

When should the majority rule?

Experimental evidence for Madisonian judgments in five cultures

Alexander Bor¹
Aarhus University

Honorata Mazepus
Leiden University

Scott E. Bokemper
Yale University

Peter DeScioli
Stony Brook University

Abstract

In democracies, majority-rule voting is an esteemed rule for collective decisions, but its hazards have recently become apparent after a series of controversial referendums and ascendant populist leaders. Here we investigate people's judgments about when voting is appropriate for collective decisions across five countries with diverse cultures and political institutions (Denmark, Hungary, India, Russia, and USA). Participants read scenarios in which individuals with conflicting preferences need to make a collective decision. They judged whether the group should decide by voting, consensus, leadership, or chance. We experimentally manipulated whether the group contains a vulnerable minority—a smaller number of people with more at stake than the majority. In all five countries, participants generally preferred voting without a vulnerable minority, with relatively greater support for voting in more democratic countries. But, when the group included a vulnerable minority, participants in all countries reduced their support for voting and instead preferred consensus.

Acknowledgements

We are grateful to Gábor Simonovits and the members of the Political Behavior Workshop at Aarhus University for helpful comments. We are indebted to Zsófia Papp, Anna Vancsó, Anna Csonka, Ekaterina Lytkina, Lyudmila Igumnova and many others for their research assistance in Hungary and Russia.

¹ Corresponding author. Mail: alexander.bor@ps.au.dk Address: Bartholins allé 7, Aarhus C, 8000, Denmark.

“Democracy must be something more than two wolves and a sheep voting on what to have for dinner.” –James Bovard (1995)

Introduction

In many contemporary societies, citizens and legislators use majority-rule voting to make a variety of collective decisions including choosing the president, allocating the budget, and passing laws with referendums. Voting gives citizens a say in the government and this personal involvement can increase the government’s perceived legitimacy (Esaïasson, Gilljam, and Persson 2012). Voting can also help rectify long-standing injustices in society by giving voice and power to marginalized groups (Acemoglu and Robinson 2012). However, voting does not always promote the common good, because a majority could make choices that disproportionately harm a minority (Sen 1977; Tullock 1959). In recent times, the hazards of voting have been widely lamented after a series of controversial votes including the Brexit referendum and the increasing electoral success of authoritarian leaders (Norris and Inglehart 2018).

Here we investigate the psychology of majority-rule voting: When do people think a group should use voting to make a collective decision and when is voting inappropriate? We use scenario methods to pose participants with dilemmas in which individuals with conflicting preferences need to make a collective choice. Participants judge whether the group should decide by voting, consensus, unilateral leadership, or chance, and they rate the appropriateness of each decision rule. Across experimental conditions, we manipulate whether the group contains a minority with more at stake than the majority. We use these methods to probe people’s intuitions about voting in five countries with diverse cultures and political institutions.

People’s judgments about voting are likely to vary across cultures. Some countries like the United States have a strong ethos espousing the merits of voting which is continually reinforced beginning in early childhood. In other countries, citizens are not culturally encouraged to admire voting institutions which may play little or no role in their government (Hug and Tsebelis 2002). Hence, people in more democratic countries are expected to be more enthusiastic about voting as a procedure for collective choice.

At the same time, people’s judgments about voting might exhibit themes that span multiple cultures due to a shared, underlying psychology of group decisions. Across all human cultures, people live and work in groups, and they frequently have to make collective decisions when individuals disagree. It is likely that the human mind includes psychological abilities for managing these collective choices, such as an ability to make quick, intuitive judgments about how a group should make a decision, and the abilities to learn and invent new rules for collective choice such as different forms of voting or leadership. These basic psychological abilities comprise a kind of *intuitive political theory* that shapes how people manage collective decisions (DeScioli and Bokemper 2018). This idea builds on an interdisciplinary literature in cognitive science about how people use *intuitive theories* to think, learn, and innovate in multiple domains of experience including language, mathematics, tool use, relationships, and economics (reviewed in Boyer and Petersen 2012; Carey and Gelman 2014).

In the present experiment, we investigate whether people across a range of cultures exhibit a kind of Madisonian intuition that voting is less appropriate when it could harm a

minority. A key insight from Madison and modern social choice theory is that majority-rule voting can do more harm than good when the majority chooses a policy that imposes disproportionate costs on a vulnerable minority (Sen, 1977; Tullock 1959). This problem was expressed in Madison’s (1787) concerns about the “mischiefs of faction” and Mill’s (1869) “tyranny of the majority.” Modern empirical research, too, has examined the harms of voting such as when referendums threaten civil rights or ethnic minorities (Gamble 1997; Bochsler and Hug 2015).

We test the hypothesis that people intuitively understand this problem of vulnerable minorities for majority-rule voting. This theory predicts that people will judge voting to be less appropriate when there is a vulnerable minority. In this case, people will seek alternative decision rules that offer greater protection for minorities such as requiring a consensus. Importantly, avoiding harmful voting can protect not only the minority themselves but also the majority who could otherwise become entangled in costly conflict with a spurned minority.

Indeed, previous research found that participants in the United States judged that voting was less appropriate when the group included a vulnerable minority (DeScioli and Bokemper 2018). Here we extend this work by using the same methods with participants from five different countries (Denmark, Hungary, India, Russia, and United States) that vary considerably in culture, political systems, economic development, and ethnic composition. Given this political diversity, we expect that participants’ support for voting will vary by country according to the cultural prominence of voting and democracy. However, our primary interest is whether people from diverse cultures judge that majority-rule voting is less appropriate when there is a vulnerable minority in the group.

Method

We recruited participants on MTurk (USA, India) and at universities on campus, in classrooms, or by email (Denmark, Hungary, Russia).² As planned in advance, we excluded participants who failed a simple comprehension question ($n = 121$; 15%), yielding a total sample of 690 participants. As expected, the samples are young and slightly politically left-leaning (see Appendix A for sample characteristics).

