The threshold effect in votes for moral transgressions

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Abstract

Rothenhäusler, Schweizer and Szech (2018) propose a model of group moral decision-making where individuals seek to avoid personal or shared responsibility for selfish group outcomes. This model predicts that as the number of selfish votes required for that option to succeed increases, more individuals vote selfishly because free-riding becomes more difficult and responsibility diffuses among more voters. We confirm this prediction in experimental elections requiring a single vote, a majority, or unanimity to pass the selfish option. We additionally find that individuals acting in isolation choose selfishly as often as voters in the unanimity rule elections; that is, group members are slightly *less* selfish than individuals overall. Finally, self-reported beliefs about the likelihood of being pivotal reveal evidence of expressive voting, though this cannot explain the observed threshold effect.

JEL Classification: C92, D02, D63, D71
Keywords: Voting, group decisions, diffusion of responsibility, prosocial behavior

1 Introduction

How do voting rules influence people's willingness to support morally questionable acts? Individuals and groups often face morally difficult choices, pitting material self-interest against a more "moral" or "ethical" alternative. When confronting this choice, individuals must weigh outcome-based motives (e.g., self-interest, social preferences) against image concerns and guilt incurred from personally supporting the action. The trade-off becomes more complex when group members must cast independent votes to determine whether to collectively commit a moral transgression that benefits them. In this case, decision-makers may free-ride on others' immoral choices, preserving their own conscience. Conversely, those who support the act may incur lower moral costs as responsibility diffuses among all who supported the transgression. These strategic considerations suggest that the particular voting rule strongly influences these calculations and the ultimate occurrence of the transgression.

To formalize these mechanisms, Rothenhäusler, Schweizer and Szech (2018) model the decision to vote for a moral transgression as a threshold public goods problem. In this model, the "public good" is, ironically, the implementation of an immoral outcome benefiting all group members, and the threshold represents the votes required for the transgression to pass. The costs of "contributing"

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a vote for the transgression comprise three distinct components: a fixed moral cost, a "shared guilt/responsibility" cost that diffuses as more individuals take the action, and a cost incurred from knowing one's vote was pivotal in passing the transgression. A key theoretical prediction of this model is a voting threshold effect: Under the unique symmetric Bayesian Nash equilibrium (in which the transgression occurs with positive probability), the number of immoral votes increases with the voting rule's threshold.[1]

We present experimental results confirming the threshold effect in elections with moral considerations. Participants chose between a larger personal payment or an allocation that included a donation to a charitable cause. They made this choice as either decisive individuals or by voting in a group of nine. In the latter case, we further varied whether 1, 5, or 9 votes were required to pass the selfish outcome. In the voting treatments, our results exhibit a clear threshold effect, with selfish votes rising from 45% in the threshold-1 treatment (when unanimity is required to pass the moral option) to 57% in the threshold-9 treatment (when unanimity is required to pass the selfish option). Individuals chose selfishly about 56% of the time — similar to those in the Threshold-9 treatment, who cannot free-ride on others' selfish choices but can diffuse their responsibility.

Overall, our results confirm the threshold effect hypothesized by Rothenhäusler, Schweizer and Szech (2018) and corroborate the experimental findings of Feess, Kerzenmacher and Muehlheusser (2023), who find that members of 3-person groups are more likely to vote to take money from a charity when doing so requires three votes than when it requires a single vote. They additionally isolate the role of guilt sharing in driving this threshold effect, distinguishing it from purely strategic considerations. They do so by using the strategy method to demonstrate that those who know themselves to be pivotal are still more willing to support the transgression when the voting threshold is higher.[2]

We also add to this literature with an analysis of participants' beliefs. Voters correctly anticipate this threshold effect: the predicted share of selfish choices among groups of eight others was highest in the threshold-9 and individual conditions and lowest in the threshold-1 condition. However, their beliefs about the likelihood of being pivotal diverge significantly from reality: those in the threshold-9 condition believed their chances of being pivotal were nearly 50%, when in fact the true likelihood was closer to 1%. Expressive voting, in which votes are more prosocial when the perceived risk of incurring real costs is small, manifests in our data as a correlation between these pivotal beliefs and selfish voting. Notably, relying on the exogenous change in pivotal probabilities to identify expressive voting proves ineffective due to the inaccuracy of these beliefs. We therefore emphasize that measuring beliefs (Tyran, 2004; Duffy and Tavits, 2008; Falk, Neuber and Szech, 2020, for instance) is an essential step when testing theories related to pivotality, at least when true probabilities are non-trivial.

Consistent with this advice, we consider the possibility that expressive voting drives the threshold effect, rather than relying on the theoretical prediction that it should cause lower selfish voting in threshold-9 than in threshold-5. We show that the threshold effect remains undiminished after controlling for pivotal beliefs, and therefore conclude that our results support the guilt-sharing mechanism proposed by Rothenhäusler, Schweizer and Szech (2018).

