Does Descriptive Representation Facilitate Women’s Distinctive Voice? 
How Gender Composition and Decision Rules Affect Deliberation

Abstract:

Does low descriptive representation inhibit substantive representation for women in deliberative groups? We address this question, but expand it to ask if the effects of descriptive representation depend on the group’s decision rule. We conducted an experiment on distributive decisions that randomizes the group’s gender composition and decision rule, includes many groups, and links individuals’ pre-deliberation attitudes to their speech and to post-deliberation outcomes. We find that low descriptive representation does produce low substantive representation, but primarily under majority rule. Under those conditions, women are less likely to voice women’s distinctive concerns about children, family, the poor and the needy, and more likely to voice men’s distinctive concerns. Men’s references shift similarly. These effects lead in turn to less generosity to the poor. Unanimous rule protects women in the numerical minority, mitigating some of the negative effects of low descriptive representation. Descriptive representation matters, but in interaction with the decision rule.

Word Count: 8,579
Deliberation is often thought these days to be a backbone of democracy (Chambers 2003; Fishkin 1995; Gutmann and Thompson 2004; Habermas 1989). Governments are increasingly turning to group discussions for input, and many citizens participate in deliberations when invited (Neblo et al. 2010). Group discussions are also common in civic life, voluntary organizations, workplaces, and educational settings (Cramer Walsh 2007; Jacobs, Cook, and Delli Carpini 2009), complementing juries, local councils, and local meetings (Gastil et al. 2010).

A key attraction of deliberation is that it can “diminish the discriminatory effects of class, race, and gender inequalities” (Gutmann and Thompson 2004, 48, 50). One of the main concerns, however, is that deliberation may instead reflect existing disadvantages, specifically through the mechanism of voice (Fraser 1992; Mansbridge 1983; Sanders 1997; Williams 2000; Young 1996). Groups with less status or power in society may refrain from voicing their distinctive concerns and perspectives (Cramer Walsh 2007). The balance of voices would thus tilt toward the perspectives of privileged groups, reinforcing political inequality.

Accordingly, a key remedy for gender inequality is to increase descriptive representation by raising the percentage of women in deliberating bodies. The U.S. National Health Planning and Resources Development Act required gender balance on boards (Mansbridge 1999, 634), as do some states (Iowa Code §69.16A (2010)). More than a hundred countries have complied with declarations issued by the EU, the UN, the Organization of American States, and the African Union urging 30% minimum quotas for women in political bodies (Krook 2010, 3, 10).

Here we ask: does increasing the descriptive representation of women increase their substantive representation, specifically, their chances of voicing women’s distinctive concerns? The empirical literature on deliberation has not studied social inequality despite the centrality of
this issue to normative theories. The literature on descriptive representation has not rigorously studied the effects on voice in deliberation. We address this gap.

In addition, we examine the effect of the group’s decision rule. If women’s voice is muted when they lack a critical mass, does unanimous rule ameliorate that silence? Conversely, if women increase their voice when they become the majority of deliberators, do they accelerate this trend when the decision rule accents the power of large numbers, as majority rule is likely to do?

We test these propositions using a large experiment on group decisions about income redistribution in which we randomly assign groups to a decision rule and a gender composition. Our design allows us to systematically analyze individuals’ speech and link it with pre- and post-deliberation preferences and attitudes.

We focus here on women’s representation for two reasons. First, at issue is the equal representation of half the population, a goal far removed from the reality (Crowder-Meyer 2010). Second, as we detail, women far more than men prioritize the protection of vulnerable populations and support “compassion” issues (Hutchings et al. 2004). Were women to gain more equal descriptive representation in citizen and elite bodies, these deliberations may reflect a different set of priorities.

*Is There a Different Voice?*

Our question is whether conditions that promote equal participation in deliberation also produce more speech about women’s priorities. But before we can address that question, we first explore whether women have distinctive concerns and what those might be.

