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DIALOGUE: GENDER, GROUP DELIBERATION, AND AUTHORITY

Why women's numbers elevate women's influence, and when they do not: rules, norms, and authority in political discussion

Christopher F. Karpowitz^{a*}, Tali Mendelberg^b and Lauren Mattioli^b

^a*Department of Political Science, Center for the Study of Elections and Democracy, Brigham Young University, Provo, UT, USA;* ^b*Department of Politics, Princeton University, Princeton, NJ, USA*

Critical mass theory argues that women's numbers are a major cause of women's status and authority in a group. Applications of the theory to political settings have yielded mixed support for the theory. We unpack one mechanism that can explain when, why, and how numbers aid women. That mechanism is the norm of communication during group discussion. Our focus is on how women build or lose authority while they interact with men. We argue that numbers – and group procedures – shape norms that advance or hinder women's authority. Women's authority in turn affects the group's decision about economic redistribution – the higher the women's authority, the higher the group's generosity to the poor. We suggest that future work further explore how rules and norms affect women's status in a group by equalizing their participation and influence, with the ultimate goal being equal gender authority.

Keywords: gender; norms; groups; deliberation; critical mass; decision rule; majority; unanimity; gender composition; authority; influence

Introduction

Political psychology naturally locates the individual at the heart of politics, so it is no wonder that it investigates gender as a feature of the individual. Venerable questions in that tradition include: how a woman thinks about politics (Burns and Kinder 2012; Burns, Schlozman, and Verba 2001; Huddy, Cassese, and Lizotte 2008; Sapiro 2003), votes (Dolan 1998; Kaufmann 2006; Kaufmann and Petrocik 1999; Mueller 1988; Box-Steffensmeier et al. 2004), campaigns (Brooks 2013; Dolan 2005, 2008; Ford 2006; Kahn and Goldberg 1991; Lawless and Fox 2005; Ondercin and Welch 2005), and governs (Swers 2002; Swers and Larson 2005).

The unrelenting focus on the individual is both strength and a weakness of political psychology studies of gender. Here, we aim to build on the strength while ameliorating the weakness. Political psychology can shed light on how individuals interact, not only on who they are. Accordingly, we rely on – and develop further – the concepts of norms and of authority. These concepts allow us to focus on the role that gender plays in a shared, group-based form of political behavior – formal discussion. We extend the modifier “gendered” from describing individuals to describing the backbone of vibrant democracy – the deliberating group. We will examine how norms feed or diminish the gender gap in authority. We home in on features of group decision-making: gender composition and the decision rule employed by the group.

*Corresponding author. Email: ckarpowitz@byu.edu

To this point, critical mass theory has been a central guiding framework for research on gender and politics. The scholar who put it on the map, Rosabeth Moss Kanter, argued that women's status in a group or organization depends on their relative number. When only one or very few members of the group are women, those women are significantly marginalized. Men attribute to them the full set of stereotypically feminine traits, with the result that women were perceived as less competent, expert, capable. Women are actively subordinated and even harassed. Women would internalize these attributions and conform to the gendered expectation of them. To perform well, women in these settings must act like stereotypical men. They are doomed to struggle against a thick glass ceiling with little support and much hostility. As women's numbers rise, however, their lot improves. Once women pass approximately 30% of group membership, they experience significant reduction in men's aggression and negative stereotyping. And where they reach an even balance with men, women's status improves to the point of equality. With numerical parity, women can simply be individuals and are accepted as such. They are free to pursue their personal tastes, visions, goals, and means, whether those tend toward feminine or masculine (Kanter 1977a, 1977b, 1977c).

The consequences of women's numbers are very much a live question in politics today. Countries around the globe have instituted soft or hard requirements for women's proportion, whether in party rules for candidates or delegates, legal regulations imposed on corporate boards, mandating office-holding quotas, or other forms (Baldez 2004; Beckwith 2003; Dahlerup 2006, 2012; Krook 2008, 2009; Norris 2004, 2006; Pande and Ford 2011). The UN has endorsed and accelerated this trend by issuing official exhortations to its member countries to take steps to meet a "critical mass" of women in positions of formal power (United Nations Department of Economic and Social Affairs 2005).¹

But numbers do not seem to produce the expected effects. At least, not consistently so.² There is a puzzling disconnect between the rising presence of women and women's influence (Carroll 2001; Franceschet, Krook, and Piscopo 2012; Reingold 2000, 2008, 132, 140; see also Hannagan and Larimer 2010). The mismatch occurs at both ends of the continuum. Sometimes token women seem to get far, while even near-balance does not lead to significant influence for women (Beckwith and Cowell-Meyers 2007; Bratton 2005; Childs 2004; Childs and Krook 2006; Crowley 2004; Dahlerup 2006; Devlin and Elgie 2008; Grey 2002, 2006; Kanthak and Krause 2010; Kathlene 1994; Kittilson 2008, 324; Lovenduski 2005; Rosenthal 1998, 90). The consequences of women's numbers are so inconsistent that by comparison, that variable appears quite secondary to a set of other variables. Those include women's mobilization in civil society (Htun and Weldon 2010, 2012; Weldon 2002, 2011), the partisanship or ideology of the women in question and of their male coalition partners, and the extent to which these women fulfill an instrumental purpose for male gatekeepers and powerbrokers (Carroll 2001; Franceschet, Krook, and Piscopo 2012; Kathlene 2001; Reingold 1992, 2000, 2008). Women's numbers do not determine women's power in settings where ordinary citizens deliberate either, such as town meetings in the USA or village meetings in India (e.g., Bryan 2004, 216–17; see Karpowitz and Mendelberg 2014, 8–32).

Here, we offer one way to understand how numbers may help women, or fail to do so. We summarize the main findings of our study of the effects of women's numbers – and of the effects of an additional variable: the group's decision rule. Formal discussions and decisions take place within institutions, and a primary function of institutions is to impose rules on their members. Rules set norms – the set of tacit expectations groups place on individuals' behavior – in motion. By cueing these expectations, norms shape the way people interact and, in the process, they affect the status and authority of women in the decision-making group. In this way, rules may help or hinder the progress of social identity groups toward equal substantive representation.

To be sure, it is no news that the rules of decision-making affect the fate of a minority (Gastil 1993, 2010; Kerr et al. 1976; Thompson, Mannix, and Bazerman 1988). Rules shape the expression and aggregation of preferences. But along with this instrumental effect, we argue that rules also have a neglected, social psychological function. Rules shape norms of interaction and affect an individual's status in the group. In doing so, rules affect the fate of identity minorities, not only the power of preference minorities.

As we explain below, we find that rules can mitigate the problems of women's low numbers by creating norms of inclusion, and conversely, they can interfere with the benefits of high numbers by denying women the power of their majority status. An important mechanism for this conditional effect of numbers and rules is the dynamic of social interaction among group members. Why and how this is so is the subject of this article.

Why gender composition might matter

Why might women's influence change based on the ratio of women to men? The research on the gender gap in self-perception of competence, in the willingness to engage in competition or conflict, and in sensitivity to social bonds suggests that the ideal of equality in deliberative settings does not obtain when men and women interact (Karpowitz and Mendelberg 2014).

Men and women begin group discussions with unequal self-perceptions. Women are more likely than men to underrate their competence, qualifications, and achievements (Beyer and Bowden 1997) even when they have equal objective competence (Kanthak and Woon, forthcoming; Pajares 2002; Wigfield, Eccles, and Pintrich 1996) and are high achieving (Babcock and Leschever 2003). Negative perceptions of self are more likely to harm the performance and willingness to assert leadership for women than for men (Beyer and Bowden 1997; Instone, Major, and Bunker 1983). Women value themselves less than men do (Callahan-Levy and Meese 1979; Major, McFarlin, and Gagnon 1984) and more readily internalize others' feedback (Horvath, Beaudin, and Wright 1992; Roberts 1991). Group interaction that is negative or not sufficiently positive itself, then, can reinforce women's beliefs in their own incompetence, depressing their willingness to contribute.

Speech itself is an act wrought with difference across genders. Men are more confident in their ability to speak publicly, despite women's superior vocabularies (Verba, Scholzman, and Brady 1995). Women have more anxiety and discomfort than men when it comes to making their voices heard (Behnke and Sawyer 2000; Conover, Searing, and Crewe 2002; Daly, Kriesler, and Roghaar 1994; Lusting and Anderson 1990). Women are also met with social sanction when they do violate the norms of passivity and modesty by speaking confidently (Babcock and Laschever 2003; Butler and Geis 1990; Carli 1990; Heilman, Block, and Martell 1995; Ridgeway 1982). Gendered patterns of interruptions and rhetorical dominance displays come into play in situations where women's status is low, so it is little wonder that women tend to avoid assertive verbal behavior (Mattei 1998). Whether consciously or not, women's reluctance to dominate a social setting renders them less likely to benefit from deliberation, whether in the form of salary negotiation or legislative committee meetings (Babcock and Laschever 2003; Eagly and Carli 2007; Kathlene 1994).

All these processes can come into play when women interact with many men. Men rely on the stereotype that leadership and masculinity go hand in hand more than women do, and men are more likely than women to devalue women who engage in leadership action (Eagly, Makhijani, and Klonsky 1992; Koenig et al. 2011). If men dominate a group, women are more likely to receive the signal that their contributions are inferior. Group interactions between men and women tend to crystallize women's *ex ante* inferior authority, rendering them less likely to exercise influence in a deliberative setting.