Participants gave informed consent, read the instructions, and completed the survey on Qualtrics. Participants read three scenarios³ about group decisions in a random order. In each scenario, a small group needs to make a collective decision even though they disagree. The scenarios are designed to describe a few problems of social choice that could arise in everyday life—choosing a restaurant for dinner, choosing an activity for a day trip, and choosing how to divide the profits from selling a company. We used three scenarios to include multiple settings for group decisions (we did not have specific predictions about differences between scenarios).

As in previous research, we deliberately used scenarios about small groups and non-politicized issues in order to focus on participants’ intuitive judgments about social choice, for

² All anonymized reproduction and replication materials are available at the paper’s OSF repository at https://osf.io/4tp9b/?view_only=fbd7aa253f8b408399ec3ff5d041a6c6

³ Participants in Denmark saw only two randomly selected scenarios due to time constraints.

the moment holding aside a variety of political beliefs that would apply to particular decisions in country-specific ways. This research strategy also leverages the idea that people's understanding of national politics builds on their judgments about everyday personal interactions (Petersen and Aarøe 2013).

Across between-subject conditions, we manipulated whether the group had a vulnerable minority—a smaller number of people with more at stake than the majority. For example, in the vulnerable minority condition of the dinner scenario, participants read:

A group of ten people are deciding where to have a dinner event. Seven people want to have the event at a Japanese sushi restaurant. Three people cannot eat sushi because they have fish allergies and they want to have the event at an Italian restaurant instead. They have discussed this issue for a while but haven't come to a conclusion. How should the group decide what to do?

In the control condition, participants read the same scenarios except they stated that “some” individuals preferred each option, without saying how many or whether there was a vulnerable minority (see Appendix B for all materials).

After each scenario, participants answered how the group should decide: voting, consensus, leadership, or chance (with a brief explanation of each decision rule, see Appendix B). Participants also rated the appropriateness of each decision rule on a 7-point scale from very inappropriate to very appropriate (coded -3 to +3). Finally, participants answered demographic questions about their age, sex, and political ideology.

We first examine whether participants' preference for voting varies across countries. We then test the Madisonian hypothesis that participants will show less support for voting when the group contains a vulnerable minority compared to the control scenario.

Results

We combine the three scenarios to determine each participant's percentage of choosing each decision rule. Figure 1 shows participants' choices by country. We first examine preferences for voting in the control condition without a vulnerable minority. As expected, participants' preferences for voting varied by culture, $F(4,349) = 6.56, p < .001$. The lowest support for voting is in Russia ($M = 44\%$), which is the only non-democratic country in the study, and next is India ($M = 49\%$), a new democracy. We find more support for voting in the United States ($M = 57\%$) and Denmark ($M = 65\%$), established democracies, and somewhat surprisingly, Hungary ($M = 58\%$), a new and struggling democracy. This pattern broadly mirrors the levels of democracy in these countries (Freedom House's Democracy scores, see Appendix C). Broken down by scenario, participants from all five countries chose voting most often for the Dinner and Activity scenarios, while consensus was the most frequent decision rule for the Company scenario (see Appendix C).

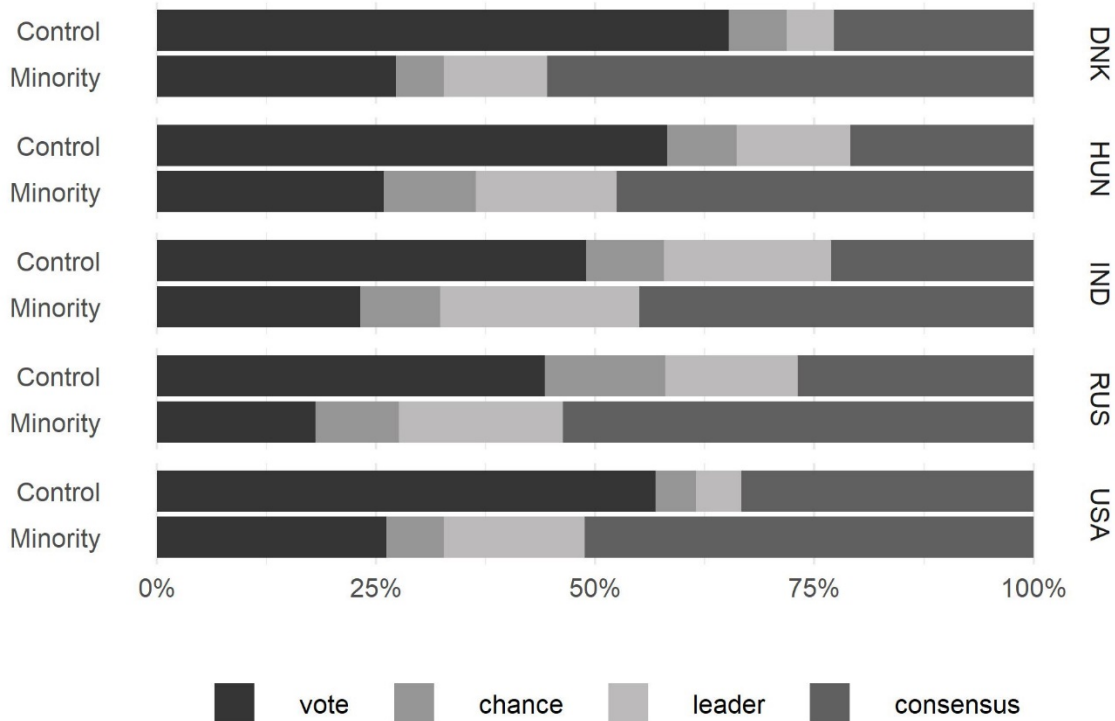


Figure 1. Participants' choices of decision rules by experimental condition (control or vulnerable minority) and country. The results show a high preference for voting (black bars aligned left) in the control condition, which was substantially diminished when a vulnerable minority was present in the group. Meanwhile, participants' preference for consensus (darkest grey shade aligned right) tended to increase with the addition of a vulnerable minority.