Existing work suggests that women do hold a number of perspectives and priorities that differ from men’s. In advanced industrialized countries, women now tend to vote more leftwing
than men by about 10 points, and their ideological position lies to the left of men’s (Inglehart and Norris 2010, 130). In the most recent review of the U.S. gender gap in public opinion, Crowder-Meyer (2007) finds that even after controlling on variables such as party identification, women are more likely than men to believe that “it is problematic that not everyone in the U.S. has an equal chance in life”; are considerably more supportive of government’s role in addressing economic distress and social needs such as health care; prefer less room for the free market; and are more concerned about economic inequality. Women are more eager for government spending on the poor, elderly and children. Women are also more racially egalitarian (Hutchings et al. 2004).

Even more relevant to what people will say in a deliberation are the issues they believe are most important for the country and those on which they rely the most in choosing among parties or candidates. Among the largest gender gaps are in these priorities, with women much more likely than men to view poverty and economic inequality as an important problem: women are “eighty percent more likely than men to mention poverty or homelessness” (Crowder-Meyer 2007, 13).

Women’s priorities differ most from men’s on the topic of children. Women are “two and a half times more likely than men to mention children’s issues as a most important problem” (Crowder-Meyer 2007, 14). Perhaps most strikingly, “the least commonly mentioned most important problem for men is children’s issues, while women are more likely to mention these as a problem than illegal immigration, taxes, outsourcing, and energy and gas prices” (14).

Other settings and behaviors support these findings. College majors that serve populations in need are overwhelmingly female – health (85%), education (77%), psychology and social work (74%) (Carnevale et al. 2011). Women in U.S. legislatures and female activists
tend to prioritize issues of children and family and are more likely to work to pass measures that benefit them (Burns et al 2001; Carroll 2001). When people are asked to render a verdict in a simulated trial of first-degree sexual assault on a six-year-old child, women tend to convict and men to exonerate (Golding et al. 2007). So in small group deliberations, as in survey and real world settings, women tend to place a high priority on the needs of vulnerable people, and significantly more than men.

Some issues emerge as distinctive priorities for men. Men are more concerned than women about financial issues – outsourced jobs, energy and gas prices, and taxes (Crowder-Meyer 2007). In all, women are more concerned with children and the needy than they are with taxes or prices. Men’s priorities are the reverse.

*How Gender Composition May Matter*

To derive predictions about the effect of descriptive representation, we begin with gender role theory, which posits that the higher the number of women in the group, the more that women express their views.¹ Men tend to be perceived as more competent and to enjoy a higher status than women in discussions of what are perceived to be masculine subjects (Ridgeway and Smith-Lovin 1999). Politics is viewed as a masculine arena (Burns et al. 2001), and both men and women perceive women to have less knowledge than men, regardless of actual knowledge (Mendez and Osborn 2010). Women are less likely to talk about politics and to attempt persuasion (Hansen 1997; Huckfeldt and Sprague 1995). They indicate less competence in public speaking and less politically relevant experience than do similarly qualified men (Lawless and

¹ Scholarship affirms the notion that gender composition shapes group and individual decisions (Sapiro 2003; see also [redacted] 2007 for a review). For example, gender composition affects judicial outcomes and respectful legislative debates even if individual gender does not affect preferences, and controlling on ideology and other factors (Farhang and Wawro 2004; Grunenfelder and Baechtiger 2007; Hannagan and Larimer 2010; Peresie 2005). Gender composition effects may weaken without a group decision (Farrar et al. 2009, footnote 7).
Fox 2011). Consequently, when women discuss political issues in mixed-gender groups, they may speak less, feel less confident, exercise less influence than men, and feel less free or able to express views or raise topics not articulated or shared by men, and the group decision will be less aligned with women’s distinctive priorities. The more men there are, the more this gender gap grows (Aries 1998; Croson and Gneezy 2009; Eagly 1987; Giles et al. 1987; Hastie et al. 1983; Ridgeway 1982).