More broadly, our paper adds to the large literature on the difference between group and individ-

[1]This is true so long as there is either a fixed moral cost of voting for a realized transgression and/or a diffuse moral cost that decreases with co-conspirators. If the moral cost only accrues to those who are pivotal, then there would not exist a threshold effect.

[2]This experiment was conducted the year before ours and we were unaware of this work when conducting our experiment.

ual decision making. This literature broadly concludes that groups make more rational (Charness and Sutter, 2012) and polarized (i.e., by amplifying the tendency of individuals) decisions (e.g. Gershoni, 2021; Ambrus, Greiner and Pathak, 2015). The deliberative process likely contributes to this phenomenon (Glaeser and Sunstein, 2009; Roux and Sobel, 2015; Kocher, Schudy and Spantig, 2017), but even without group deliberation, groups make different moral decisions than individuals. Many of these studies observe that individuals act more self-interestedly when acting as part of a group (Dana, Weber and Kuang, 2007; Conrads et al., 2013; Barr and Michailidou, 2017; Behnk, Hao and Reuben, 2022); however, exceptions occur (Brütt, Schram and Sonnemans, 2020). While our group treatments support the diffused responsibility mechanism, our individual treatment demonstrates that individuals acting in isolation are not always more virtuous than groups.

More specifically, our study relates to a small number of other experimental comparisons of pair or small group choices when different numbers of participants are required to agree to impose the selfish outcome. Neither Behnk, Hao and Reuben (2022) nor Brütt, Schram and Sonnemans (2020) find statistically significant differences when requiring either one or both members of a partnership to vote for the selfish outcome.[3] Ginzburg, Guerra and Lekfuangfu (2022) compare majority versus unanimity rule in groups of 3, 5, and 9, and report a difference consistent with the threshold effect, though they attribute their findings to expressive voting. Finally, Feess, Kerzenmacher and Muehlheusser (2023) also report a threshold effect in groups of three, and we confirm their attribution of this effect to shared responsibility and a desire for conformity.

2 Experimental design

Participants were recruited on CloudResearch in the summer of 2021 and chose how to allocate money between themselves and the international humanitarian charity CARE. They faced a single binary choice:

Option A: \$1.40 for the participant and \$0 for the charity
Option B: \$1 for the participant and \$1 for the charity

The cost of giving (sacrificing 0.40 to give \$1) was chosen based on pilot experiments to ensure that the proportion of selfish choices was bounded away from 0% and 100% and so there was room for group decision making to increase or decrease selfish choices.

Participants were randomly assigned to one of four treatments. Those in the *Individual* treatment made this choice independently for themselves. Those in the other treatments were assigned to groups of nine and knew that each group member would independently vote for one of the two options. If option A won, then each group member received \$1.40, with no money contributed to charity. If option B won, then each group member received \$1 and a total of \$9 was donated to the charity. The threshold required for implementing the selfish option A varied across treatments. In the *Threshold-1* treatment, a single vote for option A sufficed to implement the selfish outcome for all nine members. In the *Threshold-5* treatment, majority rule determined the outcome, and in the *Threshold-9* treatment, option A's selection required unanimity.

[3] Brütt, Schram and Sonnemans (2020) report a statistically significant difference opposite to the threshold effect only when groups are endogenously formed. Their framing of options as "defaults" also differs from other designs and may introduce a countervailing status quo bias.

After participants in the voting treatments voted, we elicited their beliefs about the likelihood of their vote being pivotal. Specifically, we asked participants in the Threshold-X treatment to estimate the likelihood that exactly $X-1$ of their group members voted for option A (with the remaining $9-X$ voting for B). Participants were financially incentivized to report their beliefs truthfully. Specifically, they knew that they would receive a bonus given by $0.20 - 0.20 \times$ | *reported belief – actual likelihood that* $X-1$ *other group members chose A in treatment* X|.

Following findings demonstrating that direct instruction to accurately report beliefs yields fewer false reports than explicit scheme explanations (Danz, Vesterlund and Wilson, 2022), we informed participants that they would "maximize [their] earnings by reporting a percentage as close to the truth as possible." Interested participants could consult a separate paragraph for more details. Participants in the voting treatment were also asked to guess the total number of people in their group of eight others who chose A (with a reward of \$0.20 for correct guesses), while those in the Individual treatment were asked to imagine a group of eight other participants and guess how many voted for option A (with a reward of \$0.20 if their guess matched the proportion of selfish choices in a random sample of eight others).

Overall, 792 participants took part in the experiment, with 198 assigned to each treatment. This yielded 22 groups of nine in each voting condition. The average participant spent approximately 4.5 minutes completing the experiment (median = 3.83), including instructions and the post-experiment survey. The average total payment was \$1.83, which translates to an average hourly rate of \$24.40 (not including charitable donations made on their behalf). Complete replication data is available from Robbett and te Velde (2026), and experimental instructions are available in the Online Appendix.

3 Results and Discussion

Figure 1 shows the percentage of selfish choices in each of the treatments. An upward trend as a function of the threshold is clearly visible, increasing from 45% in the Threshold-1 treatment to 57% in Threshold-9, with the individual rate of 56% falling at the upper end of this range.

