants stated an average of 7.18 points which is significantly different from being neutral (5 points), two-sided sign test, $p < 0.001$. Their feelings of identity strength are also strongly correlated with allocations to their ingroup, see Supplementary Table S1.

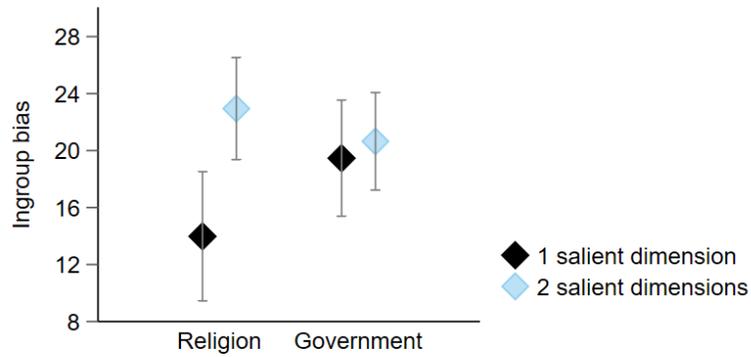


Figure 1. Effects of multiple salient dimensions on ingroup bias by identity dimension. Plots of 95% confidence intervals of the mean in each treatment. Ingroup bias is the difference (in the percentage of resources) between allocations made to an ingroup versus an outgroup in a third-party dictator game.

However, we also note that there is some heterogeneity in ingroup bias across the cases. When only a single dimension of identity is salient, ingroup bias is significantly lower for allocations on the religion dimension compared to the government dimension ($p = 0.005$, two-sided Mann-Whitney test). When both dimensions of identity are salient, the amount of ingroup bias is however indistinguishable for allocations on the religion and government dimensions ($p = 0.803$, two-sided Mann-Whitney test). The effects of multiple dimensions on ingroup bias can be seen to be dependent on whether allocations involve the religion or government dimensions of identity. Making a second dimension salient increases ingroup bias for allocations on the religion dimension, but has negligible effects for allocations on the government dimension.

Table 2 confirms the last observation using a multiple regression analysis with various controls. On the religious dimension, two salient dimensions of identity, compared to one salient dimension results in an increase in ingroup bias of 7.6 percentage points, Wald-test, $p = 0.012$. By contrast, on the government dimension, there is an insignificant decrease in ingroup bias of 0.12 percentage points, Wald-test, $p = 0.966$. This 7.7 percentage point difference is statistically significant, Wald-test, $p = 0.031$. There is thus strong evidence that multiple dimensions of identity can have disparate effects on ingroup bias in different social dimensions.

	<i>Subgroup:</i>	
	Religion Dimension	Government Dimension
<i>Marginal Effect on ingroup bias of:</i>		
Two Salient Dimensions	7.615** (3.035)	-0.118 (2.746)
Observations	1437	

Table 2. Marginal effects of two salient dimensions, relative to one salient dimension, on ingroup bias in each identity dimension. Estimates are from an ordinary least squares regression using individual-question level observations. It regresses ingroup bias on the interaction between dummies for the number of salient dimensions and dummies for the dimension of allocation. Includes controls for strata, session and order fixed effects. * 0.10 ** 0.05 *** 0.01. Standard errors clustered at individual level in parentheses.

Possible Explanations

Differences in Identity Strength?

The treatment effects suggest that there are some fundamental differences between identity defined with respect to religion and government. One possible explanation might be that *stronger identities on the government dimension* have spillover effects on the religion dimension, raising the importance of religious differences and consequently increasing ingroup bias. There are several pieces of evidence which suggest that this is *not* the case.

Firstly, questions from our post-experiment survey indicate that the strength of identities on the religious dimension is greater compared to the government dimension. Table 3, Column 1 shows that on a scale from 0 to 10, their feelings of belonging to their government ingroups were on average 0.57 points lower compared to religious ingroups, Wald-test, $p < 0.001$.

Secondly, there is no evidence that making the government dimension salient increases feelings of belong to one's religious ingroup. Table 3, Column 2 shows that there is no significant effect of the number of dimensions on feelings of belonging to one's religious ingroup, Wald-test, $p = 0.688$, nor one's government ingroup, Wald-test, $p = 0.832$. Thus, it is unlikely that the rise in ingroup bias in the religion dimension when multiple identities are salient can be explained via the aforementioned mechanism.

<i>Dep Var: Feelings of belonging to ingroup</i>	(1)	(2)
Government dimension	-0.568*** (0.121)	-0.654*** (0.210)
2 salient dimensions × Religion dimension		-0.091 (0.226)
2 salient dimensions × Government dimension		0.038 (0.180)
Constant	7.466*** (0.106)	7.527*** (0.175)
Strata, Session and Order Fixed effects	✓	✓
Observations	1437	1437

Table 3. Effects of multiple salient dimensions by identity dimension on survey-measured feelings of belonging. See the Appendix for more details. Ordinary least squares regressions with individual-question level observations. * 0.10 ** 0.05 *** 0.01. Standard error in parentheses clustered at the individual level.

Signalling

A second possible explanation might be that the higher levels of ingroup bias on the government dimension spillover to the religion dimension when both dimensions are salient because of a *signalling effect*. In particular, individuals might see membership of one group as a possible signal that their partner may also be a member of another group — especially when multiple dimensions of identity are salient. In our experiment, this might explain our results if an individual believes a partner who shares a group identity on the religious dimension is more likely to also have a shared identity on the government dimension when both dimensions are salient. Since the government dimension has higher levels of ingroup bias, such beliefs would lead to higher levels of ingroup bias on the religion dimension — even if ingroup bias on the single salient religion dimension is small.

We are able to examine such an explanation as in the post-experiment survey, participants were asked about their beliefs about the chance that ingroup/outgroup member on the religion (government) dimension is also an ingroup/outgroup member on the government (religion) dimension, see the Supplementary Materials for more details. Using this, we can calculate for each dimension, in percentage points, the extent to which participants are *more likely* to believe that an ingroup member on a particular dimension is also an ingroup member on the other dimension (relative to an outgroup member on the particular dimension). For exposition purposes, we refer to this as their *ingroup correlation beliefs*.

<i>Subgroup:</i>	Religion Dimension	Government Dimension
<i>Marginal Effects on Ingroup bias of:</i>		
2 salient dimensions	8.050*** (3.052)	-3.979 (3.152)
Ingroup correlation beliefs	0.188*** (0.048)	-0.001 (0.044)
Observations	1232	

Table 4. Marginal effects of two salient dimensions relative to one salient dimension, and ingroup correlation beliefs, on ingroup bias in each identity dimension. Estimates are from an ordinary least squares regression using individual-question level observations. It regresses ingroup bias on the interaction between dummies for the number of salient dimensions, dummies for the dimension of allocation and ingroup correlation beliefs. 215 observations excluded due to out of range beliefs which are treated as missing. Includes controls for strata, session and order fixed effects. * 0.10 ** 0.05 *** 0.01. Standard errors clustered at individual level in parentheses.

Results of our analyses are inconsistent with the above signalling explanation. Firstly, while Supplementary Table S2 shows that on average, participants have positive ingroup correlation beliefs, there are limited effects of making two dimensions of identity salient. Secondly, controlling for their ingroup correlation beliefs in regressions similar to Table 2 does not explain away our earlier results on the heterogeneous impacts of multiple dimensions of identity on ingroup bias; in fact differences are even bigger. Table 4 shows that while ingroup correlation beliefs have some explanatory effect on ingroup bias on the religion dimension, even after controlling for it, the effect of two salient dimensions on ingroup bias is still 12 percentage points higher on the religion dimension compared to government dimension, Wald-test, $p = 0.002$.