Much of this research comes from studies of ordinary people, but it seems to apply even in official decision-making settings, such as congressional hearings and legislative committees. Here too, norms of gendered power can matter, as shown in the path-breaking work of Mattei (1998) and Kathlene (1994). For example, Mattei conducted extensive analysis of language patterns used by female and male witnesses testifying before an all-male Senate Judiciary Committee on David Souter's nomination to the Supreme Court. In that setting, women were given less speaking time, were antagonistically interrupted more often, were asked more challenging questions, had higher demands for evidence for their views, and were cut off when they tried to interject more often than men. Female witnesses interrupted Senators one-third as often as did male witnesses. This is just one case in which men assert their superior status through patterns of gendered speech, effectively relegating women's voices to a lower position and undermining their authority.

Why numbers are conditioned by rules

Kanter's theory has often been interpreted as unconditional. It is easy to read it as predicting that any numerical minority will bear the brunt of dominance, no matter who that minority is. But a closer look suggests that Kanter's theory actually predicts a conditional effect of numbers. In our view, Kanter's theory implies that numbers will have a different effect depending on the dominant or subordinate social status of the numerical majority or minority. So the numerical majority would be much more likely to target the numerical minority with dominant behaviors and to apply stereotypes to it if the numerical majority and minority are social identities that occupy a dominant and subordinate status in society, respectively. That is, numbers will work differently for men – a socially dominant group – than for women – a socially subordinate one.

In addition, Kanter's theory is consistent with the hypothesis that numerical effects depend on norms, and therefore, that an alternative norm can exercise a countervailing force against the effects of numbers. According to Kanter, numbers matter because they shape norms. Numbers activate particular expectations and social interactions. Low numbers set in motion a set of derogatory, hostile, aggressive, and dominant attitudes and behaviors targeting the smaller and socially subordinate group. In our interpretation of Kanter's theory, that set of attitudes and behaviors is based on a shared understanding of the subordinate place of women in the group. Large numbers allow the socially dominant group to shape the norms of the group, and it does so in a way that furthers its status in the group.

We expand this story of numbers, norms, and gender. If norms are the mechanism that link numbers to status, then a countervailing norm of inclusion and respect could neutralize the deleterious effects of small numbers. In that sense, norms can alleviate women's low status. Several studies have already pointed to the importance of discussion norms in the success of a deliberating group (Gastil 1993, 2010; Mansbridge 1983; Walsh 2007). We build on these understandings of norms to elaborate when and how women's influence will rise or fall with the group norm. We argue that norms – and thus numbers – work differently for men and for women. By the same logic, rules, which also beget norms, work differently for men and for women.

In other words, not only do norms emerge out of the balance of numbers, but also from the group's rules. The institutions of group discussion – its decision rules and agenda-setting procedures – influence the behavior of group members (Meirowitz and Landa 2009). Two common rules are majority rule and unanimous rule. Unanimous rule may produce norms of inclusion by encouraging a process of consensus building. Consistent with this notion, unanimous rule has been shown to shift individuals' views during discussion, generate more expressions of agreement, and encourage greater information sharing (Hastie, Penrod, and Pennington 1983; Mathis 2011; Nemeth 1977). Further evidence that group members behave as if each voice is

valued under unanimous rule comes from the finding that those who hold a minority viewpoint prefer that decisions are reached by consensus (Kerr et al. 1976). The requirement of unanimity thus begets norms of equal respect, as Mansbridge (1983) argued.

By contrast, success under majority rule follows numerical superiority. Preference majorities have fewer incentives to include the interests of preference minorities under majority rule and have difficulty persuading the majority in small groups (Gastil 2010; Moscovici 1980, 1985). Majority rule begets deliberative norms of agency or competition. The choice to employ majority rule itself can be seen an acknowledgement of conflict (Mansbridge 1983). Thus, unanimous rule can help preference minorities by giving them a veto, while majority rule helps preference majorities by allowing them to override and ignore the minority (Gastil 1993; Mansbridge et al. 2010). Thus, unanimous rule tends to generate interaction norms of mutual respect and inclusion, while majority rule tends to generate norms of majoritarian power.

While these are helpful starting points, they do not move us far enough along toward predictions about numbers and gender. To generate those predictions, we apply these insights from studies of *preference* minorities or majorities to the case of *identity* minorities or majorities. The uniform effects of rules on any preference minority or majority do not hold for identity minorities. Decision rules affect social identity minorities differently depending on who those minorities are.

In the case of gender, numbers matter differently for men and women. Low numbers interfere with women's influence much more than with men's influence. And so, rules that help preference minorities – namely, unanimous rule – may leave male numerical minorities better off than they leave female numerical minorities. And by the same token, female numerical majorities will leverage the majoritarian norm from majority rule less effectively than male majorities. However, rules do help women in the same direction as they help men – majority rule is good for women when they are many for the same reason it is good for men when they are more numerous, and unanimous rule is good for women when they are few for the same reasons it helps men when they are few.

An especially novel hypothesis coming out of this framework is that a norm of inclusion from unanimous rule could backfire on women's equality when women are the numerical majority. Since women occupy a low status in society, they have developed internalized assumptions about the need to refrain from overstepping their prescribed subordinate status. Women may view a norm of inclusion as an edict to keep themselves in check. Conversely, men may view the same norm of inclusion from within the agency framework with which they in turn have been socialized. Men may thus tend to interpret a consensus process as freedom to accelerate their individual influence. The upshot of this process is that under unanimous rule, women's rising numbers may provide little improvement in women's status, because under a consensus process, women, as a numerical minority, already come close to equality with the men in their group, and because when they are the minority, men do even better than the women in their group. Under unanimous rule, then, the effect of women's numbers is thus flat or negative.

Results

School boards

A basic form of influence, or substantive representation, is speech. The theory of numbers would predict that greater numbers raise women's level of participation in the group. Participation starts with the act of speaking. While talk is only one measure of participation, it is a key political act in democratic groups (Mansbridge 1983) and has been identified by deliberative theorists and their critics as an important measure of equality in group discussion (Sanders 1997; Sunstein 2002;

Thompson 2008). Disproportionate silence on women's behalf reveals unequal participation by genders, placing the democratic character of deliberation at risk. Because speech is the means by which individuals influence deliberation, it is a more important indicator of equal participation than mere access to the discursive setting (Knight and Johnson 1997). Individuals who believe they have the authority to speak are more likely to do so, giving them more opportunities to influence group outcomes (Shelly et al. 1999). In this way, propensity to speak is both shaped by status and signals status (Fiske 2010). If men speak more than women, women's representation and influence are at a disadvantage. The proportion of time that individuals command the forum is an indicator of their power – speech and authority track together (Cappella 1998; Johnson 1993; Shelly et al. 1999).

One promising place to examine the relationship between a decision-making group's gender composition and patterns of speaking time among men and women is the local school board. These are sites of substantial formal political power, with jurisdiction over large budgets and decision-making of broad reach (National School Board Association). They are also one of the few institutions in which the gender composition varies sufficiently to explore not just the effect of a small increase in women's numbers, but also the patterns on boards where women form a substantial majority.³ We drew a sample of boards of varying gender composition – ranging from all-male to all-female boards – from all over the USA, and we analyzed the patterns of motions and speaking turns that were recorded in the board's official minutes.⁴ All the boards in the sample used majority rule as their decision-making standard. Thus, school boards allow us a partial but important test of the effects of numbers on women's influence.

In these majority-rule groups, the board's gender composition exerted a powerful effect on women's participation and whether or not that participation meets a key standard of equality. The effect holds even after controlling for a variety of additional potential explanations, including the size of the board, the members' experience and education, and various features of the school district (Karpowitz and Mendelberg 2014, 273–304). Table 1 describes our statistical estimation of four models in which the dependent variable is the ratio of women's average proportion of speaking turns (or motions) to their proportion of the group. The models allow us to estimate the independent effect of the proportion of women present on a board on relative equality in motions (Models 1 and 2) and speaking turns (Models 3 and 4), with and without a number of potentially relevant covariates.

We define equal speech participation as speaking turns and motions that are proportional to women's presence in the group (in other words, equality would mean that women make 20% of the recorded speaking turns on a board composed of 20% women), and indicate this equality ratio of 1 with a horizontal line in Figure 1. Reflecting the predicted values from Models 2 and 4 of Table 1, Figure 1 shows that on boards where women are outnumbered by men, women's participation falls far short of this standard of equality. For example, when women comprise 20% of the board, they reach only two-thirds of the way to equality of speaking turns, meaning that they account for a little more than 13% of the speaking turns recorded in the board's official minutes. In fact, even when women constitute 50% of the board's membership, they contribute only 40% of the talk. As the proportion of women on the board increases, women come much closer to equality, though it typically requires a supermajority of women – 60% in the case of motions and 70% in the case of speaking turns – before women reach levels of participation that match or exceed their numbers. The depth of women's silence in many of the meetings where they are a minority is remarkable. In 20% of the meetings in our sample at which women were outnumbered, women never spoke, and in nearly 40% of minority-female meetings, their proportion of speaking turns was less than half of their proportion on the board.⁵ Men, by contrast, experience such a severe disadvantage in speaking far less often – less than a quarter of the time when they are the gender minority.⁶

Table 1. Ratio of proportion of turns taken by women to proportion of women attending, mixed-gender groups only.