While our analysis primarily focuses on the three threshold treatments, the individual treatment reveals that group decisions do not significantly increase selfish behavior. In fact, individuals are marginally significantly more likely to choose selfishly than those in the Threshold-1 condition (55% vs. 45%, $p = 0.056$).

Result 1 *Rates of selfish choices are not higher when the decision is the outcome of a group decision-making process rather than made individually.*

This demonstrates that the oft-observed increase in selfishness when decisions are made in groups (Dana, Weber and Kuang, 2007; Conrads et al., 2013; Barr and Michailidou, 2017; Behnk, Hao and Reuben, 2022) may not be universal. A key difference between our design and these studies, which may explain the divergent findings, is that our groups of nine are larger than the dyads and triads in previous studies. When only one selfish vote is required to pass that option, it is much easier to free-ride on others while avoiding any personal feeling of responsibility when groups are larger and the likelihood of passing is very high.[4]

[4]Note that Falk, Neuber and Szech (2020), another study with larger groups, does not contradict our findings because in their design individual payoffs are determined by their personal choices. Someone who votes selfishly earns a payment regardless, and eight mice are saved only if no voter votes selfishly.

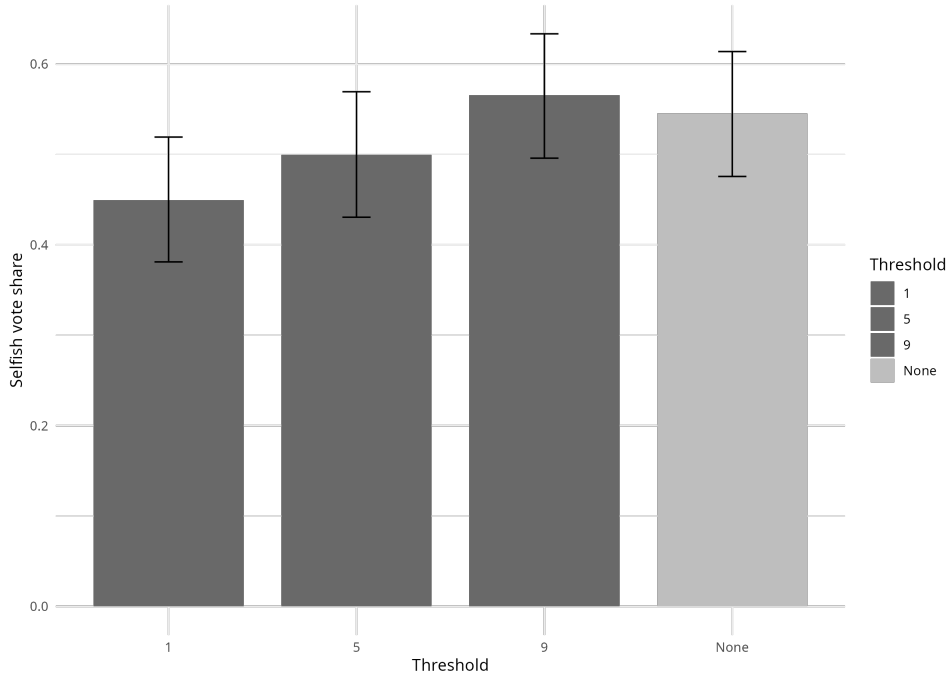

Figure 1: Rate of selfish votes in the three threshold treatments and the individual treatment. 95% binomial confidence intervals are shown.

The upward trend in selfish voting as a function of threshold, visible in Figure 1, is statistically significant. The difference between thresholds 1 and 9 is pairwise significant in a two-sided t-test with $p < 0.02$, and the regression analysis in Table 1 shows that the overall trend is statistically significant and robust to demographic controls.

	(1)	(2)
Threshold Number	0.015**	0.015**
	(0.006)	(0.006)
Constant	0.432***	0.429***
	(0.037)	(0.037)
Controls?	N	Y
Observations	594	589

Table 1: The threshold effect. Threshold number varies from 1 to 9, and controls are mean-centered demographic variables for age, gender, race, education, income, and political affiliation. Statistical significance indicated at * 10%, ** 5%, and *** 1% levels.

This finding supports the prediction of Rothenhäusler, Schweizer and Szech's (2018) Proposition

1, which states that the threshold effect should occur so long as voters experience guilt and/or shame[5] when their selfish vote contributes to a passing outcome, or share responsibility with other favorable voters, or both.

Result 2 *Rates of selfish voting increase in the threshold number of votes required to pass the selfish outcome.*

These results are consistent with negative feelings of responsibility from supporting a selfish outcome. Another possibility that we cannot rule out is conformity: a preference for conformity may lead voters to match others' behavior, contingent on circumstances that vary with the threshold. Conformity to majority behavior has been shown to be a powerful motivation in a wide range of contexts (Asch, 1963; Goeree and Yariv, 2015; te Velde and Louis, 2022, e.g.), and naturally apply to this group choice environment as well.