Identities in conflict vs Identities in Harmony

In the previous section, we showed that differences in identity strength or signalling cannot explain our treatment effects. We next consider how another facet of identities — the degree of “conflict” or “harmony” between identity groups defined on specific dimensions — may explain our results. While opinions on government and religion are polarized, we first note an interesting difference between sentiment directed towards those who do not share identity with respect to religion as opposed to government. Table 5 examines the marginal effect of identity strength on ingroup bias in each identity dimension. A 1 point higher answer on the 11-point Likert scale for identity strength is associated with a 4.3 percentage point increase in ingroup bias on the government dimension, but only a 2.2 percentage point increase in ingroup bias on the religion dimension. The difference is statistically significant, Wald-test, $p = 0.021$. That identity strength matters much less for allocation decisions on the religion dimension suggests that there is a greater sense of harmony between individuals of different religious opinion, as compared to government opinion.

<i>Subgroup:</i>	Religion Dimension	Government Dimension
<i>Marginal Effect on ingroup bias of:</i> Feelings of belonging to ingroup	2.223*** (0.593)	4.308*** (0.732)
Observations	1437	

Table 5. Marginal effects of feelings of belonging to ingroup, on ingroup bias in each identity dimension. Estimates are from an ordinary least squares regression using individual-question level observations. It regresses ingroup bias on the interaction between feelings of belonging to ingroup and dummies for the dimension of allocation. Includes controls for strata, session and order fixed effects. * 0.10 ** 0.05 *** 0.01. Standard errors clustered at individual level in parentheses.

A greater sense of harmony between groups should be associated with higher concerns of fairness and mutual respect. We have several pieces of evidence that illustrate this. Using an exact 50-50 split between ingroups and outgroup as a proxy for concerns of fairness and mutual respect, Figure 2 shows that for decisions in the 1 dimension treatment, participants show much higher concerns for fairness in the religion dimension. When making allocations on the religion dimension, 75 percent are an equal split. In contrast, when making allocations on the government dimension, only 64 percent are an equal split. This difference is statistically significant, two-sample test of proportions, $p = 0.007$.

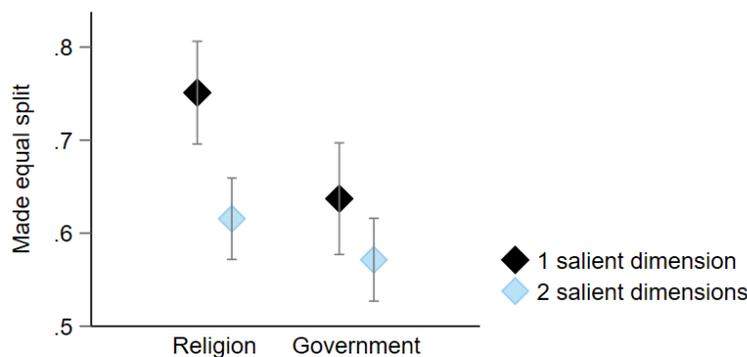


Figure 2. Proportion of participants choosing an equal split (50-50 allocations), by treatment. Plots of 95% confidence intervals of the mean in each treatment.

Evidence from our post-experiment survey is also consistent with the above. Participants were given a multiple choice question on how they decided on their allocations. In the first two sessions, there was no explicit option to choose fairness, but if they selected “other”, it was possible to indicate fairness or mutual respect as a reason. In the third session, we added in fairness as an explicit option. In the one-dimension treatment, 38 out of 237 either selected fairness as their reason or gave an open-ended answer involving fairness or mutual respect for the religion dimension compared to 23 out of 248 for the government dimension. The difference in proportions of participants who gave fairness or mutual respect as a reason is significantly different, two-sample test of proportions, $p = 0.025$.

However, when making decisions in the two-dimension treatment, it seems that these concerns for fairness evaporate. Figure 2 shows that participants are almost as likely to choose an equal split on the religious dimension compared to the government dimension — there is no significant difference in the proportion of equal splits for the religion and government dimensions in the two dimension treatment, two-sample test of proportions, $p = 0.166$. Likewise, in the post-experiment survey, participants are equally likely to indicate fairness or mutual respect as a reason for allocations in the two dimension treatment. 30 out of 239 for the religion dimension, and 27 out of 237 for the government dimensions indicate mutual respect and fairness as a reason for their allocation. This difference is not significant, two-sample test of proportions, $p = 0.697$.

The above results suggest that making the relatively discordant government dimension salient has spillover effects on the relatively harmonious relations in the religion dimension. While interactions on the religion dimension are usually fairly harmonious, the knowledge that others might differ on the government dimension (for which there is greater conflict) crowds out any considerations of fairness or mutual respect that apply to the religion dimension. Interestingly, this spillover effect is asymmetric — we do not observe similar spillover effects of the religion dimension on the government dimension. Ingroup bias on the government dimensions and measures of concerns for fairness/mutual respect remain relatively unchanged when the religion dimension is made salient as well, see Figures 1 and 2.

Discussion

In our paper, we find evidence that raising the salience of additional dimensions of identity can have effects on ingroup bias — inattention to other possible dimensions of identity is thus likely important. However, our results are more nuanced compared to related research. In contrast to research on multiple categorisation where non-overlapping categories reduce ingroup bias, we find an increase in ingroup bias based on religion when multiple dimensions of identity are salient — this occurs despite the multiple dimensions being relatively uncorrelated.

Possible explanations for the failure of multiple categorisation in the literature include the causal centrality and dominance of particular identities²³ and the conceptual relation of categories²⁴. However, exploring the respective potential mechanisms of differences in identity strength and signalling, we do not find any evidence consistent with them. One reason could be that our study involves dimensions which are more politically charged, involving elements of what columnist Erza Klein calls issue and identity based polarisation.²⁵

We find evidence that there is even more nuance amongst such (strong) polarised identities. In particular, it is possible to classify identities into different “domains” based on the kinds of intergroup relations. In our experiment, the religion identity dimension involves norms of fairness and mutual respect which are seemingly less present in the government identity dimension, perhaps due to social norms which suppress religious discrimination. Other studies have found evidence that on ethnic identity dimensions, similar social norms which suppress racial discrimination also seem to be present.²⁶

Consequently, there appear to be different kinds of interactions between these domains when multiple dimensions of identity are present. Results show that the government dimension has negative spillover effects on the religion dimension reducing the apparent “harmony” that exists in our sample between those with or without religious identity (which exhibits itself as a low level of ingroup bias in allocations). However, the religion dimension does not have positive spillover effects on the government dimension, proving incapable of generating harmony where it did not already have a foothold. We surmise that this may be because salience of identities on the government dimension “activates” thinking on political partisanship lines. Such asymmetry also highlights the fragility of any notion of fairness and harmony between different identity groups.

Broadly, our results suggest that when studying multiple dimensions of identity, it is also important to consider the social context of dimensions of identity rather than just attempting to draw general conclusions. We believe that more work needs to be done in linking the sociology of inter-group interactions to the psychology of multiple identities.

Methods

This study used an online experiment to examine the effect of the number of salient dimensions of identity on identity strength and ingroup bias. The experiment had two different treatments which were conducted between subjects. There were two main stages in the experiment. The first stage was an identity inducement stage split into two treatments. Participants were randomly assigned to a treatment in which either 1) one dimension of identity was made salient, or 2) two dimensions of identity were

made salient. In the second stage, participants completed an incentivized third-party allocation task which was used to elicit their level of ingroup bias. At the end of the experiment, there was a post-experiment questionnaire which included standard demographic questions together with questions concerning feelings of closeness to their ingroup, and their beliefs about the distribution of identities on each dimension (which were incentivized). The full experimental script is provided in Appendix B.