Next, we turn to the main experimental prediction about vulnerable minorities. Participants' preferences for voting (Figure 1, black bars aligned left) decrease when there is a vulnerable minority compared to the control condition. Aggregating across scenarios and countries, participants were significantly less likely to choose voting when there was a vulnerable minority ($M = 23\%$) compared to the control condition ($M = 54\%$), $t(674) = 14.47$, $p < .001$. Further, this treatment effect occurred within each of the five countries: Denmark, $\Delta M = -38\%$, $t(125) = 6.33$, $p < .001$; Hungary, $\Delta M = -32\%$, $t(109) = 6.43$, $p < .001$; India, $\Delta M = -26\%$, $t(88) = 5.02$, $p < .001$; Russia, $\Delta M = -26\%$, $t(189) = 8.83$, $p < .001$; and USA, $\Delta M = -31\%$, $t(111) = 5.45$, $p < .001$. Hence, we find support for the Madisonian hypothesis.

Meanwhile, participants' preferences for consensus (dark grey bars aligned right) increase with the addition of a vulnerable minority. In aggregate, participants were more likely to choose consensus when there was a vulnerable minority ($M = 51\%$) than in the control condition ($M = 25\%$), $t(667) = 11.33$, $p < .001$. Indeed, with a vulnerable minority, consensus became the most common choice. Again, this treatment effect occurred within all five countries: Denmark, $\Delta M = 33\%$, $t(103) = 5.44$, $p < .001$; Hungary, $\Delta M = 27\%$, $t(93) = 5.08$, $p < .001$; India, $\Delta M = 22\%$, $t(111) = 4.04$, $p < .001$; Russia, $\Delta M = 27\%$, $t(205) = 7.52$, $p < .001$; and USA, $\Delta M = 18\%$, $t(112) = 3.06$, $p < .01$. In Appendix C, we report additional analyses broken down by scenario and country, and with multilevel multinomial logistic regression models, further confirming that

when there was a vulnerable minority, participants reduced their preferences for voting while increasing their preferences for consensus, supporting the Madisonian hypothesis.

We next examine participants' ratings of appropriateness for each decision rule separately. The appropriateness ratings provide more detail about participants' judgments of each rule, rather than only their relative preferences. In aggregate, participants rated voting as less appropriate when there was a vulnerable minority ($M = 0.11$) than in the control condition ($M = 1.50$), $t(1794) = 17.0$, $p < .001$. Participants rated consensus to be more appropriate when there was a vulnerable minority ($M = 1.35$) compared to the control condition ($M = 0.63$), $t(1924) = 9.3$, $p < .001$. These differences occurred within all five countries (see Appendix D for further analyses by country and scenario).

Discussion

Overall, we find support for the Madisonian hypothesis that people's preference for voting is diminished by the presence of a vulnerable minority. In general, participants from five diverse countries frequently chose voting as the best decision rule for resolving conflicting preferences. As expected, support for voting also varied across countries, approximately following the nation's level of democracy. Among this variation, we also found a consistent theme across countries: Participants showed less support for voting when there was a vulnerable minority compared to the control condition. With a vulnerable minority, participants shifted their preference to consensus, which is revealing because consensus was the only available alternative that inherently protects minority interests. This pattern occurred within all five countries amid their substantial differences in political institutions, economic development, and culture.

This experiment has a number of limitations that can be expanded upon in future research. For instance, participants did not have a personal stake in the conflicts. We suspect that with a personal stake, people have a strong motive to favor whichever rule is most likely to achieve their own goals. This could potentially override their Madisonian judgments causing them to favor voting when they are in the majority, even if it does greater harm to a vulnerable minority. Also, we purposefully used interpersonal scenarios unconnected to current politics, which we regard as a crucial initial step for understanding people's basic judgments about group decisions. Future research can build on this foundation to address current political issues such as whether a government should use referendums to resolve political conflicts such as whether to expand public health care, allow rent control, or open borders to immigrants.

Subject to these limitations, the current findings have implications for how people judge the legitimacy of voting as a rule for resolving disagreements in society. This experiment supports the broader theory that people have distinct intuitions about how groups should make decisions in different situations. When these expectations are violated, people generally perceive the resulting decisions as less legitimate and deserving of respect (Hibbing and Alford 2004). More specifically, like Madison and Mill, citizens might view majority-rule voting as illegitimate when they believe that a minority could be considerably harmed by a vote. To recall the opening quote, people appear to intuitively understand that voting does not always protect a minority of sheep from a majority of wolves, calling for discernment about the kinds of collective decisions for which voting is best suited.

References

- Acemoglu, Daron, and James A. Robinson. 2012. *Why Nations Fail: The Origins of Power, Prosperity, and Poverty*. New York: Crown Business.
- Bochsler, Daniel, and Simon Hug. 2015. "How Minorities Fare under Referendums: A Cross-National Study." *Electoral Studies* 38: 206–16. doi:10.1016/j.electstud.2015.02.005.
- Bovard, James. 1995. *Lost Rights: The Destruction of American Liberty*. New York: St Martin's Griffin.
- Boyer, Pascal, and Michael Bang Petersen. 2012. "The Naturalness of (Many) Social Institutions: Evolved Cognition as Their Foundation." *Journal of Institutional Economics* 8 (01): 1–25. doi:10.1017/S1744137411000300.
- Carey, Susan, and Rochel Gelman. 2014. *The Epigenesis of Mind: Essays on Biology and Cognition*. New York: Psychology Press.
- DeScioli, Peter, and Scott E. Bokemper. 2018. "Intuitive Political Theory: People's Judgments About How Groups Should Decide." *Political Psychology*, October. doi:10.1111/pops.12528.
- Esaiasson, Peter, Mikael Gilljam, and Mikael Persson. 2012. "Which Decision-Making Arrangements Generate the Strongest Legitimacy Beliefs? Evidence from a Randomised Field Experiment." *European Journal of Political Research* 51 (6): 785–808.
- Gamble, Barbara S. 1997. "Putting Civil Rights to a Popular Vote." *American Journal of Political Science* 41 (1): 245–69.
- Hibbing, John R., and John R. Alford. 2004. "Accepting Authoritative Decisions : Humans as Wary Cooperators." *American Journal of Political Science* 48 (1): 62–76.
- Hug, Simon, and George Tsebelis. 2002. "Veto Players and Referendums around the World." *Journal of Theoretical Politics* 14 (4): 465–515. doi:10.1177/095162902774006831.
- Madison, James. 1787. "Federalist No. 10." In *The Federalist*, edited by Henry B. Dawson, 55–64. New York: Charles Scribner.
- Mill, John Stuart. 1869. *On Liberty*. London: Longmans, Green, Reader and Dyer.
- Norris, Pippa, and Ronald Inglehart. 2018. "Understanding Brexit: Cultural Resentment Versus Economic Grievances." *Paper for Presentation at the American Political Science Association's Annual Convention, Boston.; HKS Working Paper No. RWP18-021*.
- Petersen, Michael Bang, and Lene Aarøe. 2013. "Politics in the Mind's Eye: Imagination as a Link between Social and Political Cognition." *American Political Science Review* 107 (02): 275–93. doi:10.1017/S0003055413000026.
- Sen, Amartya K. 1977. "Rational Fools: A Critique of the Behavioral Foundations of Economic Theory." *Philosophy & Public Affairs* 6 (4): 317–44.
- Tullock, Gordon. 1959. "Problems of Majority Voting." *Journal of Political Economy* 67 (6): 571–79. doi:10.1086/258244.