Even though group behavior is unknown at the time of voting, voters may be concerned about what pivotality, or supporting a selfish outcome, would imply about the alignment of their votes with the rest of the group. A preference for conformity *conditional on pivotality* trivially leads to a threshold effect: If I am pivotal when the threshold is 1, I can conform by voting selflessly, and the opposite extreme happens when the threshold is 9. A preference for conformity *if supporting a successful selfish option*, on the other hand, has been shown to contribute to the threshold effect by Feess, Kerzenmacher and Muehlheusser (2023), who term this the "group consensus" motive.

Two additional relevant motivations – bandwagon voting and expressive voting – can be ruled out as driving our results by turning to the elicited beliefs and survey data.

Bandwagon voting is the proclivity to vote for the expected winner out of an innate desire to be on the winning side, or perhaps for other reasons such as reducing the uncertainty associated with elections (Hong and Konrad, 1998) or cognitive consistency (Morwitz and Pluzinski, 1996). Many studies in political science and economics have found evidence of bandwagon effects (Agranov et al., 2018; Bischoff and Egbert, 2013; Goidel and Shields, 1994; Marsh, 1985; Mehrabian, 1998; Morton et al., 2015; Nadeau, Cloutier and Guay, 1993; Tyran, 2004) either with experimental manipulation of expected winners or by correlating behavior with observed expectations. However, in the simple majority elections that provide essentially all of the existing evidence, bandwagon effects coincide with conformity to the majority. In elections with thresholds other than 50%, as in our study, the two concepts differ, and the likely winner can be affected by the voting institution.

Our empirical data indicate that this possibility is inconsistent with our results. A straightforward prediction of bandwagon voting is that, holding the probability of being pivotal constant, a higher chance of the selfish option passing should lead to higher rates of selfish voting. In our data, the likelihood of being pivotal is very low in both the threshold 1 and 9 cases, but a threshold of 1 is dramatically more likely to be met than a threshold of 9. Bandwagon voting therefore predicts the opposite pattern from what we observe.

Expressive voting, as proposed by Tullock (1971) and Brennan and Lomasky (1993) and formalized by Huck and Konrad (2005) and Feddersen, Gailmard and Sandroni (2009), may also influence our results if thresholds affect the likelihood of being pivotal. In these models, voters are likely to support prosocial options when the expected cost of doing so is small due to the low chance of

[5]While Rothenhäusler, Schweizer and Szech (2018) use the terminology of "guilt" to refer to the negative emotional state resulting from supporting a selfish outcome, this emotional state could also be shame. That is, supporting the selfish outcome could hurt both self image and social image, both of which are unpleasant. We discuss this further in our results.

being pivotal, because supporting the prosocial option provides intrinsic utility whether or not it is enacted.[6] Experimental evidence for this effect is mixed (Feddersen, Gailmard and Sandroni, 2009; Fischer, 1996; Tyran, 2004; Morton and Tyran, 2012; Shayo and Harel, 2012).

Given that selfish voting rates are close to 50% in all cases, the true probability of being pivotal is highest in the threshold-5 treatment, which makes it seem that expressive voting cannot explain the observed threshold effect. This method has been employed to argue for or against expressive voting in other studies (Tyran and Wagner, 2019; Ginzburg, Guerra and Lekfuangfu, 2022). However, voters' beliefs about pivotality may not align with reality (Esponda and Vespa, 2014; Duffy and Tavits, 2008), and this is indeed the case in our data. Therefore, even if voters vote more selfishly in situations where they believe they are more likely to be pivotal, this may not be evident from choice data alone if these beliefs are highly inaccurate.

The dark bars in Figure 2 show average beliefs about the percentage of other participants who choose selfishly, by treatment. Overall, participants expect others to be more selfish than they really are, but the trends between treatments are highly consistent with actual behavior; beliefs about the selfish vote share significantly increase with threshold (p=0.002).

In contrast, the lighter bars in Figure 2 show the true likelihood of being pivotal, the median stated belief about this likelihood, and the median probability implied by the stated belief about the rate of selfish voting in each treatment.[7] As expected, the beliefs about pivotality implied by the stated rates of selfish voting are largely consistent with the true likelihoods. The directly stated probabilities, however, are highly inaccurate and are correlated with threshold (in a linear regression of these beliefs on threshold, the slope is positive and significant with $p = 0.007$). Participants are unable to translate their accurate beliefs about voting rates into accurate beliefs about pivotality, a finding also observed by Esponda and Vespa (2014) and Duffy and Tavits (2008).

These (inaccurate) pivotal beliefs influence voter behavior, consistent with expressive voting. However, the relationship is insufficient to explain the observed threshold effect. Table 2 shows that including beliefs about pivotality in our earlier regressions reveals a significant expressive voting effect, but it only marginally diminishes the predictive power of the threshold number itself. These two channels of influence thus appear largely independent.