Gender role theory thus leads to the “minority status” hypothesis: numerical minority status affects women’s status in the group and thus their likelihood of articulating a distinctively feminine perspective. For example, Johnson and Schulman (1989) found that while both men’s and women’s influence is rated lower when they are in a numerical minority, women incur a greater disadvantage (see also Aries 1998; Smith-Lovin and Brody 1989). Therefore, we might expect women to mention women’s distinctive issues less in groups where women are a minority, because in these settings there are more active, confident participants to which the women defer. We also expect women to increase these references as the number of women increases. Consequently, group decisions are more likely to align with women’s distinctive priorities as those priorities are articulated to a greater extent.

The “minority-status” hypothesis is seconded by another literature within gender role theory. Women may speak less to women’s topics in discussions with many men than in discussions with many women not only because of a gender difference in perceived expertise and confidence, but also because gendered norms of interaction vary with gender composition and facilitate or hinder women’s participation and the gendered content of their speech (Carli 1990). In settings with many men, the interaction tends to take on more stereotypically masculine characteristics of individual assertion, agency, competition, and dominance; in settings with

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2 No specific functional form is expected and non-linear effects are not considered disconfirming evidence.
many women, people tend to interact in a more stereotypically feminine style that emphasizes cooperation, intimacy, and the inclusion of all participants (Aries 1998; Miller 1985; Smith-Lovin and Brody 1989). For example, levels of self-disclosure during group discussion increase as the number of women in the group increases (Dindia and Allen 1992). Women may thus experience a greater sense of comfort in predominantly female settings with their more stereotypically feminine norms of interaction, and feel ill-at-ease in settings with predominantly male norms. Consistent with this perspective, Kathlene (1994) finds that in legislative committees, competitive, aggressive communication behavior inhibits women’s participation more than it does men’s. In settings with more men, then, masculine interaction norms may be more common, leading women to speak less about what’s on their mind, therefore mentioning fewer women’s topics. In sum, this literature on norms reinforces the “minority-status” hypothesis – women will mention women’s topics infrequently in predominantly male groups, and increase their mentions as their proportion increases, and these settings will shape group decisions accordingly.3

The Importance of the Decision Rule

Gender role theory dominates the literature on gender and discussion, but we view it as incomplete. The proportion of women in a group is not the only important factor that affects gendered patterns of speech. Institutions can eliminate the disadvantages of low numbers; similarly, they can block the power of high numbers. A key institutional mechanism is the group’s decision rule.

3 Our goal here is not to test which of the two mechanisms better explains ‘minority status’. Elsewhere we find evidence for both women’s lack of confidence and masculine norms of interaction. For now, we simply note that there are several good reasons to expect that groups with few women will lower women’s substantive representation.
We focus on decision rule because previous work suggests that unanimous rule can create group norms that enhance consensus and inclusion. A seminal experimental study of mock juries reports that people shift their views during discussion more under unanimous than majority rule (Hastie et al. 1983). Unanimous rule can increase a sense that the decision was legitimate and appropriate (Kameda 1991; Kaplan and Miller 1987). Group consensus generated through talk can lead to increased cooperative behavior (Bouas and Komorita 1996). Thus, unanimous rule leads to consensus-oriented norms of inclusion that can protect numerical minorities (see also [redacted] 2002). However, while unanimous rule can protect numerical minorities, no one has considered whether this protective effect for preference minorities holds for social identity minorities.

We theorize that unanimous rule protects gender minorities just as it protects preference minorities because of the emphasis it places on inclusion and cooperation (Bouas and Komorita 1996; Mathis 2011). Decision rule and gender composition will thus interact to shape the content of group discussion. Our “interaction hypothesis” predicts that women will increase their references to women’s issues with greater numbers only under majority rule; under unanimous rule, greater numbers do not benefit women, because this rule helps minority women, but as we elaborate below, it also aids minority men to the detriment of majority women. In the existing literatures, no interactive effect of decision rule and gender has been taken into consideration, though such an effect is plausible in light of what we know about each variable in isolation. Attention to this interaction represents our theoretical contribution to these literatures.