Online Appendix

Table of Contents

Appendix A – Sample characteristics and country differences	2
Appendix B – Experimental scenarios.....	4
Dinner Scenario	4
Activity Scenario	4
Company Scenario.....	4
On the selection of four decision rules.....	5
Appendix C – Additional analyses of participants’ choice of decision rule	6
Preference for voting and levels of democracy.....	6
Choice of decision rule broken down by scenario	7
Multilevel multinomial logistic regression for choice of decision rule	7
Appendix D – Additional analyses of appropriateness ratings	9
The appropriateness of voting and minority effects by country.....	9
Appropriateness of decision rule broken down by scenario	10
Multilevel models for the appropriateness of voting and consensus	12
Appendix E – Main analysis without excluding comprehension failures.....	13

Appendix A – Sample characteristics and country differences

Table A1 shows the demographics of the five samples. All samples are relatively young and slightly left leaning (on a 1-7 scale). Overall, the samples provide considerable variation in national, political, and cultural contexts, even if each sample is obviously not representative of the nation as a whole.

Table A1. Sample characteristics

Country	Sampling	<i>n</i>	Female	Age (<i>SD</i>)	Ideology (<i>SD</i>)
Denmark ¹	University students	139	55%	20.7 (1.3)	3.76 (1.27)
Hungary	University students	113	48%	21.7 (1.9)	4.04 (1.06)
India	Mechanical Turk	115	32%	33.1 (9.1)	3.57 (1.78)
Russia	University students	209	72%	22.1 (4.6)	3.31 (1.30)
USA	Mechanical Turk	114	40%	34.1 (10.5)	3.23 (1.85)

Table A2 summarizes key political and social differences between the five countries based on four indicators. The democracy score reflects the democratic institutions in society. The economic development of a country may affect the vulnerability of different groups in society. Ethnic fractionalization indicates the potential for vulnerable minorities based on ethnicity. The number of political parties indicates the potential for political groups that could become marginalized, vulnerable minorities.

Overall, the table shows considerable variation. Politically, four countries are democratic, while Russia is a non-democratic regime. Economically, Denmark and the USA are rich countries, whereas Hungary and Russia are relatively poorer, and India is considerably poorer. Ethnically, Denmark and Hungary are homogeneous, whereas India and the USA are heterogeneous, with Russia in the middle. In terms of political parties, there are large differences in party systems ranging from the House of Representatives in the US, which has a two-party system to India with a multiparty system.

Table A2. Political and social differences between samples

	Democracy score (2017) ^a	GDP PPP (2016) ^b	Ethnic fractionalization (2003) ^c	Effective number of parties at the electoral level (year) ^d
Denmark	97	\$49,496	0.08	5.86 (2015)
Hungary	76	\$26,681	0.15	3.22 (2014)
India	77	\$6,572	0.42	6.82 (2014)
Russia	20	\$23,163	0.25	3.14 (2016)
USA	89	\$57,467	0.49	2.14 (2016)

a. Freedom House's Freedom in the World 2017 report. Aggregate scores reflecting both political rights and civil liberties: 0 = least free, 100 = most free. <https://freedomhouse.org/report/fiw-2017-table-country-scores> accessed [2018.07.28.]

¹ The Danish sample differs from the other four samples in that participants were randomly presented with two of the three scenarios due to time constraints. This feature of the data affects none of the analyses reported in the paper or this appendix.

- b. World Bank's estimates of per capita Gross Domestic Product at purchasing power parity [https://en.wikipedia.org/wiki/List_of_countries_by_GDP_\(PPP\)_per_capita](https://en.wikipedia.org/wiki/List_of_countries_by_GDP_(PPP)_per_capita) accessed [2018.07.28.]
- c. Ethnic fractionalization index developed by Alberto Alesina; et al. (2003). "Fractionalization". *Journal of Economic Growth*. 8: 155–194. doi:10.1023/a:1024471506938. The numbers reflect the probability that two randomly drawn individuals from a country are not from the same group. Data retrieved from https://en.wikipedia.org/wiki/List_of_countries_ranked_by_ethnic_and_cultural_diversity_level accessed [2018.07.28.]
- d. Gallagher, Michael, 2018. Election indices dataset at http://www.tcd.ie/Political_Science/people/michael_gallagher/EISystems/index.php accessed [2018.07.28.]

Appendix B – Experimental scenarios

The treatment differences are shown with colored font, blue for the control condition and red in brackets for the vulnerable minority condition.

Dinner Scenario

A group of ten people are deciding where to have a dinner event. Some people prefer to have sushi at the event and others prefer to have the event at an Italian restaurant instead. [Seven people want to have the event at a Japanese sushi restaurant. Three people cannot eat sushi because they have fish allergies and they want to have the event at an Italian restaurant instead.] They have discussed this issue for a while but haven't come to a conclusion. How should the group decide what to do?