Identity Inducement

In our experiment, we focused on two main dimensions of political identity inspired by Everett²⁰: 1) economic and 2) social conservatism/liberalism. Participants were shown a general statement on limited government (“*Government intervention is good for society*”) and/or religion (“*The world was created by a divine entity*”) and asked to choose where they stood on the issue (agree/disagree). After choosing their position, participants were then shown their implied group membership based on their choices, with graphic symbols for each group to further increase identity-salience. In the one-dimension treatment, they were only asked about one (random) statement. In the two-dimension treatment, they were asked about both statements in a random order — this order was kept the same for any questions thereafter. For completeness, participants in the one dimension treatment were asked in the *post-experiment* survey to choose their stand on the other dimension.

Our focus on political identities was based on observations in an early pilot that people form strong identities around their political affiliation. Religion and government size were chosen because they had several useful characteristics as discussed by Everett²⁰:

- *They are documented to be quite divisive and as such there is potential for them to initiate identity formation.* Religion and Limited Government are 2 items in the 12-item Social and Economic Conservatism Scale (SECS) which weigh heavily in the “Social Conservatism” and “Economic Conservatism” factors (see Table 1 in Everett²⁰)
- *They are of similar “strength” to avoid any asymmetry between dimensions complicating the effect of making another identity dimension salient.* Religion and Limited Government have high factor loadings (> 0.8) in social and economic conservatism respectively (see Table 4 in Everett²⁰).
- *They are not strongly correlated which preserves the notion that both dimensions are relatively independent.* In the paper, the two factors had a weak correlation of 0.09 which was not significant at the 0.05 level (see Table 1 in Everett²⁰).

We also note that there is no obvious ordering in terms of status or hierarchy across different opinions in these two dimensions.

Third-Party Allocation Task

We used a third-party allocation task to elicit participants’ levels of ingroup bias in an incentivized way. Participants had to decide how they would allocate 100 experimental credits between two randomly selected other participants in the following manner. Firstly, they decided for a given dimension of identity (i.e, religion or government), how to allocate the credits in 3 different cases: 1) if one of the two selected participants has an ingroup identity while the other has an outgroup identity, 2) both have an ingroup identity and 3) both have an outgroup identity. In the two-dimension treatment, the fact that on the other dimension of identity, the participant might have an ingroup or outgroup identity was highlighted.

Secondly, each participant had to decide whether they wanted to implement the allocation based on their aforementioned decisions. If not, they could instead elect to equally divide the experimental credits or randomly divide the credits between the two participants. For those in the two-dimension treatment, they had to make the same set of decisions on the second dimension. Each participant’s decisions were then used to determine the payoffs of two randomly selected other participants. For those in the two-dimension treatments, one set of decisions was randomly selected to be implemented.

From this task, we can measure their ingroup bias by calculating: $Allocation_{ingroup} - Allocation_{outgroup}$. This can be done for both the *raw allocation* (before they made the second decision), and the *effective allocation* (after they made the second decision). In our main analysis, we used effective allocations to calculate ingroup bias as these were the final decisions that were implemented for payment. Results are qualitatively similar and in fact quantitatively larger if raw allocations are used to calculate ingroup bias. See Supplementary Tables S4 - S6 for the corresponding results using raw ingroup bias.

Post-experiment Questionnaire

In the post-experiment questionnaire, we collected standard information on participants’ demographic characteristics like their birth year, gender, education level, personal income level and ethnicity etc. Furthermore, we also had questions relating to the task like their understanding of the instructions as well as how they made their allocation decisions. These were used in robustness checks of our main analysis. All results go through qualitatively, controlling for these variables in similar regressions, see Supplementary Tables S7 - S10. We also had several questions which were used to construct variables used in exploring potential mechanisms behind our results.

Firstly, all participants were asked to give estimates of the unconditional conditional distributions of participants’ identities on the religion and government dimensions. In particular they were asked about (i) the percentage of all participants who belong to the group that agree/disagree with the religion statement, (ii) the percentage of all participants who belong to the group that

agree/disagree with the government statement, (iii) the percentage of the participants who agree with the religion (government for session 3) statement that agree/disagree with the government (religion for session 3) statement, (iv) the percentage of the participants who disagree with the religion (government for session 3) statement that agree/disagree with the government (religion for session 3) statement. These estimates were elicited in an incentivized way: one of the four estimates was randomly selected for payment; the closer the estimate to the true value, the higher the payment.

Using these estimates and participants' identities, we constructed participants' ingroup correlation beliefs by calculating: $Prob(\text{Ingroup on second dimension} \mid \text{Ingroup on first dimension}) - Prob(\text{Ingroup on second dimension} \mid \text{Outgroup on first dimension})$. In cases where the first dimension does not correspond to the dimension that was conditioned on in questions (iii) and (iv), conditional probabilities had to be calculated via Bayes law and could fall outside of the possible range 0–100. These out-of-range conditional probabilities are treated as missing in the analysis. The distributions of calculated and directly observed conditional probabilities treating out-of-range values as missing are similar to the distributions of only directly observed conditional probabilities, k-smirnov test, $p=0.804$.

Secondly, participants were asked to indicate on an 11-point Likert scale (0 to 10), to what extent they see themselves as belonging to their ingroup on religion and government dimension respectively. This question was adapted from the measure of group identification in Doosje et al.²⁷, and is used to measure participants' identity strength on each dimension.

Data Collection

The experiment was programmed in Otree²⁸ and conducted on the online research platform Prolific (www.prolific.co). Recruitment was restricted to participants currently residing in the United States and having a Prolific approval rate not lower than 95. Ethical approval for conducting the experiment was obtained from the University of Warwick Humanities and Social Sciences Research Ethics Committee (ref. HSSREC 178/19-20). All experiments were performed in accordance with the relevant guidelines and regulations, with informed consent being obtained from all participants on Prolific.

We conducted 3 sessions during late May and early June in 2021. In total $480 + 240 + 241 = 961$ participants completed the experiment in the 3 sessions respectively. Of this, 485 participants were in the one-dimension treatment, while 476 participants were in the two-dimension treatment. They were paid a completion fee of \$0.9 together with a bonus fee based on decisions made by participants during the experiment. On average, participants spent 7 minutes in the experiment and received a payment of \$1.41 which is above the recommended hourly payment rate of \$9.60 for Prolific experimental participants.

Stratified randomisation was used to reduce sampling error. There were six strata given by a participant's political and religious affiliation as indicated on Prolific's demographic screener: Demographic/Republican/Independent \times Religious/Non-religious. These two variables were chosen for stratification because they are closely related to the identities in the experiment and we suspected that behaviour in the experiment could differ by participant's identities (this is indeed true, opinions on government and religion are significantly different across strata, Kruskal Wallis test, $p < 0.001$ for both government and religion).

Simple random sampling was applied within each stratum: half of the participants in each stratum were randomly assigned to the one-dimension treatment, while the other half was assigned to the two-dimension treatment. We implemented an equal size for the one dimension and two dimension treatments because pilots indicated no significant differences in the standard deviation for ingroup allocations between them. Supplementary Table S3 compares demographic variables in the two treatments and show that they are relatively similar.

Our main analysis focuses on the measures of effective ingroup bias calculated from participants allocation decisions. Note that in the two-dimension treatment, each participant has a measure of ingroup bias for each dimension. In the one-dimension treatment, each participant has only one measure of ingroup bias for the dimension he/she faces. In total, we have $485 + 476 \times 2 = 1,437$ data points.

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Additional information

Author contributions statement

D.Sgroi, J.Yeo and S.Zhuo conceived the experiment. S.Zhuo conducted the experiment on prolific. D.Sgroi, J.Yeo and S.Zhuo analysed the results and reviewed the manuscript.

Competing Interests

The authors have no competing interests in the submission of this article. The research was funded by the Bridges Leverhulme Doctoral Scholarship at the University of Warwick which had no involvement in the conduct of the research and preparation of the article.

Data availability

Anonymized data have been deposited in Open Science Framework (<https://osf.io/5amf4/>) on 6th September 2021.