	(1)	(2)	(3)	(4)
	Motions	Motions	Speaking turns	Speaking turns
Proportion women	0.64*** (0.19)	1.01** (0.43)	0.49** (0.17)	0.48** (0.21)
Size of board		-0.04 (0.10)		-0.07 (0.06)
Board experience (median years)		-0.03 (0.02)		0.02 (0.02)
No. of college graduates on board		0.05 (0.06)		0.09* (0.06)
Public comment at meeting		0.08 (0.14)		0.09 (0.17)
Urban		0.26* (0.17)		-0.16* (0.12)
Superintendent is female		-0.18* (0.12)		0.05 (0.15)
No. of students enrolled (log)		-0.12** (0.05)		0.02 (0.07)
Budget per student (log)		-0.23 (0.22)		0.07 (0.23)
Length of meeting		0.03 (0.05)		0.08 (0.07)
South		-0.14 (0.36)		-0.01 (0.13)
West		0.16 (0.12)		0.14 (0.15)
Midwest		-0.08 (0.12)		0.11 (0.15)
Constant	0.55*** (0.14)	3.38 (2.01)	0.57*** (0.09)	-0.67 (2.30)
Observations	69	63	69	63
R ²	0.30	0.45	0.07	0.22
Control for outlier	Yes	Yes	Yes	Yes

Notes: Group-level analysis. Cell entries are OLS regression coefficients, with cluster robust standard errors in parentheses (cluster by state). Table available in Karpowitz and Mendelberg (2014, 285).

* $p < .1$ (one-tailed test).

** $p < .05$ (one-tailed test).

*** $p < .01$ (one-tailed test).

To supplement this analysis of majority rule, we turn to procedures meant to stimulate a consensus process. We are interested in rules insofar as they prompt norms of interaction. Even if a group's operating rules do not require a formal decision, they can nevertheless shape norms, all the more so, if they explicitly set out to do so. An opportune case of this kind offers itself in data originally published by Walsh (2007) on civic dialog groups in Wisconsin and Illinois. These groups met to conduct discussions about race in their community, and thus did not make a formal decision. That is, there was no decision rule. Nonetheless, participants were explicitly instructed to "listen carefully," to "really try to understand what others are saying," and to avoid the temptation to "monopolize the conversation" (Walsh 2007, 40). In this way, the group instructions emphasized the sorts of group dynamics that we believe go hand in hand with unanimous rule. We revisited Cramer Walsh's data to investigate the interplay of gender composition and participation.

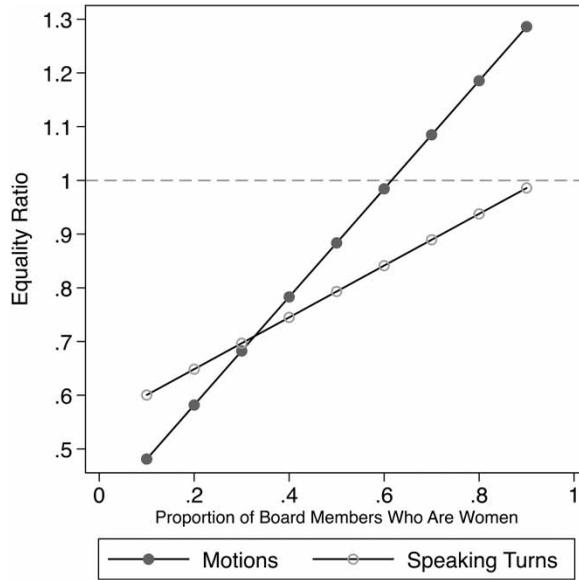


Figure 1. Equality of women's speech participation by school board gender composition. Notes: Dependent variable is the equality ratio: women's average proportion of motions or speaking turns relative to their proportion of the group. Lines are predicted values generated from Models 2 and 4 in Table 1. Figure available in Karpowitz and Mendelberg (2014, 287).

Consistent with our prediction about consensus norms, we found that women's participation is not aided by numbers when the norms do not emphasize the legitimacy of numerical power. Women's participation came closest to equality when women made up a smaller proportion of those in attendance, and *declined* as the proportion of women increased.⁷ Thus gender-neutral discussion norms and procedures, whether promoted by formal decision rules or informal conversational instructions, have asymmetrical, gendered effects. Because rules, procedures, and norms help men more than they help women with the same numerical presence, even a consensus process can actually backfire on women when their numbers are high, because in those groups, consensus leads men – and not women – to accelerate their participation. These civic groups thus offer the flip side of our prediction for majority rule. School boards and dialog groups locate at a mirror image of the other by virtue of their opposing rules and norms. And those norms implement or deflect the power of numbers.

The deliberative justice experiment

The school board data are a helpful initial indication of the ability of gender composition to shape the dynamics of group discussion under majority rule. But the data are also limited by the lack of groups deciding by unanimous rule, a gap that the case of race dialog groups fills only partially. Moreover, the typical problems of observational data rear their head here too. We cannot be entirely sure of the causal relationship between gender composition and women's participation. Finally, those data lack measures of other forms of power and representation, and measures of psychological mechanisms.

To better understand the political psychology of gender during group discussions and to home in on the causal relationships, we conducted a lab experiment. We chose two very different US locations – a medium-sized, conservative, religious city in the Mountain West and a small,

liberal, secular town on the Atlantic seaboard. We recruited a diverse sample of both student and community residents to participate in a study of “how people make decisions about important issues,” and we randomly assigned participants to 5-person groups that varied in their gender composition and decision rule. The experiment is a fully crossed 6 (gender composition) \times 2 (decision rule) between-subjects design, and participants were assigned to groups of between 0 and 5 women, with groups making decision by either unanimous or majority rule. Within each condition, we have 6–10 groups, which means that a total of 94 groups (470 individuals) completed the study.⁸ For purposes of this article, we are primarily interested in contexts in which men and women interact with each other; so, much of our analysis will focus on the 64 mixed-gender groups in our dataset.⁹

The three-part experimental protocol followed the basic procedure of a previous study by Frohlich and Oppenheimer (1990, 1992). In the first part, participants privately answered a pre-treatment questionnaire about various social and political attitudes and were told that later in the experiment they would be performing tasks to earn the money they would take home at the conclusion of the experiment. In this first stage, the precise tasks they would perform (which turned out to be finding spelling errors in a difficult text within a two-minute time period) were not revealed, but participants were told that in all likelihood, some would be very good at the tasks and others would struggle. They were also introduced to the basic values and ideas behind several different common approaches to income redistribution (including the possibility of no redistribution at all) and how those approaches might be applied in the context of the experiment.

In the second part of the experiment, participants were brought together for a “full and open” discussion about which principle of redistribution was “most just.” Their chosen principle, voted on by secret ballot according to the decision rule to which they had been randomly assigned, would be applied to the money they earned during the experiment. Participants were also instructed to choose a principle they would apply to society at large. As part of this process, groups that chose to provide a safety net to prevent group members from receiving little to no payment had to choose a minimum guaranteed income or poverty line, in annual salary, below which no one in the group would be allowed to fall.¹⁰ Group members appeared to take the discussions seriously and spent, on average, over 25 minutes in discussion. Consistent with the instructions, the discussions typically included detailed exploration of the principles of income distribution, the participants’ own related life experiences, and the relevant values they wanted to encourage in society at large.

After the deliberation was complete and the group had chosen a principle, participants returned to private computer terminals, where they answered a series of questions about the nature of the discussion and their impressions of the other members of the group. The researchers then revealed the nature of the experimental work tasks, and the participants performed several rounds of work. Their earnings were distributed according the distribution scheme chosen by the group, after which participants answered a final series of questions about their views on redistribution and were debriefed.

The experiment thus allows us to explore how important institutional features of the group – specifically, its decision rule and gender composition – affect many different aspects of group functioning. Because we exercised control over the institutional features of the groups and because we randomly assigned participants to those different types of groups, we can be confident that there is a causal relationship between the treatments and the patterns of participation and group dynamics we observed.