The interaction hypothesis rests on the claim that unanimous rule produces a group dynamic in which numerical minorities – whether preference or social identity minorities – get more say than they would get otherwise. When unanimity is the rule, every voice counts.
Minority women will thus be included more under unanimous than majority rule, and feel more welcome to articulate views that differ from men’s, increasing their confidence in discussing women’s issues. Consequently, minority women do better under unanimous than majority rule, articulating more women’s issues and aligning group decisions with women’s distinctive priorities. At the same time, because it helps any minority, unanimous rule protects minority men, and this explains why women do not speak more about their topics as their numbers grow under unanimous rule. This partially explains why with this rule, majority and minority women mention women’s issues at roughly equal rates and why the group outcome does not shift toward women’s distinctive priorities. That is, under unanimous rule, majority women do not leverage the advantage of numerical majority status. This inclusiveness effect of unanimous rule also explains why majority women are worse off under unanimous than majority rule.4

To summarize, our interaction hypothesis makes the following predictions. Women will mention the fewest women’s issues, and succeed the least in aligning the group’s decision with those issues, as minorities under majority rule, because their low numbers disadvantage them. Women will mention the most women’s issues, and be most likely to produce a group outcome aligned with those issues, as majorities under majority rule, where they benefit from high numbers without the encumbrance of a discussion norm that would create deference to confident participants, who tend to be men. Minority women will speak to women’s issues, and obtain group outcomes matching those issues, more under unanimous than majority rule, while majority women do the reverse. That is, we expect that the frequency of references to issues of distinctive concern to women, and the group decision, will shift with the circumstances of women’s representation in deliberation. When women are a numerical minority, they may feel less able to speak and specifically more reluctant to speak about their distinctive priorities as women, unless

4 We expect the effect of gender composition to be flat or decline under unanimous rule.
protected by unanimous rule, which creates norms that may signal to women that their distinctive concerns are a legitimate topic of conversation and that their participation is expected.

Thus our interaction hypothesis significantly qualifies the “minority status” hypothesis of gender role theory. Our hypothesis makes the same prediction that gender role theory does about the benefits of increasing numbers of women, but only under majority rule. It contradicts gender role theory by arguing that minority women are not inevitably quiescent about women’s issues when they are a minority, because unanimous rule protects them. Finally, it adds predictions about the disadvantages of majority women under unanimous rule.5

A final caveat is in order: we need to address the possibility that differences apparently due to gender are spuriously caused by preferences or attitudes correlated with individual gender. We examine deliberation about redistribution, so political ideology is a possible confounding factor (Crowder-Meyer 2007; Shapiro and Mahajan 1986). We control for the individual’s ideology and for the number of liberals in the group. We also replicate the results with controls on the person’s pre-deliberation redistribution preferences and their membership in the pre-deliberation preference majority (Table A4; all “A” tables/figures are in the online appendix).

Data and Methods

We designed our study to meet the following requirements: 1) generate a sufficient number of groups in various gender compositions to create adequate variance in this independent variable; 2) test for the predicted interactive effects of gender composition with decision rule; 3) use random assignment to create exogenous gender composition and decision rule variables so as to gauge their unbiased effects; and 4) record what each individual says and match it to the individual’s characteristics, including gender. Further details on the procedure, subjects, item

5 We do not expect substantial differences by rule among the all-female groups because there we expect feminine norms of inclusion regardless of rule.
wordings and responses, coding, descriptive statistics, and other methodological matters are in the online appendix available at [redacted].

The experiment followed the basic procedure of a study by Frohlich and Oppenheimer (1990, 1992). As in that study, participants were told that they would be performing tasks to earn money and that the money they actually received would be based on a group decision about redistribution, using unanimous or majority rule. However, they were not told the nature of the work task until the group made its decision. Following Frohlich et al., we instructed participants to reach a group decision that would not only apply concretely and immediately to themselves, but also could apply hypothetically to society, in order to generalize beyond the lab to the decisions people make about redistribution in politics.