Supplementary Information: Additional Tables and Figures

<i>Dep var: Ingroup Bias</i>	(1)
Feelings of belonging to ingroup	2.987*** (0.473)
Constant	-1.338 (3.387)
Strata, Session and Order Fixed effects	✓
Observations	1437

Table S1. Correlation between ingroup bias and survey-measured feelings of belonging. Ordinary least squares regressions with individual-question level observations. * 0.10 ** 0.05 *** 0.01. Standard error in parentheses clustered at the individual level.

<i>Dep var: Ingroup correlation beliefs</i>	(1)	(2)
2 salient dimensions	-3.099 (2.334)	-4.043 (2.845)
Government dimension		-5.727* (3.437)
2 salient dimensions × Government dimension		1.878 (3.759)
Constant	7.069*** (1.786)	9.759** (2.325)
Strata, Session and Order Fixed effects	✓	✓
Observations	1232	1232

Table S2. Effects of multiple salient dimensions on ingroup correlation beliefs. Ordinary least squares regressions with individual-question level observations. Out of range beliefs are treated as missing. * 0.10 ** 0.05 *** 0.01. Standard error in parentheses clustered at the individual level.

	1-salient-dimension mean (sd)	2-salient-dimensions mean (sd)	Difference (p-value)
Age	35.730 (13.177)	35.624 (12.993)	0.106 (0.900)
Gender			
Female	0.493 (0.500)	0.475 (0.500)	0.018 (0.577)
Male	0.489 (0.500)	0.498 (0.501)	-0.009 (0.775)
Other or preferred not to say	0.019 (0.135)	0.027 (0.163)	-0.009 (0.366)

Means here reflect proportions within the corresponding population.

Continued on next page...

	1-salient-dimension mean (sd)	2-salient-dimensions mean (sd)	Difference (p-value)
Highest education level completed			
Less than High School Diploma	0.019 (0.135)	0.008 (0.091)	0.010 (0.172)
High School Diploma	0.351 (0.478)	0.326 (0.469)	0.025 (0.415)
Associate's Degree (AA/AS)	0.076 (0.266)	0.118 (0.323)	-0.041* (0.030)
Bachelor's Degree (BA/BS)	0.386 (0.487)	0.370 (0.483)	0.016 (0.613)
Master's Degree (MA/MS/M.Eng)	0.140 (0.348)	0.143 (0.350)	-0.003 (0.906)
Doctoral Degree (PhD)	0.012 (0.111)	0.017 (0.129)	-0.004 (0.567)
Professional Degree (e.g., JD, MD)	0.016 (0.128)	0.019 (0.136)	-0.002 (0.777)
<i>Means here reflect proportions within the corresponding population.</i>			
Annual personal income			
Under \$10,000	0.270 (0.444)	0.242 (0.429)	0.029 (0.312)
\$10,000 to \$19,999	0.124 (0.330)	0.132 (0.339)	-0.009 (0.689)
\$20,000 to \$29,999	0.109 (0.312)	0.109 (0.312)	0.000 (0.999)
\$30,000 to \$39,999	0.107 (0.310)	0.097 (0.296)	0.011 (0.588)
\$40,000 to \$49,999	0.076 (0.266)	0.088 (0.284)	-0.012 (0.501)
\$50,000 to \$59,999	0.074 (0.262)	0.065 (0.247)	0.009 (0.580)
\$60,000 to \$69,999	0.035 (0.184)	0.053 (0.223)	-0.017 (0.187)
\$70,000 to \$79,999	0.054 (0.225)	0.057 (0.232)	-0.003 (0.833)
\$80,000 to \$89,999	0.031 (0.173)	0.040 (0.196)	-0.009 (0.452)
\$90,000 to \$99,999	0.025 (0.155)	0.021 (0.144)	0.004 (0.699)
\$100,000 to \$124,999	0.047 (0.213)	0.034 (0.180)	0.014 (0.278)
\$125,000 to \$149,999	0.012 (0.111)	0.017 (0.129)	-0.004 (0.567)
\$150,000 and above	0.035 (0.184)	0.046 (0.210)	-0.011 (0.382)
<i>Means here reflect proportions within the corresponding population.</i>			

Continued on next page...

	1-salient-dimension mean (sd)	2-salient-dimensions mean (sd)	Difference (p-value)
Ethnicity			
White	0.693 (0.462)	0.662 (0.474)	0.031 (0.304)
Black or African American	0.072 (0.259)	0.101 (0.301)	-0.029 (0.114)
Native American or American Indian	0.004 (0.064)	0.000 (0.000)	0.004 (0.158)
Hispanic or Latino	0.064 (0.245)	0.063 (0.243)	0.001 (0.955)
Asian or Pacific Islander	0.126 (0.332)	0.143 (0.350)	-0.017 (0.438)
Others or Multiracial	0.041 (0.199)	0.032 (0.175)	0.010 (0.421)
<i>Means here reflect proportions within the corresponding population.</i>			
If understood instructions			
Yes	0.988 (0.111)	0.987 (0.112)	0.000 (0.974)
No	0.012 (0.111)	0.013 (0.112)	-0.000 (0.974)
<i>Means here reflect proportions within the corresponding population.</i>			
Made allocation decisions			
Based on my preferences	0.404 (0.491)	0.487 (0.500)	-0.083** (0.009)
Based on what I wanted to do	0.223 (0.416)	0.200 (0.400)	0.023 (0.381)
Based on what I thought the experimenter expected me to do	0.004 (0.064)	0.006 (0.079)	-0.002 (0.640)
Randomly	0.010 (0.101)	0.011 (0.102)	-0.000 (0.976)
Based on gut instinct	0.177 (0.382)	0.130 (0.337)	0.047* (0.043)
Based on what I thought was the socially desired thing to do	0.047 (0.213)	0.034 (0.180)	0.014 (0.278)
Based on what I thought was fair [†]	0.097 (0.296)	0.078 (0.268)	0.019 (0.293)
Other	0.037 (0.189)	0.055 (0.227)	-0.018 (0.195)
<i>Means here reflect proportions within the corresponding population.</i>			
Sample size (n)	485	476	

Table S3. Sample Characteristics. [†]This option only appeared in the third session. * 0.10 ** 0.05 *** 0.01. Standard deviations in parentheses for first two columns. P-values for t-tests in parentheses for third column.

	<i>Subgroup:</i>	Religion Dimension	Government Dimension
<i>Marginal Effect on Raw Ingroup Bias of:</i> Two Salient Dimensions		11.336*** (3.269)	-0.521 (2.938)
Observations			1437

Table S4. Marginal effects of two salient dimensions, relative to one salient dimension, on raw ingroup bias in each identity dimension. Estimates are from an ordinary least squares regression using individual-question level observations. It regresses raw ingroup bias on the interaction between dummies for the number of salient dimensions and dummies for the dimension of allocation. Includes controls for strata, session and order fixed effects. * 0.10 ** 0.05 *** 0.01. Standard errors clustered at individual level in parentheses.

	<i>Subgroup:</i>	Religion Dimension	Government Dimension
<i>Marginal Effects on Raw Ingroup Bias of:</i> 2 salient dimensions		11.295*** (3.314)	-5.955* (3.307)
Ingroup correlation beliefs		0.184*** (0.052)	-0.015 (0.048)
Observations			1232

Table S5. Marginal effects of two salient dimensions relative to one salient dimension, and ingroup correlation beliefs, on raw ingroup bias in each identity dimension. Estimates are from an ordinary least squares regression using individual-question level observations. It regresses raw ingroup bias on the interaction between dummies for the number of salient dimensions, dummies for the dimension of allocation and ingroup correlation beliefs. 215 observations excluded due to out of range beliefs which are treated as missing. Includes controls for strata, session and order fixed effects. * 0.10 ** 0.05 *** 0.01. Standard errors clustered at individual level in parentheses.