Full details of our experimental results can be found in Karpowitz and Mendelberg (2014), and in what follows, we review some of the key findings and their implications for critical mass theory. We begin by examining the extent to which group members shared the floor

equally. The experimental results reveal that in the setting most common in the world of politics – few women and majority rule – a significant gender gap in speech participation exists, with the average woman in the group holding the floor significantly less than the average man (Karpowitz and Mendelberg 2014, 120). Figure 2 shows the magnitude of women’s participatory deficit using the same dependent variable as we used in the analysis of school boards – the ratio between women’s talk and their proportion of the group.¹¹ The dots in the figure represent the raw average group-level equality ratio for each condition, and the lines show the linear trend for each decision rule, computed from the linear Model 1 in Table 2. In majority-rule groups, we see the same trend as with the school boards data. When women are heavily outnumbered by men in groups deciding by majority rule, their participation suffers, even relative to their numbers in the group. As the number of women in the group increases, women come much closer to equality of participation, just as critical mass theory would predict. Take, for example, majority-rule groups with only one woman: in that condition, women account for 20% of the group, but the average woman takes about 10% of the conversation – half of her proportion of the group.¹² As evident in Figure 1, in majority-rule groups, women only reach full equality of participation with men when women outnumber men 4 to 1.¹³

Figure 2 reveals one other, equally important trend. In groups randomly assigned to decide by unanimity, the pattern of gendered discussion is very different. In those conditions, women do not experience the same severe disadvantage when they are in the minority, and the equality ratio does not increase substantially when they are in the majority. Under unanimity, the effect of large numbers of women is offset by the countervailing benefit that the decision rule imparts to men when they are the numerical minority. Under this condition, the raw talk times of minority men rise substantially, keeping the overall equality ratio low. In other words, numbers are not destiny for women’s participation. When other features of the group change – in this case, its formal decision rule – the effect of numbers is dramatically different. Only under majority rule does women’s participation increase substantially with the number of women in the group. As

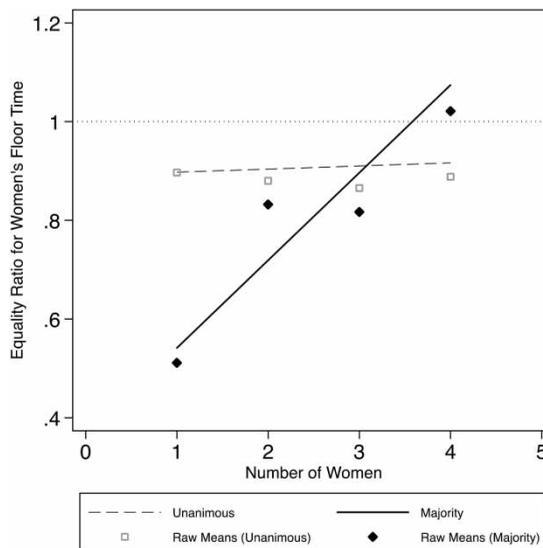


Figure 2. Equality of women’s speech participation by experimental condition. Notes: Dependent variable is the equality ratio: women’s average proportion of talk time relative to their proportion of the group. Lines are predicted values generated from Model 1 of Table 2.

Table 2. Speech participation and influence.

	(1)	(2)	(3)	(4)
	Equality ratio speaking turns	Equality ratio speaking turns	Equality ratio influence	Equality ratio influence
Majority rule	-0.527*** (0.192)	-0.479** (0.233)	-0.773 [^] (0.504)	-0.257 (0.598)
Number of women	0.006 (0.049)	0.003 (0.050)	0.017 (0.127)	-0.020 (0.128)
Majority rule × number of women	0.171** (0.070)	0.181** (0.075)	0.311* (0.184)	0.412** (0.193)
Number of egalitarians	-0.039 (0.040)	-0.025 (0.055)	-0.000 (0.105)	0.150 (0.142)
Majority rule × number of egalitarians		-0.027 (0.070)		-0.281 (0.181)
Constant	0.919*** (0.149)	0.892*** (0.167)	0.426 (0.390)	0.137 (0.428)
Observations	64	64	64	64
R ²	0.263	0.265	0.128	0.164
Control for outlier	Yes	Yes	Yes	Yes
Control for experimental location	Yes	Yes	Yes	Yes

Note: Group-level analysis; cell entries are OLS regression coefficients, with standard errors in parentheses.

* $p < .1$.

** $p < .05$.

*** $p < .01$.

[^] $p < .15$.

the interaction terms in Models 1 and 2 of Table 2 confirm, decision rule moderates the effect of numbers.

Next, we need evidence that the patterns come from gendered norms rather than preferences correlated with individual gender. Our argument, at its core, is that numbers, rules, and other features of the group and its structure affect norms (gendered expectations for participation and interaction in the group setting), which in turn affect women's authority. As evidence, we need to show that numbers and rules do not simply carry the effects we document because they aggregate the preferences of any numerical majority or any numerical minority differently, and that women's authority is not simply an accident of their preferences. Table 2 includes controls on preferences, in the form of a scale measuring the individuals' level of egalitarianism (which we dichotomize by dividing at the scale median for our count of the main correlate of the number of women – the number of egalitarians in the group). The effects display merely minor changes across the models, indicating that accounting for preferences barely touches the pattern of gender inequality. Women do not speak less than men when their numbers are small because they hold preferences different from men's. Rather, they do so because they are women.¹⁴

This pattern of results would be little more than an interesting side note, however, if floor time were merely a proxy for chattiness and nothing else. But our argument is that floor time matters because it is strongly related to authoritative influence. Many people can recount an experience in which a relatively quiet member of a group seemed to have a substantial effect on the group's decisions, but our experiment allows us to discover whether such anecdotes generalize. After the group discussion, we asked participants several questions about their efficacy – such as whether their opinions were “influential in shaping the group discussion and final decision” or whether their “voice was heard.” We also asked them to identify the “most influential” group

member. We use these responses to measure how much influence women have in the eyes of others. Efficacy is the authority one believes one has. Perceived influence is the authority others believe one has.

We find that speaking time is substantially related to both one’s own and others’ assessments of authority within the group. Individuals who spoke more were more likely to believe that their opinions were influential and that their voices were heard, and this effect was greater for women than for men (Karpowitz and Mendelberg 2014, 130–133). In other words, women feel better about their own contribution to the group when they speak up, and this benefit affects women more than men. In addition, and perhaps even more importantly for authority, speaking up builds influence in the eyes of fellow group members. Men and women who held the floor for a greater percentage of the group’s conversation were dramatically more likely to be identified by their fellow group members as the “most influential” group participant (Karpowitz and Mendelberg 2014, 133–135). The quietly influential group member may exist, but he or she is the exception, not the rule. In the conditions where women are more likely to speak up, therefore, they are more likely to be seen as influential.

This means that the interaction of gender composition and decision rule produces not only speaking time but also standing and authority. Figure 3 and Models 3 and 4 of Table 1 highlight the basic result. The dependent variable in these analyses is the gender equality of perceived influence, operationalized as the proportion of all votes received by women divided by women’s proportion of the group. As with the equality ratio for women’s talk time, numbers less than one represent a deficit of influence for women, relative to their presence in the group. Under majority rule, critical mass theory finds vindication: women’s influence relative to their numbers rises as the group’s gender composition tilts in their favor. When women are heavily outnumbered by men, they experience a severe inequality of influence. For example, in majority-rule groups, only once did a token woman receive an influence vote (and then only a single vote). But even this near-total disempowerment can be remedied by numbers. In groups with four women and a token man, women received more influence votes than their proportion of the group.

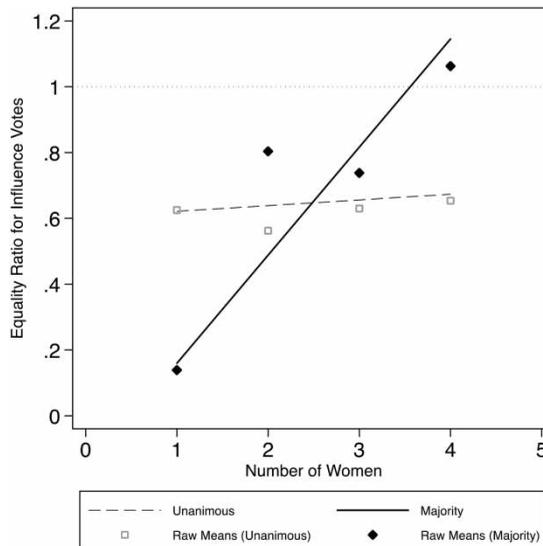


Figure 3. Equality of women’s influence by experimental condition. Notes: Dependent variable is the equality ratio for influence: Women’s average proportion of votes relative to their proportion of the group. Lines are predicted values generated from Model 3 of Table 2.

Numbers do make an enormous difference to women's authority, shifting it all the way from virtually zero to over 100%.

The effect is again very different, however, in groups in which unanimity was required. There, women come closer to equality of authority when their numbers are few, but do not experience a significant increase in influence as their numbers grow. This interaction between gender composition and decision rule, evident in the "x-pattern" of the linear predicted values in Figure 3 and confirmed in the interaction terms in the regression models, can be seen especially clearly when we consider who wins the influence vote (Karpowitz and Mendelberg 2014, 136) – that is, whether a man or a woman is considered to be the most influential member of the group. When women are in the numerical minority, a woman is significantly more likely to receive the most influence votes under unanimity (25%) than under majority rule (13%). But in groups where women outnumber men, women are substantially more likely to receive the most votes in groups deciding by majority rule (73%) than in groups deciding by unanimity (53%).

The experimental conditions thus affect how much or how little women are likely to speak up relative to men, and these patterns of verbal participation in turn build women's standing and authority within the group. Speech matters because it affects women's ability to be seen by others as influential group members. A formal mediation model (shown in Karpowitz and Mendelberg, 137–138) confirms that the experimental conditions affect influence through their effect on floor time. Thus, the effect of numbers on women's authority – and more broadly, the political psychology of gendered participation – cannot be understood apart from careful attention to the *interaction* of the social identity of the members and the rules under which the group comes together.