To summarize, we conclude the following:

Result 3 *Voters exhibit expressive voting; that is, they are more likely to vote selflessly when they believe they have a smaller chance of influencing the outcome.*

This result, based on reported beliefs about pivotality rather than exogenous manipulation of pivotal probabilities, highlights the importance of eliciting beliefs when they may be highly inaccurate yet nonetheless instrumental.

Result 4 *The threshold effect observed is consistent with wanting to avoid responsibility or shared responsibility for selfish outcomes, and/or a preference for conformity.*

This result affirms the findings of Feess, Kerzenmacher and Muehlheusser (2023), who measure the relative magnitudes of these three motivations.

[6] The importance of other kinds of expressive voting (e.g. Schuessler, 2000) is minimized in our laboratory setting because partisan identities are irrelevant and voting is costless. Thus, turnout is not driven by a desire to express an opinion, nor are votes driven by a desire to align with a pre-existing team.

[7] The distributions of implied probabilities are highly skewed; thus, the median is a more informative statistic than the mean.

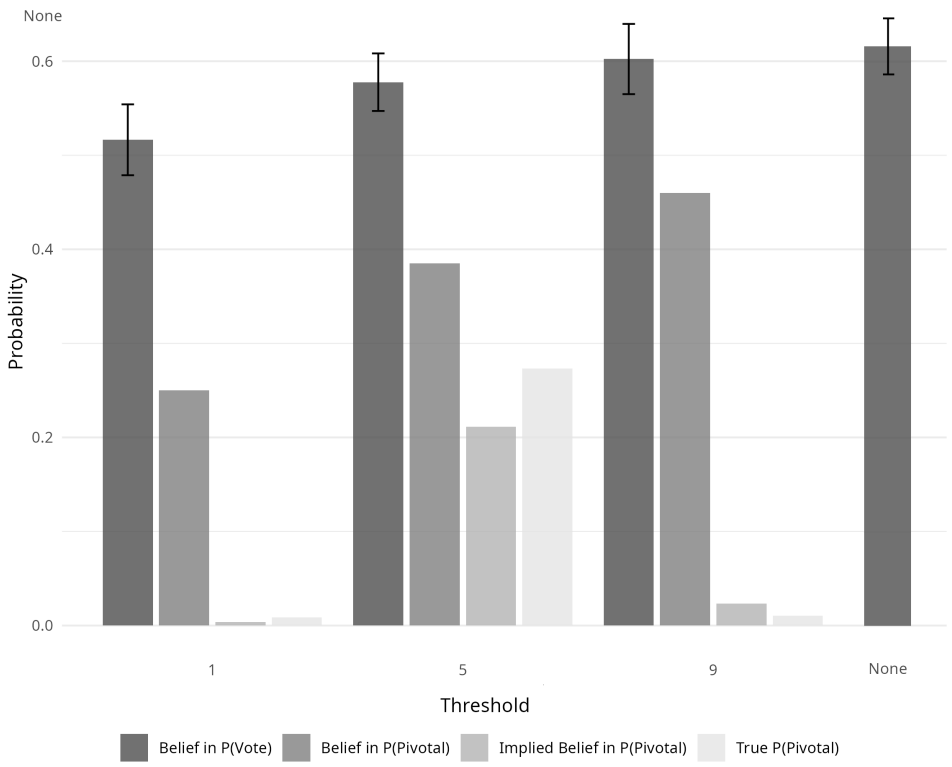

Figure 2: Beliefs about selfish voting rates and likelihood of being pivotal by threshold treatment and in the individual choice treatment. The first bar in each treatment group shows the mean belief about the rate of selfish votes, with 95% confidence intervals. The second bar indicates the median belief in the probability of being pivotal, while the third bar shows the median belief *implied* by the belief about overall selfish voting rates. The final bar shows the true pivotal probability given observed selfish voting rates.

Finally, our post-experiment survey provides additional suggestive evidence on mechanisms. Participants rated the importance of several factors for their vote choice, and the full survey-factor regressions are reported in the Online Appendix. Those patterns are broadly consistent with conformity and image concerns mattering for support of the selfish outcome, especially when pivotality implies different degrees of agreement with other group members.

4 Conclusion

We present experimental evidence supporting a key theoretical prediction from Rothenhäusler, Schweizer and Szech's (2018) model of diffused responsibility: as the threshold number of votes required to pass a selfish option increases, more voters vote selfishly. In their model, this arises from two factors. First, if the threshold is small, it is easier to free-ride on the selfish votes of others while avoiding personal responsibility for supporting a selfish outcome. Second, if responsibility is diffused, it diffuses among more voters as the number required to pass the selfish outcome increases.

	(1)	(2)
Threshold Number	0.013**	0.013**
	(0.006)	(0.006)
P(pivotal)	0.207***	0.220***
	(0.074)	(0.073)
Constant	0.358***	0.351***
	(0.046)	(0.045)
Controls?	N	Y
Observations	594	589

Table 2: Expressive voting. Threshold number varies from 1 to 9, and P(pivotal) is the probability with which each participant stated they believed they would be pivotal. Controls are mean-centered demographic variables for age, gender, race, education, income, and political affiliation. Statistical significance indicated at * 10%, ** 5%, and *** 1% levels.