	<i>Subgroup:</i>	Religion Dimension	Government Dimension
<i>Marginal Effect on Raw Ingroup Bias of:</i> Feelings of belonging to ingroup		2.572*** (0.636)	4.676*** (0.783)
Observations			1437

Table S6. Marginal effects of feelings of belonging to ingroup, on raw ingroup bias in each identity dimension. Estimates are from an ordinary least squares regression using individual-question level observations. It regresses raw ingroup bias on the interaction between feelings of belonging to ingroup and dummies for the dimension of allocation. Includes controls for strata, session and order fixed effects. * 0.10 ** 0.05 *** 0.01. Standard errors clustered at individual level in parentheses.

<i>Subgroup:</i>	Religion Dimension	Government Dimension
<i>Marginal Effect on ingroup bias of:</i> Two Salient Dimensions	7.424** (3.067)	0.101 (2.752)
Observations	1437	

Table S7. Marginal effects of two salient dimensions, relative to one salient dimension, on ingroup bias in each identity dimension. Estimates are from an ordinary least squares regression using individual-question level observations. It regresses ingroup bias on the interaction between dummies for the number of salient dimensions and dummies for the dimension of allocation. Includes controls for strata, session, order fixed effects as well as whether the participant indicated they understood instructions, whether the participant indicated they made allocation decisions randomly or based on what they thought the experimenter expected them to do, the participant’s age, gender, highest education level completed, personal income level and ethnicity. * 0.10 ** 0.05 *** 0.01. Standard errors clustered at individual level in parentheses.

<i>Dep Var: Feelings of belonging to ingroup</i>	(1)	(2)
Government dimension	-0.577*** (0.123)	-0.682*** (0.215)
2 salient dimensions × Religion dimension		-0.094 (0.229)
2 salient dimensions × Government dimension		0.063 (0.183)
Constant	7.242*** (0.935)	7.320*** (0.954)
Controls	✓	✓
Strata, Session and Order Fixed effects	✓	✓
Observations	1437	1437

Table S8. Effects of multiple salient dimensions by identity dimension on survey-measured feelings of belonging. Ordinary least squares regressions with individual-question level observations. Controls: whether the participant indicated they made allocation decisions randomly or based on what they thought the experimenter expected them to do, the participant’s age, gender, highest education level completed, personal income level and ethnicity. * 0.10 ** 0.05 *** 0.01. Standard error in parentheses clustered at the individual level.

<i>Subgroup:</i>	Religion Dimension	Government Dimension
<i>Marginal Effects on Ingroup bias of:</i>		
2 salient dimensions	8.045*** (3.085)	-4.337 (3.169)
Ingroup correlation beliefs	0.191*** (0.049)	0.008 (0.046)
Observations	1232	

Table S9. Marginal effects of two salient dimensions relative to one salient dimension, and ingroup correlation beliefs, on ingroup bias in each identity dimension. Estimates are from an ordinary least squares regression using individual-question level observations. It regresses ingroup bias on the interaction between dummies for the number of salient dimensions, dummies for the dimension of allocation and ingroup correlation beliefs. 215 observations excluded due to out of range beliefs which are treated as missing. Includes controls for strata, session and order fixed effects as well as whether the participant indicated they understood instructions, whether the participant indicated they made allocation decisions randomly or based on what they thought the experimenter expected them to do, the participant's age, gender, highest education level completed, personal income level and ethnicity. * 0.10 ** 0.05 *** 0.01. Standard errors clustered at individual level in parentheses.

<i>Subgroup:</i>	Religion Dimension	Government Dimension
<i>Marginal Effect on ingroup bias of:</i>		
Feelings of belonging to ingroup	2.176*** (0.602)	3.919*** (0.739)
Observations	1437	

Table S10. Marginal effects of feelings of belonging to ingroup, on ingroup bias in each identity dimension. Estimates are from an ordinary least squares regression using individual-question level observations. It regresses ingroup bias on the interaction between feelings of belonging to ingroup and dummies for the dimension of allocation. Includes controls for strata, session and order fixed effects as well as whether the participant indicated they understood instructions, whether the participant indicated they made allocation decisions randomly or based on what they thought the experimenter expected them to do, the participant's age, gender, highest education level completed, personal income level and ethnicity. * 0.10 ** 0.05 *** 0.01. Standard errors clustered at individual level in parentheses.

Supplementary Information: Experiment Script

Experiment Introduction

Participant Information Sheet

You have been invited to take part in a research study run by researchers at the University of Warwick. Please read the following statements carefully and answer the question below.

Our commitments and privacy policy

- We **never deceive** participants. For example, if we inform you that another participant is making a choice on which you can then react, this is indeed the case.
- We keep our promises made to participants. For example, if we promise a certain payment, participants will indeed receive it. In the event that we are responsible for a mistake that is to the disadvantage of participants, we will inform and compensate the respective participants.
- We design, conduct and report our research in accordance with recognized scientific standards and ethical principles.

We adhere to the terms of our privacy policy as stated below:

The data in the participants' database will only be used for the purpose of the study. There is no link between the personal data in the participants' database and the data collected during a study. The generated anonymous data will be used for analysis. The end product will be publicly available. Your participation in this study is purely voluntary, and you may withdraw your participation or your data at any time without any penalty to you. Please note that the software automatically notes the time you spent on each question and this data will be made available to researchers for analysis.

Please refer to the University of Warwick Research Privacy Notice which is available here:
<https://warwick.ac.uk/services/idc/dataprotection/privacynotices/researchprivacynotice> or by contacting the Information and Data Compliance Team at GDPR@warwick.ac.uk.

This study has been reviewed and given favourable opinion by the University of Warwick's Humanities and Social Science Research Ethics Committee (HSSREC).

If there is anything about the study or your participation that is unclear or that you do not understand, if you have questions or wish to report a research-related problem, you may contact us via messages on Prolific.

If you would like to make a complaint about the way you have been dealt with during the study or any possible harm you might have suffered please address your complaint to the person below, who is a senior University of Warwick official entirely independent of this study:

Jane Prewett (Head of Research Governance)
Research & Impact Services
University House
University of Warwick
Coventry
CV4 8UW
Email: researchgovernance@warwick.ac.uk
Tel: 024 76 522746

If you wish to raise a complaint on how we have handled your personal data, you can contact our Data Protection Officer, Anjali Bajaj, Information and Data Director who will investigate the matter: DPO@warwick.ac.uk.

If you are not satisfied with our response or believe we are processing your personal data in a way that is not lawful you can complain to the Information Commissioner's Office (ICO).

Thank you for taking the time to read this Participant Information Sheet.

- I have read the above and consent to take part in this study
- I do not wish to participate

Next

Participation Agreement

Welcome to the study.

In this study, you will be asked to complete several survey questions. There will also be some tasks which earn you credits. You will interact indirectly with others during the tasks. Your interactions will be anonymous and your anonymity will be strictly preserved.

Credits earned will be converted into US dollars at the rate of 100 Credits: 1 Dollar.

On completing the study, you will be paid a completion fee of \$0.90 plus your task earnings.

Please note that this study is best run on a desktop computer. If you are currently using a mobile phone, please close the window and open the study link on a desktop computer.

Next

General Information

Identity Priming and Elicitation (2 Salient Dimensions)

Firstly, we would like to ask how you stand on the following issues.

"Government intervention is good for society"

- Agree
- Disagree

"The world was created by a divine entity"

- Agree
- Disagree

Next

Identity Elicitation (2 Salient Dimensions)

Based on your answers on the previous page.

You belong to the group which:

 AGREES that:	 DISAGREES that:
<i>"Government intervention is good for society"</i>	

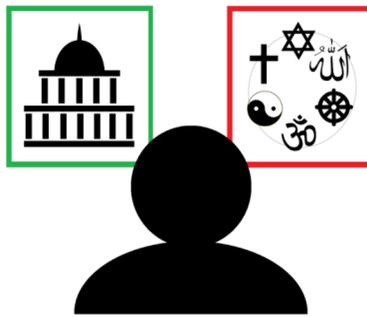
and to the group which:

 AGREES that:	 DISAGREES that:
<i>"The world was created by a divine entity"</i>	



Identity Priming (2 Salient Dimensions)

Based on your answers on the previous page,



YOU



Identity Priming 2 (2 Salient Dimensions)

Identity Priming and Elicitation (Religion Dimension Salient)

Firstly, we would like to ask how you stand on the following issue.