The results so far are consistent with our story about gender, rules, and numbers. Rules and numbers jointly set norms of interaction that boost or detract from women's authority and status in the group. Majority rule signals that the social identity majority can exercise power legitimately. And so, majority rule grants women an entitlement to influence and boosts their authority – *when they are the majority*. Conversely, unanimous rule helps women when they are the minority, because it helps any type of minority. Each member has equal power, and this equality of vote facilitates the equal respect of voice. This rule sets in motion a norm of inclusion that ameliorates the unequal authority that comes with social inequality. Notwithstanding the potential for pressure on the minority to simply conform, the majority cannot ignore the minority. But the final twist is that while majority rule empowers female majorities, it empowers male majorities still more. And the same goes for unanimous rule. The rule has asymmetric effects on men and women, just as numbers do.

Next, we examine an additional way in which authority can be instantiated or undermined through speech: the pattern of interruptions experienced by women. Authority can be generated (or undermined) not only by how much individuals speak, but also by the interactions *between* members of the group (see Mendelberg, Karpowitz, and Oliphant 2014). These interactions are a key aspect of group norms: they can generate higher status for fellow deliberators (or not) and foster a sense of group rapport (or not).

We follow an established distinction between positive and negative interruptions (Li 2001; Smith-Lovin and Brody 1989; Stromer-Galley 2007). Negative interruptions represent a powerful attempt to seize the floor and express opposition to the speaker's views. Often, they begin with phrases like "I don't know," "I'm not sure about that," "I disagree," "but," or even, simply, "no." But they can also include attempts to seize the floor and change the subject without any acknowledgment of what the previous speaker was saying.¹⁵ Negative interruptions build the power of the interrupter by placing him or her in a dominant position, relative to the speaker. Positive interruptions, by contrast, signal support, cooperation, and solidarity with the speaker. Such interjections often begin with words or phrases like "yeah," "uh-huh," "I agree," or "good point." They, too, are a form of power, but one that typically enhances the speaker's standing, generates

rapport, and sends a cue that the audience is actively listening. Previous work has found that patterns of interruptions tend to show evidence of gender hierarchies, with men being more likely than women to interrupt negatively (see Anderson and Leaper 1998 for a meta-analysis). Differences in the types and patterns of interruptions are thus an indicator of equal status (or the lack thereof) in group conversation.

We defined an interruption as occurring when one speaker clearly holds the floor and a second speaker clearly attempts to take the floor. Specifically, we used special software created just for this purpose and that allowed us to measure each speaking turn very precisely. We used the software to identify all instances in which a speaker held the floor for at least 1.5 seconds, a second speaker talked for at least 1 second, and there is an overlap of at least 0.5 seconds between the two speakers.¹⁶ We then employed human coders to check each potential interruption identified by the software, and the coders also classified interruptions as either positive or negative.

When we look inside the “black box” of interaction in group settings to examine interrupting behavior between group members, we again find that group-level conditions have an important effect on the dynamics of the conversation and ultimately on women’s authority. We begin by exploring the proportion of all positive and negative interruptions received by women from men that were negative.¹⁷ In groups where women’s status is lowest by dint of both numbers and norms – groups with few women in which decisions were made by majority rule – women receive a high proportion of negative interruptions from men. In such groups, *more than half* of the interruptions women receive from men are negative, compared to less than 19% in majority-rule groups with three or four women ($z = 1.98, p < .05$ in a group-level difference of proportions test). Thus, as women’s numbers rise under majority rule, the tone of men’s engagement with women shifts from mostly negative to largely positive. By contrast, men’s experience does not shift with the number of women in the group; only women’s does.

But again, this is only true under majority rule, as can clearly be seen in Figure 4, which highlights both the raw means in each condition and the predicted values generated from Model 1 in Table 3. The regressions in the table show that, as with our other measures, there is a strong interaction between the group gender composition and its decision rule. When the group is assigned to

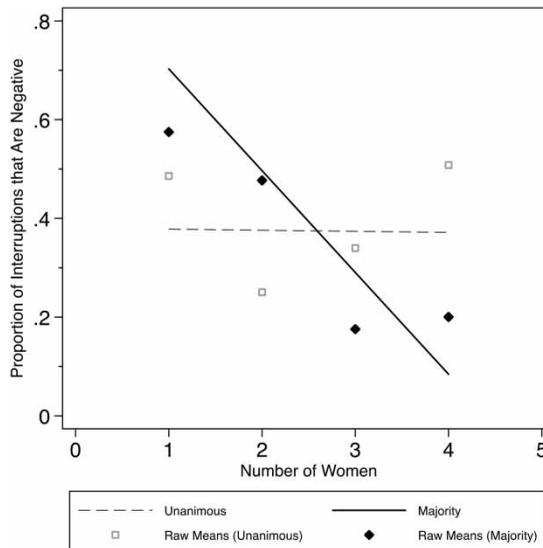


Figure 4. Proportion of negative interruptions received by women from men. Notes: Dependent variable is the proportion of all negative and positive interruptions that are negative. Lines are predicted values generated from Model 1 of Table 3.

Table 3. Discussion content and dynamics.

	(1)	(2)	(3)	(4)	(5)	(6)
	Proportion of Neg. + Pos. interruptions that are negative	Proportion of Neg. + Pos. interruptions that are negative	Frequency of care issues	Frequency of care issues	Maximum endorsed safety net	Maximum endorsed safety net
Majority rule	0.528** (0.209)	0.565** (0.243)	-11.960*** (4.338)	-10.093* (5.146)	-11.553** (4.868)	-5.134 (5.427)
Number of women	-0.002 (0.049)	-0.006 (0.050)	0.036 (1.117)	-0.088 (1.137)	-0.451 (1.071)	-0.742 (1.021)
Majority rule × no. of women	-0.204*** (0.074)	-0.195** (0.080)	4.271*** (1.600)	4.672*** (1.712)	3.924** (1.634)	5.404*** (1.681)
Number of egalitarians	0.035 (0.042)	0.046 (0.055)	-0.551 (0.914)	0.010 (1.232)	0.335 (0.906)	1.569 (1.020)
Majority rule × no. of egalitarians		-0.021 (0.070)		-1.083 (1.587)		-3.686** (1.649)
Speaking turns (group average)	0.006*** (0.002)	0.006*** (0.002)				
Constant	-0.031 (0.173)	-0.051 (0.186)	10.963*** (3.405)	9.894** (3.763)	25.329*** (3.482)	23.156*** (3.434)
Observations	55	55	64	64	40	40
R ²	0.300	0.301	0.211	0.218	0.401	0.480
Control for outlier	No	No	No	No	No	No
Control for experimental location	Yes	Yes	Yes	Yes	Yes	Yes

Note: Group-level analysis; cell entries are OLS regression coefficients, with standard errors in parentheses.

* $p < .1$.

** $p < .05$.

*** $p < .01$.

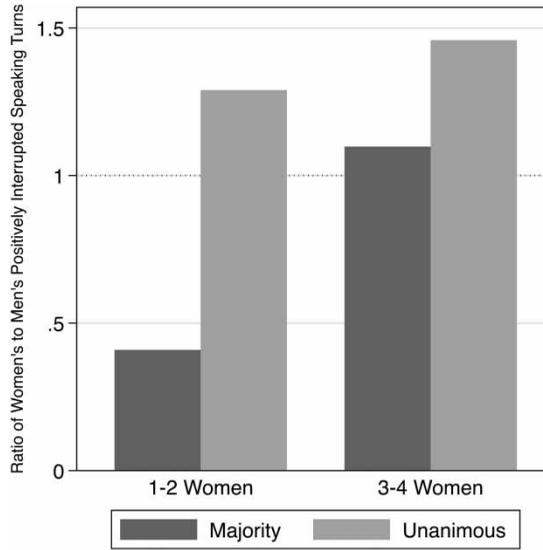


Figure 5. Ratio of women's to men's positively interrupted speaking turns. Notes: Dependent variable is the ratio of women's to men's speaking turns that were positively interrupted. The dotted line at 1 represents equality.

make decisions by unanimity, women's numbers exert no clear linear effect on men's tendency to interrupt women negatively. Though there is some variability, the proportion of negative interruptions never exceeds 50% (see Karpowitz and Mendelberg 2014, 209–213).¹⁸

The same pattern can be seen with a second measure: the ratio of women's to men's positively interrupted speaking turns. Here, we calculate the average proportion of speaking turns that received a positive interruption for both men and women and then calculate the group's gender ratio. Ratios below one indicate that women receive fewer positive interruptions than men, while ratios above one mean that women received more positive interruptions than men. Figure 5 confirms that minority status causes women to experience far less support than majority status, but only under majority rule. To be precise, women in majority-rule groups with few women receive positive affirmation at a rate that is approximately 40% of men's. By contrast, women in different experimental conditions receive positive validation for their speaking turns at least as much as and sometimes more than men. The effect of rule on groups with minority women easily exceeds standard thresholds for statistical significance ($t = 2.64$, $p = .01$, two-tailed difference-of-means test), as does the effect of numbers on groups deciding by majority rule ($t = 3.07$, $p < .01$). Again, these effects obtain only on the interruptions issued to women, not on those issued to men (Karpowitz and Mendelberg 2014).

The key result, then, is that women's experience in groups depends on the conditions of discussion. When women are protected either by numbers or decision rule, they experience a conversational dynamic that is much more positive than negative, and this occurs *because men change their behavior toward women*. The conditions have no effect on male interrupting behavior toward other men or women's interrupting behavior toward either women or men.¹⁹ Instead, women have a different experience because men offer significantly more positive validation to women when the men are outnumbered by women or when women are protected by unanimous decision rule.