Activity Scenario

A group of ten people rented a boat and they are deciding where to go for a day trip. Some people prefer to go to the beach, while other people prefer to go to the waterfall. [Seven people want to go down the river to a beach. Three people do not like the beach because they sunburn very easily, and they want to go up the river to a waterfall instead.] They have discussed the issue for a while but haven't come to a conclusion. How should the group decide what to do?

Company Scenario

A group of ten people are selling their software company and deciding how to divide the profits. All ten people contributed equal investments to start the company, but some people worked more hours than other people to grow the company. Some people think that they should divide the profits equally, and some people think they should divide the profits based on how much work each person contributed. [three of the people did all of the work creating and selling the software. The seven who invested without working think the profits should be divided equally. The three who did the work think they should receive a larger share of the profits.] They have discussed the issue for a while but haven't come to a conclusion. How should the group decide what to do?

Dependent measures

1. In your opinion, which of the following four decision rules is best for this situation?
 - **A leader should decide.** One person should take a leadership role and make the decision for the group.
 - **The group should debate until a consensus is reached.** All group members should debate the options until everyone agrees on which option to choose.
 - **The group should vote.** The group should vote on the options and choose the option that receives the most votes.
 - **The group should use a chance process.** The group should use a random process such as flipping a coin, rolling dice, drawing straws, or picking names out of a hat.

2. For the next four items, rate the appropriateness of each decision rule for solving the group's problem. (1 = very inappropriate; 7 = very appropriate)
 - A leader should decide
 - The group should discuss until consensus is reached
 - The group should vote
 - The group should use chance

On the selection of four decision rules

Previous research found that in free responses, participants spontaneously proposed voting, consensus, leadership, and chance as procedures for making a variety of group decisions; no other decision rule was mentioned by a substantial portion of participants (>5%; DeScioli and Bokemper, in press). Although our primary focus is on majority-rule voting, and to a lesser extent consensus, we included all four decision rules to ensure that preferences for voting or consensus were not due to limited response options.

Appendix C – Additional analyses of participants’ choice of decision rule

Preference for voting and levels of democracy

Figure C1 shows participants’ choice of voting (% , y axis) in each country by the level of democracy in the country (x axis), based on the Freedom House’s 2017 democracy scores. To focus on general preferences, the figure includes only the control condition in which the scenarios did not have a vulnerable minority. Although a small number of data points warrants caution, they appear to be correlated, $r(3) = 0.83$, $p = 0.08$.

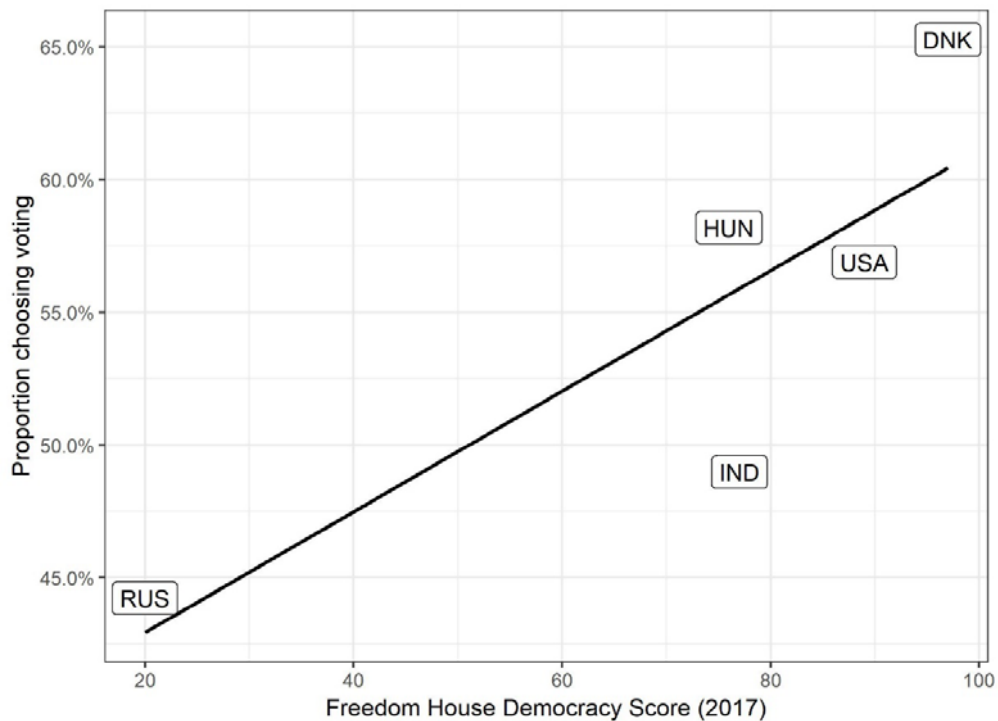


Figure C1. Participants’ choice of voting (%) by their country’s level of democracy.

Choice of decision rule broken down by scenario

Figure C2 shows participants choices broken down by scenario.