Between August 2007 and February 2009, students and community members were recruited and randomly assigned to one of the conditions. After filling out a pre-treatment questionnaire, they were instructed to conduct a “full and open discussion” and to choose the “most just” principle of redistribution and set a poverty line, in dollars (by secret ballot). They had to deliberate for at least five minutes; on average, they discussed for 25 minutes (SD=11). All instructions were exactly the same across conditions. To facilitate content analysis, we recorded each participant on a separate track.

Participants appeared to take their deliberations seriously. Group deliberations typically extended well beyond the five-minute minimum, sometimes lasting as long as an hour or more. Consistent with the instructions, group discussions nearly always explored how their choices about principles would work outside the experimental setting. The discussions touched on meaningful topics related to the redistribution, including the nature of equality, the needs of the poor, the importance of incentivizing work, the possibility of economic mobility, the fairness of
various systems of taxation, and the value of charity. A sample transcript can be found in the online appendix.

After deliberation, participants were asked to assess several aspects of the group’s discussion, including their own efficacy and their beliefs about the most influential person in the group. Participants then performed several rounds of “work” – consisting of correcting as many spelling errors as possible in a block of text within a 2-minute time limit (replicating Frohlich et al.’s original procedure). Participants earned money according to their performance, and these earnings were distributed to group members according to their chosen redistribution scheme. At the end of the work period, participants responded to questions on attitudes and beliefs and were debriefed.

We use a 6 X 2 between-subjects experimental design. Every group included 5 participants; we randomly assigned individuals to one of 6 gender compositions (to a group that ranged from 0 to 5 women) and to either unanimous rule or majority rule. Gender composition was randomly assigned to dates on the schedule of experimental sessions, and subjects who signed up to attend on that date were assigned to the corresponding gender composition condition. This process ensured that group types did not cluster on particular days of the week and that participants had a roughly equal probability of being assigned to each group type. Each man had the same probability of being assigned to a given gender composition, and the same is true for each woman. This satisfies the random assignment assumption (Morton and Williams 2010). We recruited alternates to ensure that we could fill the session’s assigned gender composition. Randomization of rule was achieved by roll of dice prior to each session. Randomization checks and propensity score analyses find that individuals were assigned by a random process and groups are equivalent on relevant covariates.
We have data for 470 individuals in 94 groups. Table 1 summarizes our experimental conditions. While our statistical power is still somewhat limited, our design includes a much larger sample of groups than is typically included in research on deliberation.

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<th>Table 1. Experimental Conditions and Sample Size</th>
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<tr>
<td>4 Females</td>
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<td>5 Females</td>
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<td># of Individuals</td>
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The experiment was conducted at two different sites – a small town on the mid-Atlantic coast and a medium-sized city in the Mountain West. In regression analyses, we control on site because subjects are assigned within but not across sites. As is common in experiments, our goal was not a nationally representative sample but one with reasonable variance, and the sample did in fact vary on relevant characteristics such as SES and political attitudes (see Table A1). Based on our reading of relevant literatures, we expected that individual race and group racial composition would introduce powerful interactions with our explanatory variables; since we would require a much larger number of groups to analyze these, we ran the study only with white non-Hispanic subjects.

We conduct word counts for each person, grouped a priori into categories we defined, using the Linguistic Inquiry and Word Count software (Newman et al. 2008). We compute two versions: 1) a dummy variable indicating whether or not the person mentioned any words in that category at least once (Mention), and 2) the percentage of the person’s words falling into the category (Frequency). We replicate our results with another method, using the TM module in R,
which identifies the words most frequently used by the sample as a whole and produces for each word its proportion of the person’s total words; we classify these most-frequent words as women’s issues using the same a priori criteria we apply to the other count.6

The LIWC package counts the number of words each participant uttered and reports the percentage of the total words uttered by the participant that fall into the various content categories. The dependent variable thus runs from 0 to 100, with 100 indicating that all the words spoken by the participant fell into a given content category. Each unit of the dependent variable represents one percentage point. The average woman in the pooled conditions spoke approximately 700 words; thus, for the average woman, a one percentage point increase means mentioning the words in that topic an additional 7 times. Seven mentions is a substantial amount in the average women’s speaking time of 3.5 minutes. Even changes of much less than one percentage point can represent several additional references. And when multiplied by the total number of women in the group, even small individual increases can significantly affect the number of times the concept is raised overall.