Interruptions thus appear to function as an indicator of status within the group. When women's power is undermined by low numbers in majority rule, their interactions with men

are characterized by male dominance and aggression in the form of negative interruptions. As women's status rises, men respond by offering positive validation, becoming dramatically more affirming in their interrupting behavior, to the point that men and women receive positive affirmation at approximately equal rates.

These differences matter for women's self-efficacy and authority. When women receive a lower proportion of negative interruptions, their sense of efficacy increases, as does the number of influence votes they receive from other members of the group (see Karpowitz and Mendelberg 2014, 222–226). Receiving more positive validation affects women more than it does men. By implication, men's sense of efficacy, and the level of influence others attribute to them, does not depend on positive interruptions to nearly the same extent as women. In addition, elsewhere we report that positive affirmation is especially powerful for women in mixed-gender groups who expressed low levels of confidence in their speaking abilities prior to the discussion (Karpowitz and Mendelberg 2014).

Just as the numbers and rules affect the pattern of interruptions between men and women, so do they affect other aspects of influence and authority, including the content of women's speech. We not only tracked how much men and women spoke during the group's deliberation; we also systematically analyzed exactly what they said. We were especially interested in whether the experimental conditions would affect women's propensity to mention the distinctive political and social priorities of women. Previous work has shown that women tend to hold a number of political perspectives and priorities that differ from men's (Crowder-Meyer 2010; Hutchings et al. 2004; Inglehart and Norris 2001). Specifically, in open-ended response to survey questions, in their choice of majors and occupations, and in their patterns of political activism, women are more likely than men to focus on the needs of families, children, the poor, and other disadvantaged populations (Burns, Schlozman, and Verba 2001; Crowder-Meyer 2010; Poggione 2004). We call this bundle of issue priorities "care issues" and contrast them with men's tendency to be more concerned about salary, taxes, prices, and other financial issues (Crowder-Meyer 2010).

To explore the content of women's contributions to the discussion, we counted the specific words that participants used during the discussion.²⁰ We defined the care issue category using a large dictionary of words associated with the topics of children, family, need, and the poor, and then assessed how often women used words that fell into these care categories as a proportion of all words spoken. The key finding is that women's propensity to talk about care issues varies dramatically with the rule and the numbers, in ways that are consistent with patterns of speech. In settings where women speak less and experience lower levels of perceived influence (majority rule groups with few women), a woman's frequency of talking about care issues averaged about 6 times per 1000 words spoken. In majority groups where women are the majority, this average rises to 15 times per 1000 words.²¹ A discussion in which care issues are raised an additional nine times per woman, on average, represents a substantial and statistically significant change in the focus of the group's talk.²² Notably, these patterns are not found with regard to financial issues or a placebo category of words related to the rich or well-off (the parallel to poor) (see also Karpowitz and Mendelberg 2014, 186–190). These results can be seen in Figure 6, which shows that when women are the numerical minority under majority rule, they raise care issues less than half as often as they raise financial issues. But when women comprise the majority in groups deciding by majority rule, they raise care issues more than twice as often as financial issues.²³

As with floor time and influence, however, the content of the group's discussion can also be affected by the decision rule. In groups deciding by unanimity, women invoked care issues about 11 times per 1000 words, regardless of the number of women in the group, and the ratio of care issues to financial issues among women stayed high regardless of gender composition.²⁴ In other

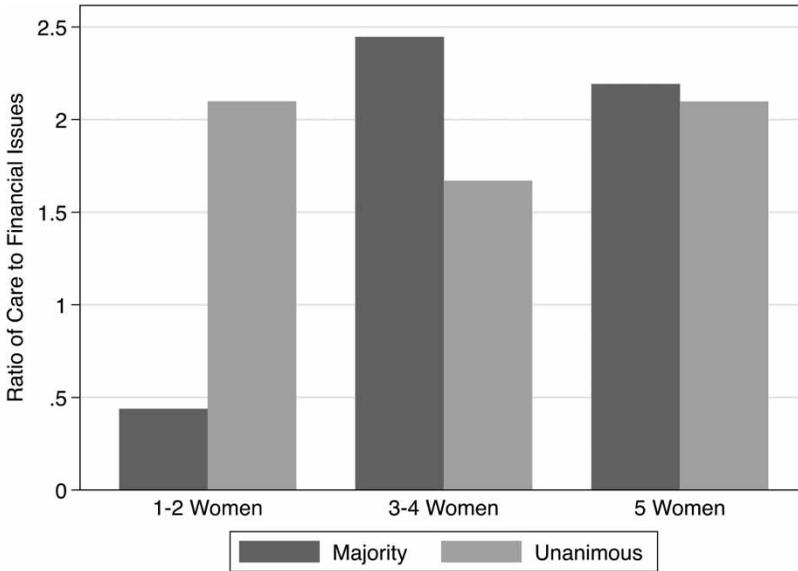


Figure 6. Ratio of care issues to financial issues among women.

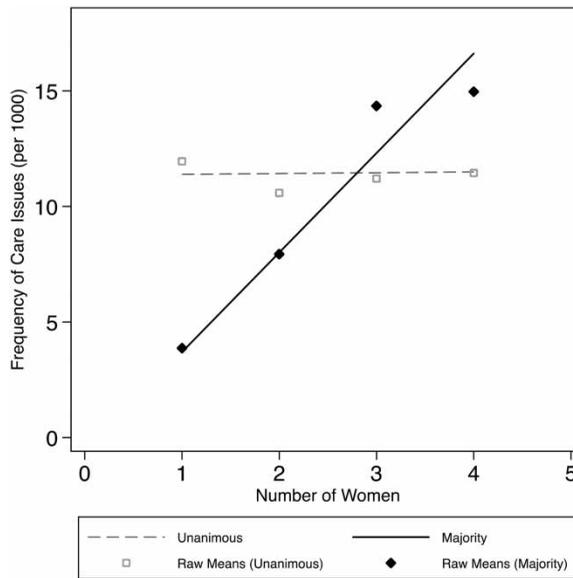


Figure 7. Women’s frequency of care issues. Notes: Dependent variable is women’s use of care words per 1000 words spoken. Lines are predicted values generated from Model 3 of Table 3.

words, women talk about women’s distinctive priorities even when their numbers are few when the decision rule empowers them. The now familiar interaction between gender composition and decision rule can again be seen in Figure 7, which presents the frequency with which women talked about care issues, and in Models 3 and 4 of Table 3, which show evidence of the significant interactive effect of decision rule and gender composition on women’s tendency to discuss care issues.

We noted above that women were more likely than men to prioritize meaningful assistance to the poor, so in addition to their use of specific words, we carefully tracked women’s expressed preferences about assistance to the poor during the group discussion. Recall that groups had the option of setting an income safety net below which they would not allow any group member to fall, and the vast majority of groups who participated in the experiment chose to do so. But the generosity of that safety net varied substantially across the groups, and so too did women’s willingness to champion more generous safety net amounts. In the conditions in which we already found women’s authority to be lower than men’s, women were also far less likely than men to set the agenda for discussion of the safety net by being the first to speak up about their preferences (Karpowitz and Mendelberg 2014, 244). And when they did speak up, they publicly advocated for safety net amounts that were considerably lower than what women endorsed in other types of groups. For example, when women were the numerical minority (one to two women) in groups deciding by majority rule, their average maximum endorsed safety net was a little more than \$24,250, while the average was about \$30,900 in groups with three or four women – a difference of about \$6600.²⁵ To put this in perspective, the federal poverty line for a family of four at the time of the study was about \$21,000, so a safety net of nearly \$31,000 represents a guarantee to poor families that is nearly half again as much as that provided by the federal government. As Figure 8 shows, however, the trends under unanimity are far different from those under majority rule. For example, women in unanimous groups with only one woman advocated a safety net of about \$30,000, with no dramatic increase as the number of women rises. The familiar “x-pattern” interaction between gender composition

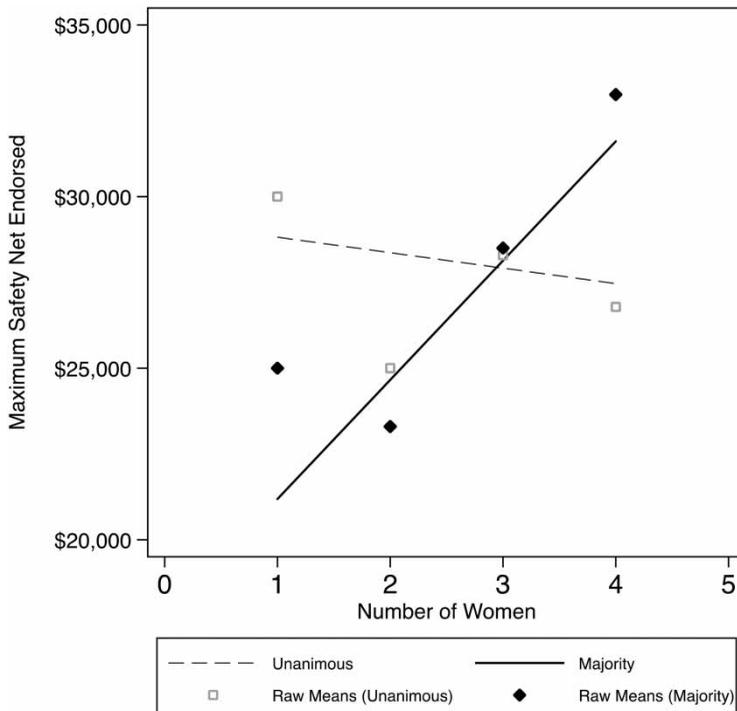


Figure 8. Average maximum safety net endorsed by women. Notes: Dependent variable is the average of the largest safety net amount women in the group endorsed. Lines are predicted values generated from Model 5 of Table 3.

and decision rule is again evident. Numbers empower women under numbers-empowering rules, and consensus protects scarce women.