"The world was created by a divine entity"

- Agree
- Disagree

Next

Identity Elicitation (Religion Dimension Salient)

Based on your answer on the previous page,

You belong to the group which:

 <p>AGREES that:</p>	 <p>DISAGREES that:</p>
<p><i>"The world was created by a divine entity"</i></p>	



Identity Priming (Religion Dimension Salient)

Based on your answer on the previous page,



YOU



Next

Identity Priming 2 (Religion Dimension Salient)

Identity Priming and Elicitation (Government Dimension Salient)

Firstly, we would like to ask how you stand on the following issue.

"Government intervention is good for society"

- Agree
- Disagree

Next

Identity Elicitation (Government Dimension Salient)

Based on your answer on the previous page,

You belong to the group which:

 <p>AGREES that:</p>	 <p>DISAGREES that:</p>
<p><i>"Government intervention is good for society"</i></p>	



Identity Priming (Government Dimension Salient)

Based on your answer on the previous page,



YOU



Identity Priming 2 (Government Dimension Salient)

Third-party Allocation Task (2 Salient Dimensions)

Instructions: Allocation Task

Now, you are provided with 100 Credits.

We would like to ask you to allocate the 100 Credits between two randomly selected participants in the study (excluding yourself).

Your decisions will be used to determine the earnings of this randomly selected pair of participants.
Likewise, the decisions of some randomly selected participant in the study will be used to determine your earnings.

You will have to make two sets of decisions. One set of your decisions will be randomly selected to be implemented.
As before, your decisions will remain anonymous.

Please click next to begin.

Next

Allocation Task Instructions (2 Salient Dimensions)

Allocation Task

Consider the two groups that agree/disagree with the statement
"Government intervention is good for society".

You will now have to make allocations based on which of the two groups each of the two randomly selected participants belongs to.

Next

Allocation Task for Religion Dimension (2 Salient Dimensions)

Allocation Task

Please decide how you would like to allocate the 100 credits between the two randomly selected participants if they belong to the groups below:



(Participants could also belong to a group that either agrees or disagrees with the statement "The world was created by a divine entity".)

Note you can use the arrow keys on the keyboard to adjust the slider precisely.

Next

Allocation for 1 Ingroup 1 Outgroup (2 Salient Dimensions)

Allocation Task

Please decide how you would like to allocate the 100 credits between the two randomly selected participants if they belong to the groups below:



(Participants could also belong to a group that either agrees or disagrees with the statement "The world was created by a divine entity".)

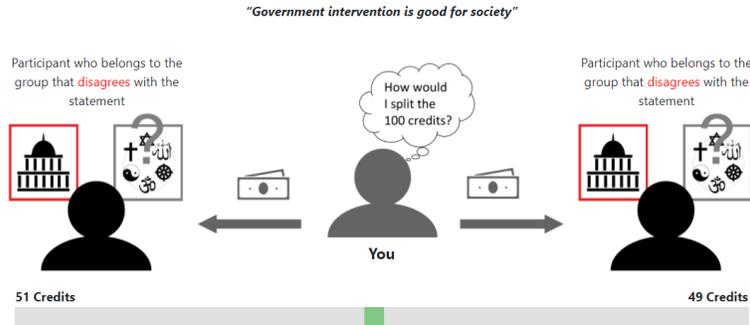
Note you can use the arrow keys on the keyboard to adjust the slider precisely.

Next

Allocation for 2 Ingroups (2 Salient Dimensions)

Allocation Task

Please decide how you would like to allocate the 100 credits between the two randomly selected participants if they belong to the groups below:



(Participants could also belong to a group that either agrees or disagrees with the statement "The world was created by a divine entity".)

Note you can use the arrow keys on the keyboard to adjust the slider precisely.

Next

Allocation for 2 Outgroups (2 Salient Dimensions)

Allocation Task

Your allocations to the two randomly chosen participants can either be based on your decisions in the different scenarios earlier, or not. Which would you like?

- Yes, allocate Credits based on the decisions earlier.
- No, allocate Credits randomly between the two participants.
- No, allocate Credits equally between the two participants.

Next

Allocation Decision for Religion Dimension (2 Salient Dimensions)

Allocation Task

Consider the two groups that agree/disagree with the statement
"The world was created by a divine entity".

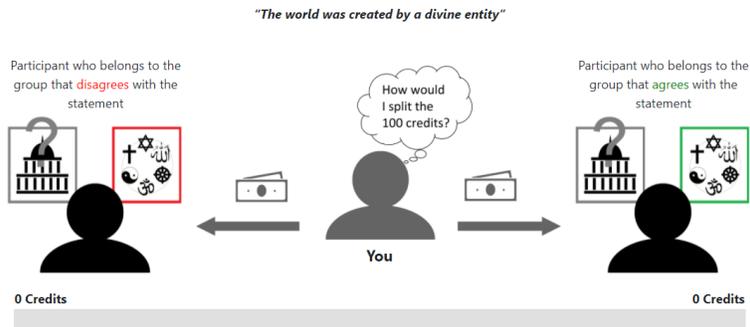
You will now have to make allocations based on which of the two groups each of the two randomly selected participants belongs to.

Next

Allocation Task for Government Dimension (2 Salient Dimensions)

Allocation Task

Please decide how you would like to allocate the 100 credits between the two randomly selected participants if they belong to the groups below:



(Participants could also belong to a group that either agrees or disagrees with the statement: "Government intervention is good for society".)

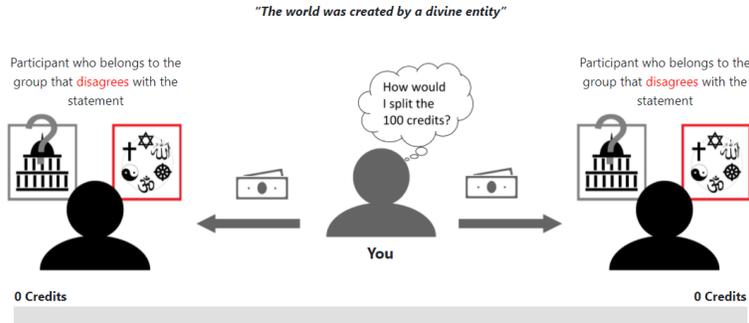
Note you can use the arrow keys on the keyboard to adjust the slider precisely.

Next

Allocation for 1 Ingroup 1 Outgroup (2 Salient Dimensions)

Allocation Task

Please decide how you would like to allocate the 100 credits between the two randomly selected participants if they belong to the groups below:



(Participants could also belong to a group that either agrees or disagrees with the statement "Government intervention is good for society".)

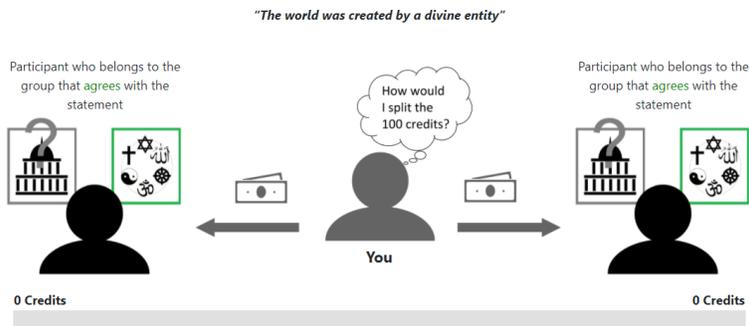
Note you can use the arrow keys on the keyboard to adjust the slider precisely.