Our results are consistent with this mechanism, or alternatively with a preference for conformity, which Feess, Kerzenmacher and Muehlheusser (2023) have independently observed. We also rule out two other social preferences relevant to voting—expressive voting and bandwagon effects—as drivers of this threshold effect.

Individuals deciding in isolation resemble those in groups with a high threshold for the selfish option, but they are more selfish than individuals in groups requiring only a single vote to pass it. This demonstrates that groups are not always more selfish than individuals and raises questions about the circumstances under which this holds. One possibility is that free-riding on others' selfish votes is easier in larger groups, but future research should systematically explore this.

5 Statements and Declarations

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Electronic Supplementary Material for "The threshold effect in votes for moral transgressions"

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A Online Appendix

A.1 Survey factor regressions

Our survey data further supports the conclusions in the main text. In the post-experiment survey, we asked participants to rate the importance of eleven factors for their vote choice on a scale from 1 to 5.[1] Several of these factors correlate with the threshold for selfish or unselfish voters, or both.

Table A1 shows that selfish voters assign greater importance to others' choices, conditional on being pivotal, when the threshold is high (Panel A, Column 1). That is, when pivotality means that all other voters were selfish, selfish voters report valuing others' choices. Conversely, when pivotality implies that selfish voters are in the minority, they report valuing others' choices less. Unselfish voters exhibit the opposite pattern (Panel B, Column 1). These results are consistent with some voters having a preference for conformity conditional on pivotality.

Ratings of importance of other group members' desires and choices also seem to be made with emphasis on the possibility of being pivotal, or with the expected distribution of votes in mind if the selfish option passes, even though these questions do not explicitly ask about these contingencies. In both cases, selfish voters assign greater importance to group desires when pivotality or the general success of the selfish option implies a group consensus of selfishness; the inverse holds for non-selfish voters (columns 5 and 6). This further supports the importance of conformity.

If some voters have expressive preferences, then given their stated higher beliefs in the chance of being pivotal at higher thresholds, we would expect these voters to be more prevalent in the selfish voter sample at higher thresholds, thereby increasing the importance of pivotality in Column 2, Panel A. This coefficient is positive but not statistically significant, and conversely the coefficient in Panel B is negative but not statistically significant.

Ratings of image importance, that is, what other group members and voters themselves think of a choice, illuminate responsibility sharing. If these are evaluated on a non-contingent basis, we would not expect a correlation with the threshold, which is indeed the case for self-image (Column 4) and for the social image of selfish voters (Column 3, Panel A). For non-selfish voters, however, we observe a negative correlation with the threshold (Column 3, Panel B). This is consistent with some of these voters being particularly concerned about social image in the event of being pivotal, and trying to avoid being solely responsible for a selfish outcome while caring less about image when responsibility is shared.

[1] Participants in the individual treatment were not asked about the four factors pertaining to the group.

Dependent variable:	Choices if pivotal	Chance pivotal	Social image	Self image	Group desires	Others' choices
A: Selfish voters						
Threshold	0.062^{***}	0.026	-0.003	-0.005	0.061^{**}	0.045^{*}
	(0.023)	(0.024)	(0.022)	(0.025)	(0.024)	(0.025)
Constant	2.100^{***}	2.600^{***}	1.982^{***}	2.364^{***}	2.099^{***}	2.257^{***}
	(0.143)	(0.147)	(0.137)	(0.154)	(0.151)	(0.154)
Controls?	Y	Y	Y	Y	Y	Y
Observations	298	298	298	298	298	298
B: Non-selfish voters						
Threshold	-0.057^{**}	-0.027	-0.065^{***}	-0.026	-0.063^{***}	-0.074^{***}
	(0.023)	(0.023)	(0.021)	(0.021)	(0.020)	(0.023)
Constant	2.451^{***}	2.647^{***}	2.365^{***}	3.733^{***}	2.264^{***}	2.584^{***}
	(0.130)	(0.130)	(0.121)	(0.117)	(0.116)	(0.132)
Controls?	Y	Y	Y	Y	Y	Y
Observations	291	291	291	291	291	291

Table A1: The importance of six factors for participants' voting decisions. "Choices if pivotal" represents the importance (on a scale of 1 to 5) of the factor "How my group members must have voted in the event that I was decisive"; "Chance pivotal" of "The chance my vote would be decisive"; "Social image" of "The effect of my choice on how others see me"; "Self image" of "The effect of my choice on how I see myself"; "Group desires" of "What my group members would want me to do"; and "Others' choices" of "What I thought others would do". Controls are mean-centered demographic variables for age, gender, race, education, income, and political affiliation. Statistical significance is indicated at * 10%, ** 5%, and *** 1%.

Overall, these survey results underscore the importance of image and conformity when supporting a selfish outcome or acting as a pivotal voter.