The norms of discussion thus build (or undermine) women’s empowerment and representation by encouraging or discouraging their speech, with the result that women become more willing to articulate care issues and champion more generous safety nets. Thereafter, we see the traces of this rising authority in women’s sense of efficacy and others’ perception of their relative influence.

The effects of the norms that numbers and rules produce are also revealed in two additional measures: women’s sense of certainty about their choices and the extent to which they are willing to endorse group solutions other than their most preferred. Our research design called for each participant to divulge their most preferred principle of redistribution prior to the group’s deliberation and then after deliberation to report both an update about their preference and their sense of certainty about this preference.²⁶ We find, first, that women expressed far more confidence in their preference after participating in deliberation in conditions where they were more empowered by either numbers or decision rule.²⁷ When women faced a deficit of status, standing, and authority, however, their post-deliberation confidence in their preferences was severely undermined. Men’s sense of certainty, by contrast, was little affected by the experimental conditions.²⁸ These individual-level results are summarized in Figure 9.²⁹

Second, we also found that when women were disempowered by the institutional rule, they were far *more* likely to publicly endorse principles of redistribution *other* than the one they privately favored prior to the deliberation. This offers some clues to the depth of women’s disempowerment. It is not simply a matter of women remaining quiet when the gender composition or

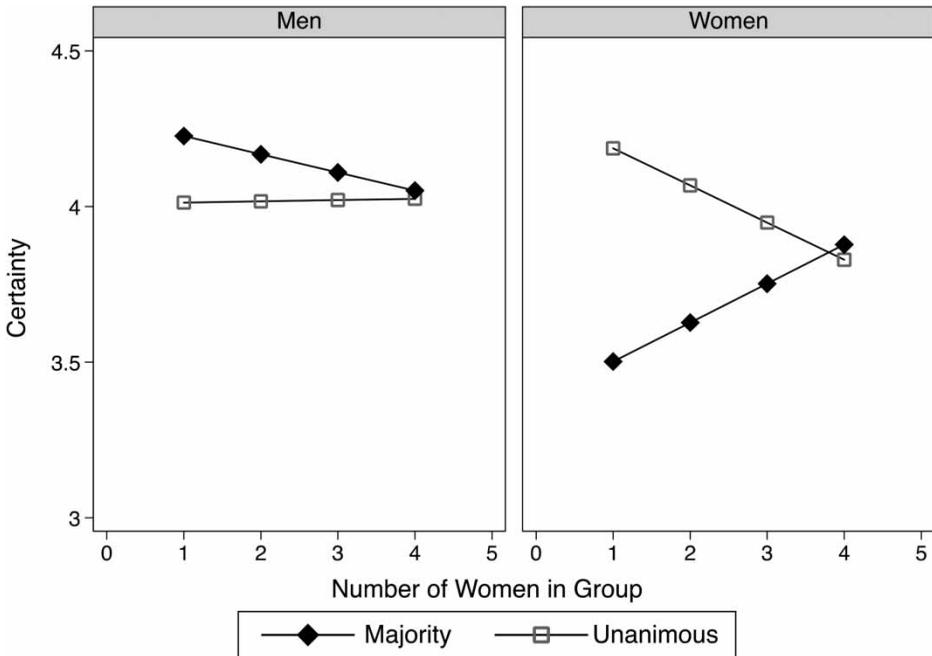


Figure 9. Certainty about preferences. Notes: Dependent variable is certainty about one’s own post-deliberation preference regarding the group decision. Predicted values from Models 1 and 3 of Table 9.1, found in Karpowitz and Mendelberg (2014, 247).

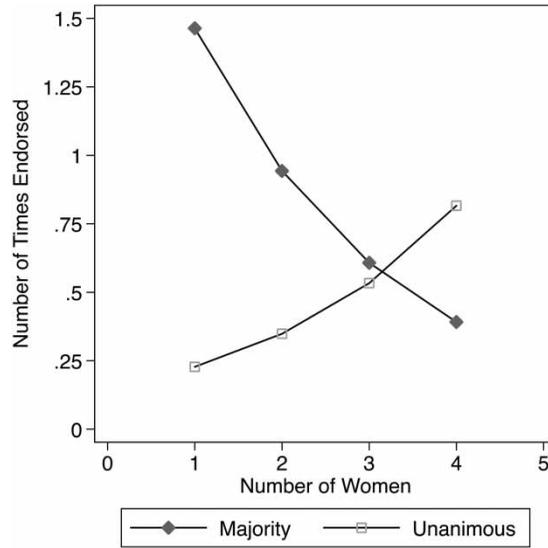


Figure 10. Preference falsification among women. Notes: Dependent variable is endorsement of principles of redistribution other than first pre-deliberation preference. Predicted values from Model 1 of Table 9.3, found in Karpowitz and Mendelberg (2014, 258).

decision rule work against them; when women are disempowered, their public preferences actively deviate from their private opinions (i.e., from their pre-discussion first choice of distributive principles). The effect is substantial: as Figure 10 shows, the rate of endorsing preferences other than their most preferred is predicted to be nearly six times greater when women are outnumbered four-to-one under majority rule than under unanimity; and if we look at majority rule alone, more than three times greater when women are outnumbered four-to-one than when they outnumber men four-to-one.³⁰ Men are not affected by the experimental conditions in this way; if anything, men are more likely to speak out for their preferences when they are the minority under majority rule.³¹

Of course, the ultimate measure of women's influence is their ability to alter the group's eventual decision. As we noted, women tend to publicly advocate a more generous safety net in conditions when their status is equal to men's. Are women also able to move the group's decision in the direction of increased generosity under those same conditions? The answer is a qualified yes. We qualify our answer because the group's final decision is the result of several factors, including the number of egalitarians in the group.³² Nonetheless, as can be seen in Figure 11, numbers and rule do interact to affect the group's outcome.³³ For example, when assigned to decide by majority rule, groups with only one or two women set a safety net that is nearly \$3600 lower than groups with many women. Under majority rule, then, women are able to translate their preferences into a more generous group decision only when there are many women in the group. In that sense, women's numbers do empower women to translate their advocacy into concrete policy. Numbers are not the only means to empowerment, however. When women are few but are empowered by the unanimous decision rule, the group sets a floor that is more than \$3700 higher than groups with few women and majority rule.³⁴ However, unanimous groups with many women set a comparatively lower floor because unanimity also empowers men when they are the minority, as the men leverage their minority status to keep the floor down.

Importantly, one of the key mechanisms for women's influence on the group decision is their willingness to speak up. When women advocate for more generous safety nets, they are often able

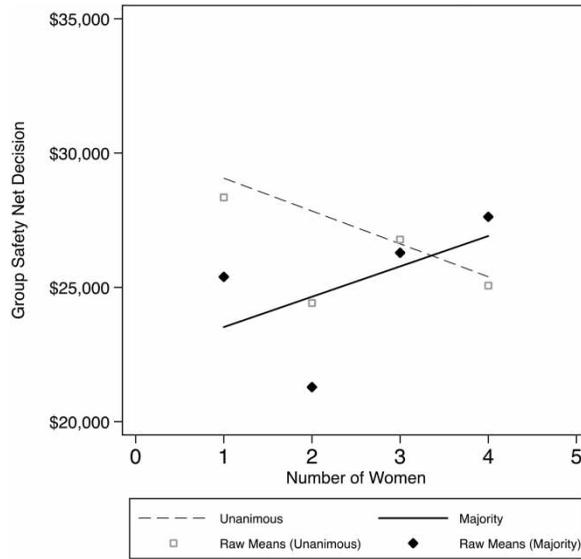


Figure 11. Generosity of group’s safety net decision.

to move the group in the direction of their preferences (see Karpowitz and Mendelberg 2014, Chapter 10 for details). When women do not speak up, however, the group’s outcome will be primarily shaped by whatever men’s preferences happen to be.³⁵ Thus, silence undermines one’s power. Of course, the extent to which women speak up, encounter positive affirmation rather than hostile bids for their floor time, and articulate more generous preferences toward the poor are themselves endogenous to the experimental conditions, as we have shown. Institutions matter because they simultaneously shape many different aspects of group functioning, including women’s floor time, the content of their speech, the generosity and sincerity of their preference expressions, and the extent to which women receive positive validation from men. All of these factors work together to shape not only women’s equal playing field during group discussion, but also the group’s eventual outcome.