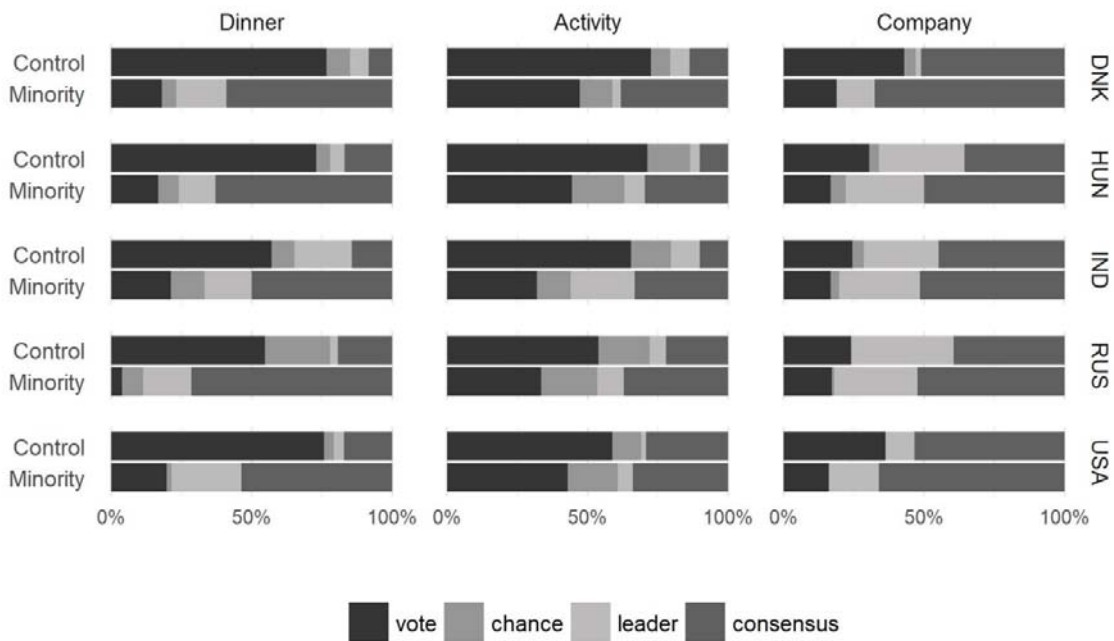


Figure C2. Participants' choice of decision rule by country and scenario.

Multilevel multinomial logistic regression for choice of decision rule

We also analysed participants' choices with multilevel multinomial logistic regression. This model estimates the overall effect of the vulnerable minority on the probability of each choice while accounting for the fact that participants completed multiple scenarios and were clustered by country. The model allows varying intercepts for individuals and both varying intercepts and slopes for the 15 country \times scenario combinations. In other words, the model allows the baseline preferences for the four decision rules to vary across participants, and for both the baseline preferences and the minority effect to vary across scenarios and countries.

Because we are most interested in voting, we used it as the reference category in the analysis so that each effect is interpretable as the difference between a given rule (consensus, leadership, or chance) and voting as the reference category. Thereby, the model estimates the baseline preference for voting and the minority effect on the preference for voting in comparison with each of the other decision rules. We used the *brms* package in R to run the analysis, and the code is in the paper's OSF repository.

Table C1 shows the main results. The intercepts estimate the likelihood of each choice compared to voting in the control condition. The negative coefficients (and CIs) indicate that consensus, leadership and chance are all chosen significantly less often than voting in the control condition without a vulnerable minority.

The vulnerable minority effects estimate the change in the likelihood of choosing each option relative to voting when the group included a vulnerable minority. The positive coefficients indicate that participants were more likely to choose other options besides voting when there was a vulnerable minority. Finally, we note that although the minority effects for consensus and leadership were similar in size, participants were most likely to choose

consensus in absolute terms, since the baseline preference for consensus was greater (i.e., the added intercept and minority effect is greatest for consensus). In short, this multilevel multinomial logistic regression model reaffirms the findings from the main text.

Table C1. Multilevel multinomial regression model of choice of decision rule

	Consensus vs. Vote	Leader vs. Vote	Chance vs. Vote
Intercept	-0.92 (-1.58, -0.33)	-2.24 (-3.12, -1.42)	-2.74 (-3.58, -2.02)
Vulnerable minority	1.73 (1.13, 2.35)	1.62 (0.91, 2.36)	0.85 (0.34, 1.39)

Note: N = 1931. The model includes random intercepts for participants and random intercepts and slopes for scenario and country. The 95% confidence intervals are in parentheses.

Appendix D – Additional analyses of appropriateness ratings

The appropriateness of voting and minority effects by country

We combine the three scenarios by averaging participants' ratings of voting across the three scenarios. We first examine the appropriateness of voting in the control condition without a vulnerable minority. As shown in Figure D1, participants' judgments of voting varied by country, $F(4, 973) = 6.14, p < .001$.

We next examine the effect of the vulnerable minority by country (Figure D1). In all five countries, participants judged that voting is less appropriate when the group contains a vulnerable minority: Denmark, $\Delta M = -1.59, t(98) = 6.37, p < .001$; Hungary, $\Delta M = -1.54, t(86) = 6.48, p < .001$; India, $\Delta M = -0.97, t(113) = 4.27, p < .001$; Russia, $\Delta M = -1.48, t(201) = 8.68, p < .001$; and USA, $\Delta M = -1.42, t(93) = 6.09, p < .001$.

Meanwhile, participants judged that consensus is more appropriate when there is a vulnerable minority: Denmark, $\Delta M = 0.78, t(123) = 2.98, p < .001$; Hungary, $\Delta M = 1.12, t(108) = 4.10, p < .001$; India, $\Delta M = 0.73, t(93) = 3.10, p < .001$; Russia, $\Delta M = 0.71, t(205) = 4.27, p < .001$; and USA, $\Delta M = 0.21, t(110) = 0.94, p < .001$. Overall, these results for participants' appropriateness ratings show the same patterns as for their choice of decision rule (reported in the main text).