A.2 Experimental Instructions

[Introduction page]

Thank you for participating in the experiment. It consists of three parts. For completing all three parts, you will earn $0.20. You will also receive an additional bonus that depends on the choices made by you and other participants. It is therefore important that you understand the instructions. Your bonus will be paid within 48 hours of completing the experiment.

The instructions for Part 1 appear on the next page. You will receive the instructions for the additional parts after completing Part 1.

[Instruction Page]

[Displayed to participants in Individual Condition] In this part, you will choose how to divide money between yourself and the international humanitarian charity CARE.

[Displayed to participants in Voting Conditions] In this part, you will be matched into a group of 9 participants. Your group will choose how to divide money between yourselves and the international humanitarian charity CARE.

[Displayed to all participants] *More information about CARE.*

CARE is one of the largest and oldest humanitarian aid organizations in the world. Founded in 1945, it is non-sectarian, impartial, and non-governmental. CARE works in over 100 countries around the world and focuses on fighting global poverty and delivering emergency relief. CARE is ranked among the top charities for its transparency and percentage of funds that go directly to support its programs.

[Displayed to participants in the Individual condition] *Your choice.*

You can choose between two options:

Option A. You earn a bonus of $1.40 and no money is donated to the charity.

Option B. You earn a bonus of $1 and donate $1 to the charity.

[Displayed to participants in Voting Conditions] *Your choice.*

You can choose between two options:

Option A. Each group member earns a bonus of $1.40 and no money is donated to the charity.

Option B. Each group member earns a bonus of $1 and donates $1 to the charity.

[Displayed to participants in the Threshold-1 condition] Each group member will individually cast a vote for Option A or Option B. Option A will be implemented if it receives at least one vote.

That is, if at least 1 group member votes for Option A, then each group member receives $1.40. If all 9 group members vote for B, then each group member receives $1 and the rest of the money (a total of $9) is donated to charity.

[Displayed to participants in the Threshold-5 condition] Each group member will individually cast a vote for Option A or Option B. The option that receives the most votes will be implemented. That is, if at least 5 group members vote for Option A, then each group member receives $1.40. If at least 5 group members vote for B, then each group member receives $1 and the rest of the money (a total of $9) is donated to charity.

[Displayed to participants in the Threshold-9 condition] Each group member will individually cast a vote for Option A or Option B. Option A will be implemented if it receives all nine votes. That is, if all group members vote for Option A, then each group member receives $1.40. If at least 1 group member votes for B, then each group member receives $1 and the rest of the money (a total of $9) is donated to charity.

[Displayed to all participants] *More information about the donation.*

In the event that option B is selected, the money will be donated to CARE at the same time that the bonus is awarded. If you would like more information on why you should believe that we will actually send the money to the charity, click the button below.

Click this to learn more. Otherwise, proceed directly to the next page to begin.

[Displayed to participants requesting more information]

Why should you believe us? How do you know we won't just say that you donated to the charity and not actually submit it? First, we are economists, and economics research does not allow deception. We would not be able to publish the results of this work if we lied to our participants. Second, this experiment was approved by the Middlebury College Institutional Review Board, which oversees all research involving human subjects. This study (ID #21-039) was approved under the understanding that we would not deceive participants. This can be verified by contacting the Middlebury IRB at irb@middlebury.edu. Finally, we are happy to provide donation receipts, which you can receive by contacting arobbett@middlebury.edu

[Choice page]

[Displayed to participants in the individual condition] To make your choice, please select one of the two options below:

Option A. You earn a bonus of $1.40 and no money is donated to the charity.

Option B. You earn a bonus of $1 and donate $1 to the charity.

Please choose Option A or Option B:
Option A: You earn a bonus of $1.40 and no money is donated to CARE
Option B: You earn a bonus of $1 and donate $1 to CARE

[Displayed to participants in the Threshold-1 condition]
To make your choice, please select one of the two options below:
Option A. Each group member earns a bonus of $1.40 and no money is donated to the charity.
Option B. Each group member earns a bonus of $1 and donates $1 to the charity.
Remember:
– Each group member will individually cast a vote for Option A or Option B.
– Option A will be the outcome if at least 1 of the 9 group members vote for it.

[Displayed to participants in the Threshold-5 condition]
To make your choice, please select one of the two options below:
Option A. Each group member earns a bonus of $1.40 and no money is donated to the charity.
Option B. Each group member earns a bonus of $1 and donates $1 to the charity.
Remember:
– Each group member will individually cast a vote for Option A or Option B.
– Option A will be the outcome if at least 5 of the 9 group members vote for it.

[Displayed to participants in the Threshold-9 condition]
To make your choice, please select one of the two options below:
Option A. Each group member earns a bonus of $1.40 and no money is donated to the charity.
Option B. Each group member earns a bonus of $1 and donates $1 to the charity.
Remember:
– Each group member will individually cast a vote for Option A or Option B.
– Option A will be the outcome if all 9 group members vote for it.

[Displayed to participants in the voting conditions] Please vote for Option A or Option B:
Option A: Each group member earns a bonus of $1.40 and no money is donated to CARE
Option B: Each group member earns a bonus of $1 and donates $1 to CARE

[Belief Elicitation Screen]

Now, we would like to know how you think other people answered the previous question.