Conclusion

What can institutions do to bring about gender equality? This question is all the more urgent today, as more and more institutions take steps to remedy the near exclusion of half the population from official power. Kanter’s elegant theory of numbers offers a compelling solution. There is only one problem with it: its predictions do not seem to bear out. At least, they do not bear out consistently. Numbers seem to help, but also to hurt, with intricate reasons for when and why.

Here, we have summarized one line of investigation into that disappointing failure. We took the heart of the theory – the intersection of authority and norms – and developed it by putting to use the extensive literature on gendered social interaction. We then tested several implications of this theory of authority and norms, and found consistent support for it. Numbers do help, but with several important caveats.

First, numbers are asymmetric in favor of men; men get farther with a given number than women do. For example, unlike men, women must exceed parity, and sometimes reach a super majority, to reach equality of influence. (By the same token, rules help men more than women for any given number.) Second, women fail to leverage those large numbers unless

the rules signal the expectation that the majority carries legitimate power. In this sense, rules shape norms; they do not merely aggregate preferences. And rules can gut the potential gains from women's numbers. This second caveat is the biggest challenge to the original law of numbers.

But what is bad news for the theory of critical mass is good news for social equality. Numbers are not the only route to equality – where numbers lag, rules and their attendant norms can step in. A consensus process neutralizes the authority deficits of women when women are few. Though they may seem deceptively neutral or arbitrary, rules thus carry profound consequences for equality.

However, even this caveat can be assimilated into the logic of the theory of numbers and become a friendly amendment. The original key insight of the law of numbers was that numbers are mediated by norms. Our findings suggest a way to expand that insight from numbers to rules. When women are few, they are subject to aggressive norms unless the rule gives each person a voice, thereby creating norms that value everyone, and then, women achieve a level of participation and influence nearly equal to the men in their group.

We demonstrated the utility of our framework both with experiments and with actual speech in natural settings with groups that varied along many characteristics – race dialog groups and school boards. The prevalence and breadth of the patterns testify to the wide reach of the framework. It can apply to discussions of feminine variety of political topics; to groups with varying racial, ethnic, age, and income compositions; and to citizens and officials.

In sum, norms shape the gendered allocation of authority, and they can be shaped by numbers and rules. A fuller understanding of the psychology of gender requires further exploration of the concepts of norms and authority.

Notes

1. Another literature we engage indirectly here is the literature on deliberation. Just speech situations require equality – all members must have an equal voice in the discussion (Habermas 1990). For further discussion, see Karpowitz, Mendelberg, and Shaker (2012).
2. Studies that find a positive effect of numbers include Duerst-Lahti (2002, 380), Thomas (2005, 253–254), and Thomas and Welch (2001). Numbers sometimes boost women's power conditional on other variables such as the discourse environment (Beckwith and Cowell-Meyers 2007, 557; Grey 2006; McAllister and Studlar 2002).
3. As noted by Reingold (2008), many past studies have focused on women's participation where women are a small minority. We leverage the diversity of gender composition across school boards to determine how numbers elevate women's influence.
4. Details of the sample selection process can be found in Karpowitz and Mendelberg (2014, Chapter 10). The full sample includes 87 meetings from 20 different states.
5. We define severe disadvantage in speaking as a proportion of recorded speaking turns that is less than half of women's proportion on the board (or an equality ratio of less than .5). On boards where women were the gender majority, they experienced such a severe disadvantage in speaking at only 15% of meetings; men in the majority never did.
6. These findings persist even on boards with a female chair. We tested the notion that as the number of women increases in a group, it is more likely to select a female chair, and confirmed it, and we also found that female chairs speak more than non-chair females, raising the overall participation of women in the group. But unfortunately, a female chair has little independent effect on gender equal speaking turns among the non-chair board members, either with minority-female or majority-female boards.
7. The measure of equality is the same measure used with school boards – the ratio of women's speech participation to their proportion in the group.
8. For all details, see Karpowitz, Mendelberg, and Shaker (2012), Karpowitz and Mendelberg (2014), Mendelberg, Karpowitz, and Goedert (2014), Mendelberg, Karpowitz, and Oliphant (2014), and the associated appendixes.

9. See Karpowitz and Mendelberg (2014) for a discussion of gender “enclaves” – groups comprised entirely of one gender.
10. During the work period, earned incomes were given in a scale of annual incomes, which were later converted into the dollar amounts individuals took home. Final earnings typically ranged between \$10 and \$70.
11. We first computed the individual’s *Proportion Talk* by dividing the total number of seconds each individual spoke by the group’s total number of seconds. We also calculated the average *Proportion Talk* for men and women within the group. We compute the equality ratio by dividing women’s collective *Proportion Talk* by their proportion of the group. A ratio of 1 means that women speak in proportion to their numbers in the group. For a full discussion of related measures and results, see Karpowitz, Mendelberg, and Shaker (2012) and Chapter 5 of Karpowitz and Mendelberg (2014).
12. These computations exclude one outlier that is over two standard deviations away from the other groups in this condition. If the outlier is included, the difference between male and female floor time is still statistically significant and is about 9 percentage points, meaning that women account for about two-thirds of the speaking time of men. The regression analyses in Table 1 include a control for this outlier group.
13. There, floor time actually favors women slightly, though the difference is not statistically distinguishable from zero.
14. Each model in Table 2 includes controls for the number of egalitarians in the group, and Models 2 and 4 control for the interaction between the number of egalitarians and decision rule, in parallel fashion to the interaction of number of women and rule. Neither of these controls undermines the interaction between gender composition and decision rule, nor do controls for other variables, such as preferences about the group’s decision or, in individual-level analysis, whether or not the individual’s pre-deliberation preferences match the group outcome (Karpowitz and Mendelberg 2014). This holds for remaining analyses in this article, and holds when we control on liberal–conservative ideology instead of our measure of egalitarianism. Neither do controls for demographics such as age, income, or education alter any of the results we review here (Karpowitz and Mendelberg 2014).
15. See Karpowitz and Mendelberg (2014, 206–209) for a more complete discussion of how we defined and measured interruptions.
16. See Mendelberg, Karpowitz, and Oliphant (2014) for details of our coding procedures. Coders also identified neutral interruptions (those that could not clearly be identified as positive or negative), but these occurred very rarely and with lower inter-coder reliability, so they are not included in the current analysis.
17. As we explain in Karpowitz and Mendelberg (2014),

This is the average dyadic proportion received by each person, excluding neutral interruptions. For example, we divide the number of negative interruptions given by B to A by the sum of negative and positive interruptions given by B to A; we do the same for those given to A from the others. Then we sum these dyadic proportions and divide the sum by the number of participants who gave a positive or negative interruption to A. We repeat this procedure to calculate the average dyadic proportion given to B and so on for each member who received a positive or negative interruption. When we look at gender subgroups, this measure adjusts for the shifting gender proportion. (208)

18. On average across all unanimous groups, men tend to offer negative interruptions about 40% of the time and positive interruptions in about 60% of cases.
19. See Karpowitz and Mendelberg (2014, 209–218) for details.
20. See Karpowitz and Mendelberg (2014, 167–198) for specifics of the content analysis procedure.
21. The unit of analysis is the group, but these estimates represent the average frequency of care issues per woman, not the total number of references to care issues summed across all women in the group. Individual-level analysis yields similar results and can be found in Karpowitz and Mendelberg (2014) and Mendelberg, Karpowitz, and Goedert (2014).
22. The average group discussion in our dataset contained about 700 words, so a 1000-word session would be somewhat above average.
23. This difference in the ratios is significant at $p < .01$, $t = 2.98$, two-tailed difference-of-means test.
24. As a helpful point of comparison, Figure 6 also includes the ratio of care to financial issues in groups composed entirely of women. In these groups, the ratio is high no matter what the decision rule.
25. A group-level difference-of-means test shows that this difference is significant at $p < .001$ ($t = 10.71$).

26. Respondents were asked “how sure” they were of their preferences on a 1 (“very unsure”) to 5 (“very sure”) scale.
27. Certainty was completely unrelated to the experimental conditions prior to deliberation, as expected.
28. On average, both men and women grow more certain of their preferences after deliberation (see Karpowitz and Mendelberg 2014, 246–247), but there is no significant relationship between men’s certainty and the experimental conditions.
29. This figure shows the predicted probabilities from the models found in Karpowitz and Mendelberg (2014, 247).
30. These predicted probabilities are drawn from Models 1 and 3 in Table 9.3 of Karpowitz and Mendelberg (2014, 258).
31. For additional detail, see Karpowitz and Mendelberg (2014, 258).
32. Other important factors include the experimental site, the principle of redistribution chosen by the group, and the extent to which the preferences of men and women diverge strongly in any given group.
33. The predicted values in the figure are computed from Model 2 of Table A.9.6 (Karpowitz and Mendelberg 2014, 400).
34. In analysis that controls for experimental location, the difference between many and few women in mixed-gender groups under majority rule is significant at $p = .086$ (two-tailed test), and the difference between unanimous and majority rule in groups with few women falls somewhat short of significance at $p = .136$ (two-tailed test). In addition, in groups composed solely of women, participants set an extremely generous safety net – on average, over \$35,000, regardless of the group’s decision rule (see Karpowitz and Mendelberg 2014, 260–261).
35. Similarly, in the rare circumstances where women speak up but men are silent, women’s preferences carry the day).

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