Next

Allocation for 2 Ingroups (2 Salient Dimensions)

Allocation Task

Please decide how you would like to allocate the 100 credits between the two randomly selected participants if they belong to the groups below:



(Participants could also belong to a group that either agrees or disagrees with the statement "Government intervention is good for society".)

Note you can use the arrow keys on the keyboard to adjust the slider precisely.

Next

Allocation for 2 Outgroups (2 Salient Dimensions)

Allocation Task

Your allocations to the two randomly chosen participants can either be based on your decisions in the different scenarios earlier, or not.
Which would you like?

- Yes, allocate Credits based on the decisions earlier.
- No, allocate Credits *randomly* between the two participants.
- No, allocate Credits *equally* between the two participants.

Next

Allocation Decision for Government Dimension (2 Salient Dimensions)

Third-party Allocation Task (Religion Dimension Salient)

Instructions: Allocation Task

Now, you are provided with 100 Credits.

We would like to ask you to allocate the 100 Credits between two randomly selected participants in the study (excluding yourself).

Your decisions will be used to determine the earnings of this randomly selected pair of participants.
Likewise, the decisions of some randomly selected participant in the study will be used to determine your earnings.

As before, your decisions will remain anonymous.

Please click next to begin.

Next

Allocation Task Instructions (Religion Dimension Salient)

Allocation Task

Consider the two groups that agree/disagree with the statement
"The world was created by a divine entity".

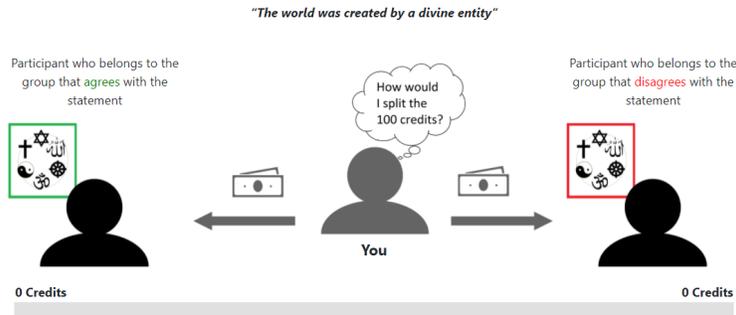
You will now have to make allocations based on which of the two groups each of the two randomly selected participants belongs to.

Next

Allocation Task (Religion Dimension Salient)

Allocation Task

Please decide how you would like to allocate the 100 credits between the two randomly selected participants if they belong to the groups below:



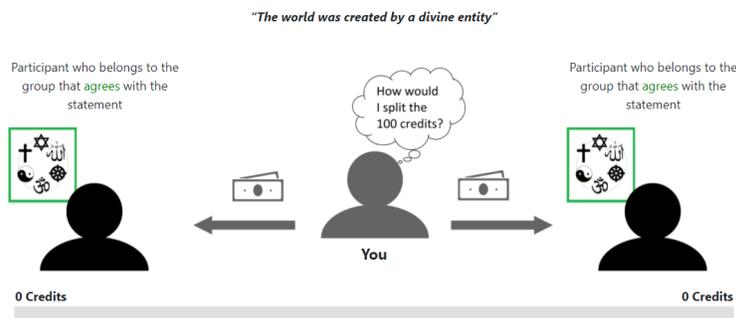
Note you can use the arrow keys on the keyboard to adjust the slider precisely.

Next

Allocation for 1 Ingroup 1 Outgroup (Religion Dimension Salient)

Allocation Task

Please decide how you would like to allocate the 100 credits between the two randomly selected participants if they belong to the groups below:



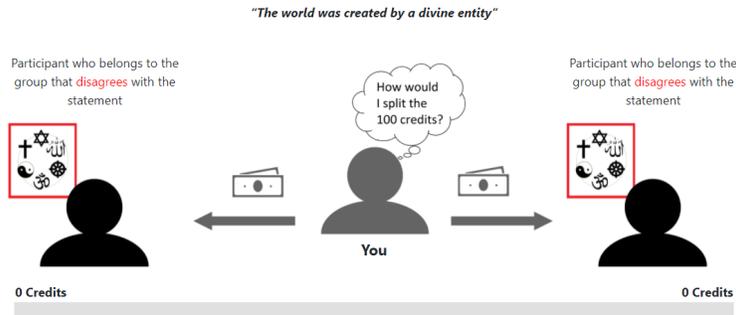
Note you can use the arrow keys on the keyboard to adjust the slider precisely.

Next

Allocation for 2 Ingroups (Religion Dimension Salient)

Allocation Task

Please decide how you would like to allocate the 100 credits between the two randomly selected participants if they belong to the groups below:



Note you can use the arrow keys on the keyboard to adjust the slider precisely.

Next

Allocation for 2 Outgroups (Religion Dimension Salient)

Allocation Task

Your allocations to the two randomly chosen participants can either be based on your decisions in the different scenarios earlier, or not. Which would you like?

- Yes, allocate Credits based on the decisions earlier.
- No, allocate Credits *randomly* between the two participants.
- No, allocate Credits *equally* between the two participants.

Next

Allocation Decision (Religion Dimension Salient)

Third-party Allocation Task (Government Dimension Salient)

Instructions: Allocation Task

Now, you are provided with 100 Credits.

We would like to ask you to allocate the 100 Credits between two randomly selected participants in the study (excluding yourself).

Your decisions will be used to determine the earnings of this randomly selected pair of participants.
Likewise, the decisions of some randomly selected participant in the study will be used to determine your earnings.

As before, your decisions will remain anonymous.

Please click next to begin.

Next

Allocation Task Instructions (Religion Dimension Salient)

Allocation Task

Consider the two groups that agree/disagree with the statement
"Government intervention is good for society".

You will now have to make allocations based on which of the two groups each of the two randomly selected participants belongs to.

Next

Allocation Task (Government Dimension Salient)

Allocation Task

Please decide how you would like to allocate the 100 credits between the two randomly selected participants if they belong to the groups below:



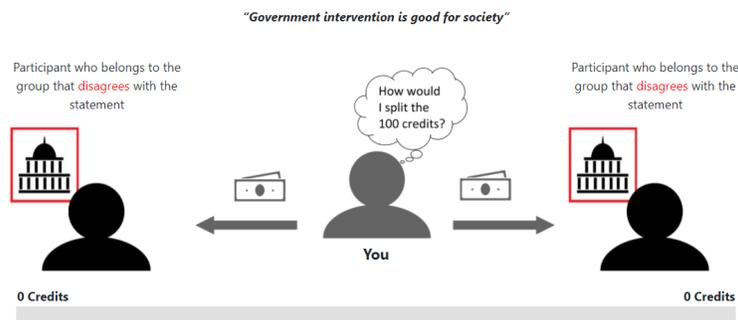
Note you can use the arrow keys on the keyboard to adjust the slider precisely.

Next

Allocation for 1 Ingroup 1 Outgroup (Government Dimension Salient)

Allocation Task

Please decide how you would like to allocate the 100 credits between the two randomly selected participants if they belong to the groups below:



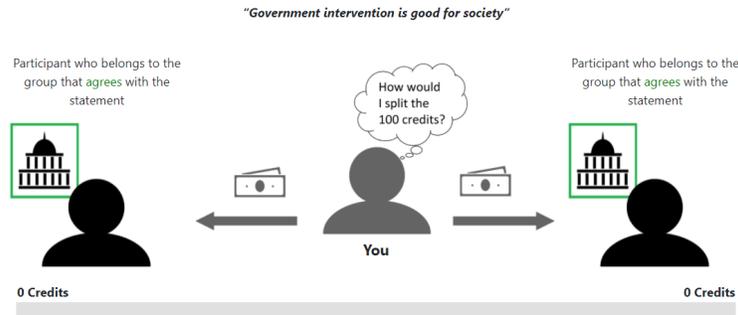
Note you can use the arrow keys on the keyboard to adjust the slider precisely.