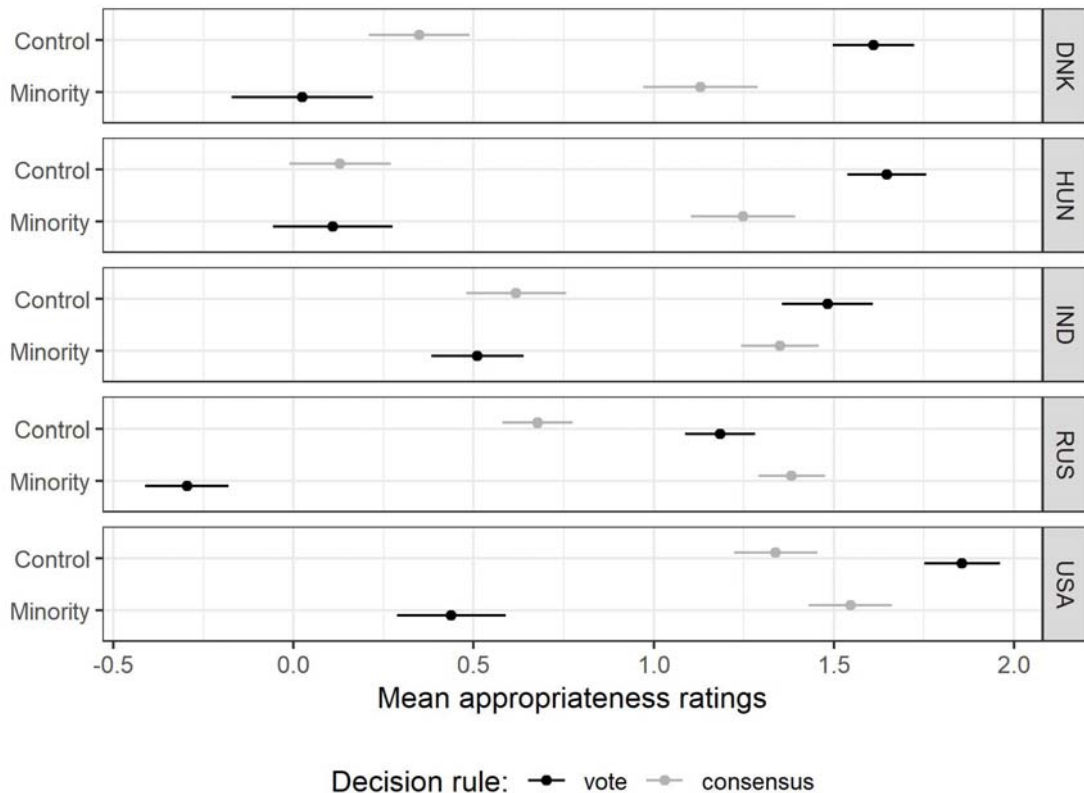


Figure D1. Appropriateness of voting and consensus by country. The ratings are averaged across the three scenarios. The error bars are standard errors.

Appropriateness of decision rule broken down by scenario

We also present participants' appropriateness ratings broken down by scenario; Figure D2 shows the appropriateness of voting and consensus, and Figure D3 shows leadership and chance.

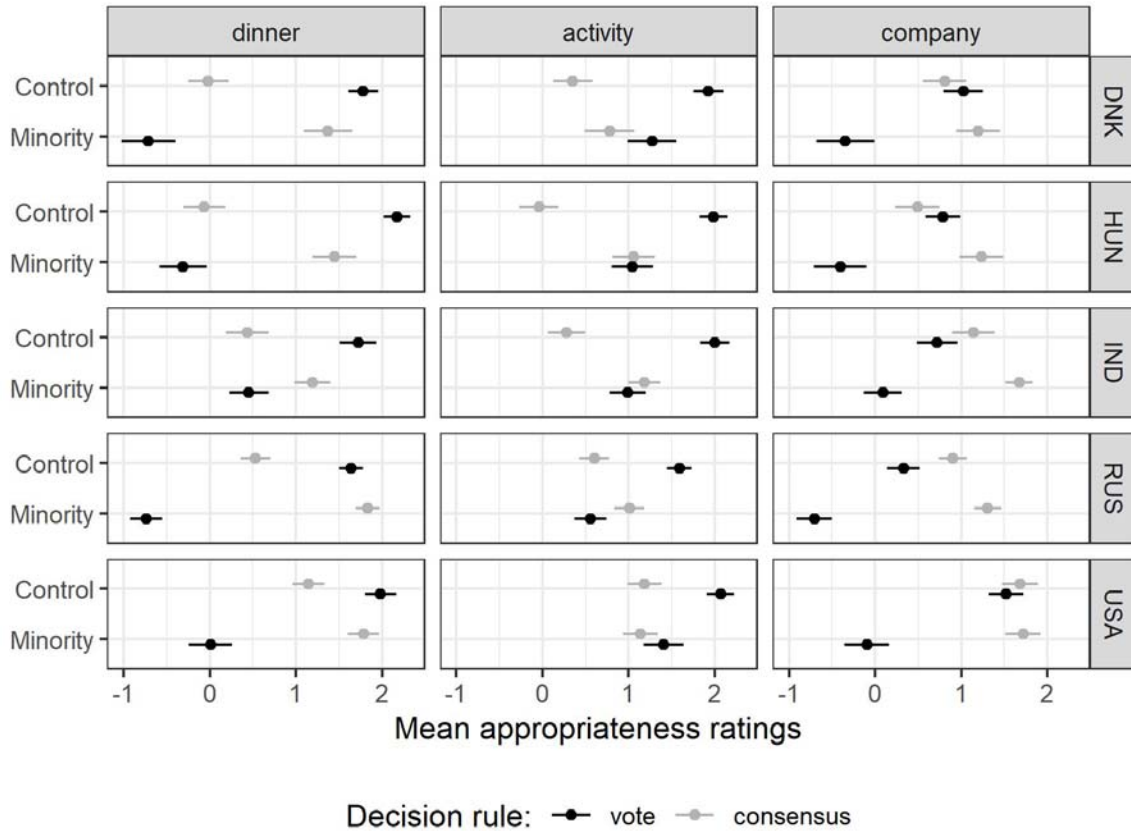


Figure D2. Participants' ratings of appropriateness for voting and consensus. Participants generally rated voting (black) as less appropriate when there was a vulnerable minority compared to the control condition, and they rated consensus (grey) as more appropriate when there was a vulnerable minority. Error bars are standard errors.