[Displayed to participants in the Threshold-1 condition] How likely is it, in your opinion, that all of the other group members chose Option A (the $1.40 bonus)?

You will be paid up to $0.20, as a bonus payment, based on the accuracy of your guess. You can maximize your earnings by reporting a percentage as close to the truth as possible. If you would

like to know in more detail how your bonus payment will be calculated, the details are provided in the next paragraph.

After the experiment, we will calculate how often a participant's other group members all voted for Option A. This will give us the actual likelihood that any individual's other group members all voted for Option A. We will then compare your prediction with this actual likelihood and you will receive a payment equal to: \$0.20 - 0.20 times [the difference between the actual likelihood and your prediction].

Please choose a probability between 0 and 100: [slider]

[Displayed to participants in the Threshold-5 condition] How likely is it, in your opinion, that the other group members' votes are evenly split, such that exactly half of the other group members chose Option A (the \$1.40 bonus) and half chose Option B?

You will be paid up to \$0.20, as a bonus payment, based on the accuracy of your guess. You can maximize your earnings by reporting a percentage as close to the truth as possible. If you would like to know in more detail how your bonus payment will be calculated, the details are provided in the next paragraph.

After the experiment, we will calculate how often a participant's other group members were evenly split. This will give us the actual likelihood that any individual's other group members were evenly split in their decision. We will then compare your prediction with this actual likelihood and you will receive a payment equal to: \$0.20 - 0.20 times [the difference between the actual likelihood and your prediction].

Please choose a probability between 0 and 100: [slider]

[Displayed to participants in the Threshold-9 condition] How likely is it, in your opinion, that none of the other group members chose Option A (the \$1.40 bonus)?

You will be paid up to \$0.20, as a bonus payment, based on the accuracy of your guess. You can maximize your earnings by reporting a percentage as close to the truth as possible. If you would like to know in more detail how your bonus payment will be calculated, the details are provided in the next paragraph.

After the experiment, we will calculate how often a participant's other group members all voted for Option B. This will give us the actual likelihood that any individual's other group members all voted for Option B. We will then compare your prediction with this actual likelihood and you will receive a payment equal to: \$0.20 - 0.20 times [the difference between the actual likelihood and your prediction].

Please choose a probability between 0 and 100: [slider]

[Displayed to participants in the voting condition] How many of the other 8 group members do you think chose Option A (the \$1.40 bonus)? If you estimate the correct number, you will additionally receive \$0.20. Please enter a number between 0 and 8:

[Displayed to participants in the individual condition] Consider a group of 8 other participants

in this same study. How many do you think chose Option A (the $1.40 bonus)? If you estimate the correct number, you will additionally receive $0.20. Please enter a number between 0 and 8:

[Survey screen]

In what year were you born?

What is your gender? [Female; Male; Non-binary; Prefer to self-describe; Prefer not to answer]

What is the highest level of education that you have completed? [High School/GED; Some College; Two Year Degree; Four Year College Graduate; Masters Degree; Doctoral Degree; Professional (JD, MD)]

What is your race or ethnic group? Check all that apply [American Indian/Alaska Native; Asian; Black/African American; Hispanic or Latino; Native Hawaiian / Pacific Islander; White; Other; Prefer not to say]

What is your annual gross income range? [Below $20,000; $20,000 - $29,999; $30,000 - $39,999; $40,000 - $49,999; $50,000 - $59,999; $60,000 - $69,999; $70,000 - $79,999; $80,000 - $89,999; $90,000 - $99,999; $100,000 or more]

Who do you usually vote for in elections? [Democrats; Republicans; Other]

Please consider how closely each of the following statements describes you. For each, indicate how strongly you agree or disagree with the statement. [For each, the options were Strongly disagree; disagree, somewhat disagree; neither agree nor disagree; somewhat agree; agree; strongly agree]

Before I do something, I want to know how other people have done it, so I can feel more safe.
It is important to me to know what other people are doing.
It is important to me, what other people think of me.
I adapt my behavior to other people around me.
It is important for me to do what others expect of me.
It would make me feel good to be a person who is fair, generous, and kind.
Being someone who is fair, generous, and kind is a big part of who I am.

Consider your decision between Option A and Option B. Please indicate how important each of the following factors was in your in decision. [For each, the options were: Not at all important; somewhat important; moderately important; very important; extremely important]

The chance my vote would be decisive [voting conditions only]
What I thought was the moral or correct choice
What I thought others would think was the moral or correct choice
What my group members would want me to do [voting conditions only]
The effect of my choice on how I see myself

The effect of my choice on how others see me

What I thought others would do

What I thought was most socially appropriate

How my group members must have voted in the event that I was decisive [voting conditions only]

The amount that I would be donate to the charity ($1) relative to the cost I must pay ($0.40)

The overall amount that would be donated to the charity ($9) relative to the cost I must pay ($0.40) [voting conditions only]