Next

Allocation for 2 Ingroups (Government Dimension Salient)

Allocation Task

Please decide how you would like to allocate the 100 credits between the two randomly selected participants if they belong to the groups below:



Note you can use the arrow keys on the keyboard to adjust the slider precisely.

Next

Allocation for 2 Outgroups (Government Dimension Salient)

Allocation Task

Your allocations to the two randomly chosen participants can either be based on your decisions in the different scenarios earlier, or not. Which would you like?

- Yes, allocate Credits based on the decisions earlier.
- No, allocate Credits *randomly* between the two participants.
- No, allocate Credits *equally* between the two participants.

Next

Allocation Decision (Government Dimension Salient)

Identity Elicitation for non-Salient Dimension in 1-Dimension treatment

Now, we would like to ask you several questions about yourself and your experience in the study.

How do you stand on the following issue?

“The world was created by a divine entity”

- Agree
- Disagree

Next

Identity Elicitation for Government Dimension (Religion Dimension Salient)

Now, we would like to ask you several questions about yourself and your experience in the study.

How do you stand on the following issue?

“Government intervention is good for society”

- Agree
- Disagree

Next

Identity Elicitation for Religion Dimension (Government Dimension Salient)

Incentivized Belief Elicitation

Please give your best estimates to the following questions -
the closer your answers are to the true values, the higher will be your earnings in this part.

- One of the four answers will be randomly selected to determine your earnings in this part.
- If your answer selected is equal to the true value (to the nearest integer), you will be given an extra 30 Credits;
- If your answer selected is within 1% of the true value, you will be given an extra 20 Credits;
- If your answer selected is within 2% of the true value, you will be given an extra 10 Credits;
- If your answer selected is not within 2% of the true value, you will not be given any extra Credits.

Q1. Consider all participants who belong to the group that **agrees** with the statement
"The world was created by a divine entity".



What do you think is the proportion of them who belong to the group that **agrees/disagrees** with the statement
"Government intervention is good for society"?



←Q2

Belief Elicitation 1

Please give your best estimates to the following questions -
the closer your answers are to the true values, the higher will be your earnings in this part.

- One of the four answers will be randomly selected to determine your earnings in this part.
- If your answer selected is equal to the true value (to the nearest integer), you will be given an extra 30 Credits;
- If your answer selected is within 1% of the true value, you will be given an extra 20 Credits;
- If your answer selected is within 2% of the true value, you will be given an extra 10 Credits;
- If your answer selected is not within 2% of the true value, you will not be given any extra Credits.

Q2. Consider all participants who belong to the group that **disagrees** with the statement
"The world was created by a divine entity".



What do you think is the proportion of them who belong to the group that **agrees/disagrees** with the statement
"Government intervention is good for society"?



←Q1

→Q3

Belief Elicitation 2

Please give your best estimates to the following questions -
the closer your answers are to the true values, the higher will be your earnings in this part.

- One of the four answers will be randomly selected to determine your earnings in this part.
- If your answer selected is equal to the true value (to the nearest integer), you will be given an extra 30 Credits;
- If your answer selected is within 1% of the true value, you will be given an extra 20 Credits;
- If your answer selected is within 2% of the true value, you will be given an extra 10 Credits;
- If your answer selected is not within 2% of the true value, you will not be given any extra Credits.

Q3. Consider the statement "*The world was created by a divine entity*".

What do you think is the proportion of all participants who belong to the group that **agrees/disagrees** with the statement?



←Q2

→Q4

Belief Elicitation 3

Please give your best estimates to the following questions -
the closer your answers are to the true values, the higher will be your earnings in this part.

- One of the four answers will be randomly selected to determine your earnings in this part.
- If your answer selected is equal to the true value (to the nearest integer), you will be given an extra 30 Credits;
- If your answer selected is within 1% of the true value, you will be given an extra 20 Credits;
- If your answer selected is within 2% of the true value, you will be given an extra 10 Credits;
- If your answer selected is not within 2% of the true value, you will not be given any extra Credits.

Q4. Consider the statement "*Government intervention is good for society*".

What do you think is the proportion of all participants who belong to the group that **agrees/disagrees** with the statement?



If you cannot proceed to the next page, please check that you have answered Q1 to Q4.

←Q3

Submit and Next

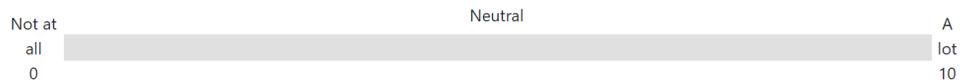
Belief Elicitation 4

Identity Strength Elicitation

Group that disagrees with the statement *"The world was created by a divine entity"*.



To what extent do you see yourself as belonging to the group above? Please indicate using the slider below.



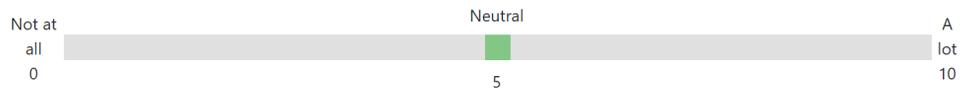
Next

Scale Identity Strength for Religion Dimension

Group that agrees with the statement *"Government intervention is good for society"*.



To what extent do you see yourself as belonging to the group above? Please indicate using the slider below.



Next

Scale Identity Strength for Government Dimension

Post-Experiment Survey Questions

Questions related to decision task

Did you understand the instructions? [*Did understand., Did not understand.*]

Please write here if there is anything unclear about the study

In the allocation task, how did you make the decisions? (Select the option which is most important to you.)

[*I made the decisions based on my preferences., I made the decisions based on what I wanted to do., I made the decisions based on what I thought the experimenter expected me to do., I made the decisions randomly., I made the decisions based on gut instinct., I made the decisions based on what I thought was the socially desired thing to do., I made the decisions based on what I thought was fair.*, Other: Please describe in the textbox below.*]

Demographic questions

In which year were you born?

What is your gender?

[*Male, Female, I would prefer not to say, Other (Please describe below if you wish)*]

What is your highest education level completed?

[*Less than High School Diploma, High School Diploma, Associate's Degree (AA/AS), Bachelor's Degree (BA/BS), Master's Degree (MA/MS/M.Eng), Doctoral Degree (PhD), Professional Degree (e.g., JD, MD)*]

Which state in the US are you currently living in?

What is your annual personal income?

[*Under \$10,000, \$10,000 to \$19,999, \$20,000 to \$29,999, \$30,000 to \$39,999, \$40,000 to \$49,999, \$50,000 to \$59,999, \$60,000 to \$69,999, \$70,000 to \$79,999, \$80,000 to \$89,999, \$90,000 to \$99,999, \$100,000 to \$124,999, \$125,000 to \$149,999, \$150,000 and above*]

Consider the total income brought into your household by all members including yourself. What percentage of this total household income is made up of your income?

[*None - 0%, 0-10%, 10-20%, 20-30%, 30-40%, 40-50%, 50-60%, 60-70%, 70-80%, 80-90%, 90-100%, All - 100%*]

] What is your ethnicity?

[*White, Black or African American, Native American or American Indian, Hispanic or Latino, Asian or Pacific Islander, Others or Multiracial*]

In general, what is your political affiliation?

[*Democrat, Republican, Independent, Other, None*]

What is your religious affiliation?

[*Baha'i, Buddhism, Candomble, Christianity (e.g. Baptist, Church of England, Roman Catholic, Methodist, Jehovah Witness, etc.), Hinduism, Islam, Jainism, Judaism, Non Religious (e.g. Agnostic, Atheist, No Religion), Paganism, Rastafari, Santeria, Shinto, Sikhism, Spiritualism, Taoism, Unitarianism, Zoroastrianism, Other, Do Not Wish to Answer*]

*This option only appeared in the third session.