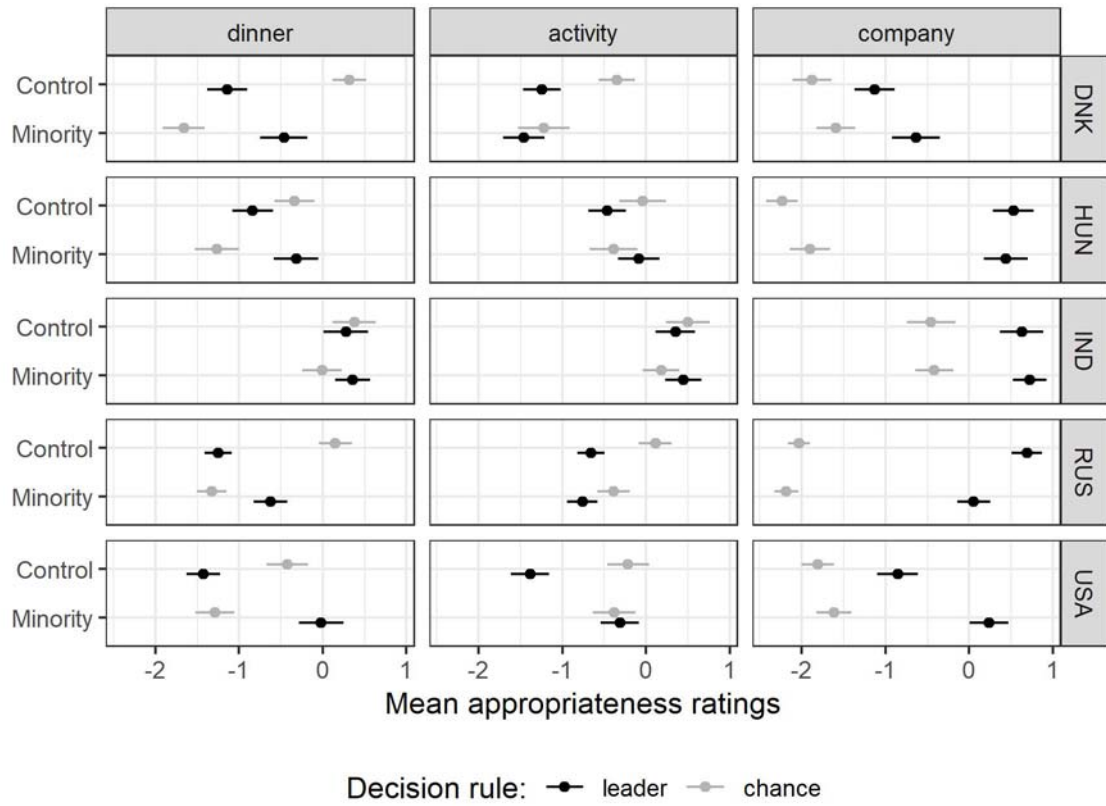


Figure D3. Participants' ratings of appropriateness for leader and chance. Error bars are standard errors.

Multilevel models for the appropriateness of voting and consensus

We also analyzed appropriateness ratings with multilevel regression models. We conducted a multilevel regression model of the appropriateness of voting with a predictor for whether there was a vulnerable minority, while allowing for varying intercepts for individuals as well as varying slopes and intercepts for country \times scenario combinations (as before with participants' choices). Table D1, Model 1 shows the results. As in our analysis of choices, participants rated voting as highly appropriate in the control condition without a vulnerable minority. The negative effect of the vulnerable minority shows that participants rated voting as less appropriate when there was a vulnerable minority.

We conducted the same regression analysis for consensus ratings (Table D1, Model 2). As before, the vulnerable minority increased the appropriateness of consensus.

Table D1. Multilevel models for the appropriateness of voting and consensus

	Vote (1)	Consensus (2)
Intercept	1.548*** (1.244, 1.853)	0.625*** (0.372, 0.877)
Vulnerable minority	-1.385*** (-1.748, -1.022)	0.712*** (0.439, 0.985)
Observations	1,931	1,931
Log Likelihood	-3,726.380	-3,638.012

Note: *** $p < 0.01$, The model includes random intercepts for participants and random intercepts and slopes for scenario and country. The 95% confidence intervals are in parentheses.

Appendix E – Main analysis without excluding comprehension failures

As planned in advance, in the main analysis we excluded participants who failed the comprehension check, which was a simple question about the scenarios they read. Figure E1 shows the main results without excluding any participants, which show the same patterns as in the main analysis. The overall treatment effects are unaffected by exclusions: pooling across countries and scenarios, participants chose voting significantly less often in the vulnerable minority condition ($M = 23\%$) than the control condition ($M = 51\%$), $t(775) = 13.8$, $p < .001$. Further, more participants in the vulnerable minority condition ($M = 48\%$) selected consensus compared to the control condition ($M = 26\%$), $t(787) = 10.5$, $p < .001$.

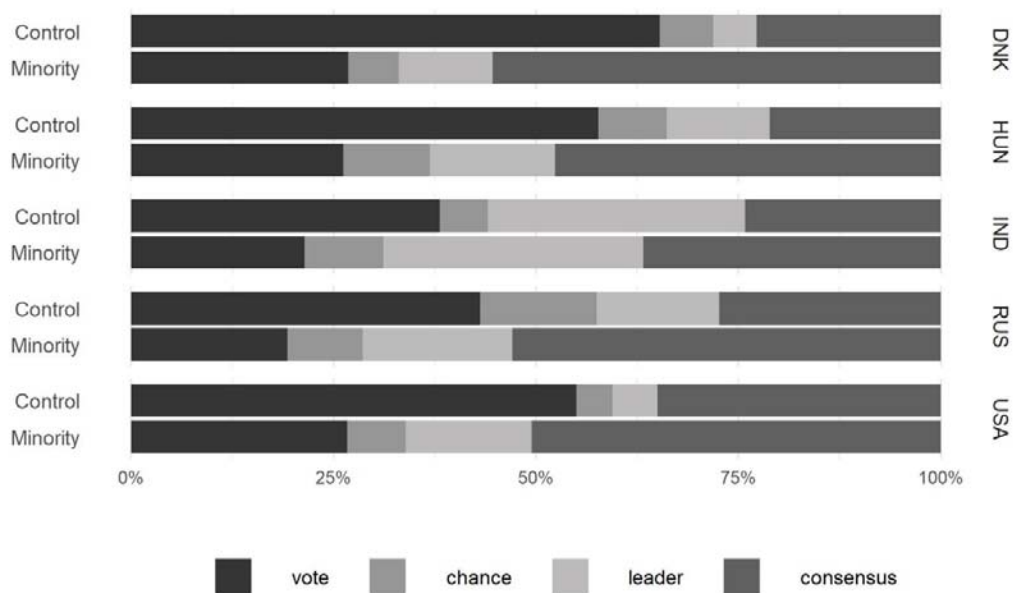


Figure E1. Participants' choice of decision rule in each country without excluding comprehension failures