Our word categories correspond to the issue priorities we explained above: 1) children, 2) family, 3) poor, and 4) needy. For contrast, we chose three other categories for the purpose of discriminant validity: 1) rich, 2) salary, and 3) taxes. “Rich” resembles children, families and the poor in referencing a social group, but it is not a social group that women prioritize. It serves as a placebo for references to social groups. The remaining two categories (“salary” and “taxes”) reflect the distinctive priorities of men. We expect that mentions of women’s issues will rise in the conditions that give rise to gender equality, while mentions of the remaining categories will not.

6 The words identified by the two methods overlap, suggesting that the words we chose a priori are among the most often used, but they differ enough that the similar results provide somewhat independent replication.
Results

In previous work, Karpowitz, Mendelberg, and Shaker (2010) found that raising descriptive representation elevates women’s participation and perceived influence, but that the decision rule fundamentally alters this effect. Specifically, they find a number of effects in line with our interaction hypothesis. First, when women are assigned to be the numerical minority in groups instructed to decide by majority rule, they are significantly less likely to speak than men in their groups, men in the same minority status, and women in other groups. That is, women have lower participation and perceived influence than men when their descriptive representation is low. Second, raising women’s numbers increases their participation and authority, but only under majority rule. Third, unanimous rule protects minority women’s participation and authority. However, fourth, unanimous rule also empowers men when they are the numerical minority, and that is why women do not benefit from higher numbers under unanimous rule (Figure A1). These results hold with various controls and alternative specifications.

When Do Women Talk about Women’s Issues?

With those findings in mind, we further test our interaction hypothesis by investigating the joint effects of descriptive representation and decision rule on the content of the discussion. References to issues of distinctive concern to women can be found throughout the transcripts. For example, in the midst of a discussion about how much is needed to survive in today’s society, a woman asks, “Let’s say there’s one person who’s bringing the income and then a spouse and a child or something like that, or you could even spend it as a single, like, mother who’s working with two kids. How much do they need to get by or something like that?” This is a typical example of how themes of children, family, poverty, and the needs of vulnerable populations emerged in the deliberation. Additional examples are in the online appendix.
While our word count method has the virtues of simplicity and ease of systematic analysis, it cannot tell us what is being said about these categories. To rule out the possibility that speakers mention women’s distinctive topics unsympathetically, we classified each mention as sympathetic, neutral, or negative. The unit of analysis is the speaking turn containing a reference to women’s issues (n=1926, the entire set of words we analyze below). For example, negative mentions include: “rob from the rich to give to the poor”. Examples of sympathetic phrases are: “whether the poor ever get help by anyone, that is not even raised here”; “if like the range is like 50,000 or whatever . . . then the poorer they don’t get anything. It's kind of risky”; “I thought maximize the floor income was, that was my number one, help those who have the least.” We found that mentions are rarely unsympathetic: 11.7% are positive, 5.0% negative, 3.5% false positives, and 79.8% neutral.\footnote{Among the entire sample, children, family, poor and needy are more often mentioned by women than by men; salary is the reverse. Taxes, which groups are explicitly asked to discuss, are mentioned equally. The difference by gender (clustering by group) is significant for children, poor, and salary. However, gender differences are not important to our argument, only the changes across conditions.}

We present effects on two versions of the topic mentions, Mention (0, 1) and Frequency (percent). As we said, the conditions that most disadvantage women’s floor time and influence are those with majority rule and minority women. Consistent with this finding, women’s average Frequency of women’s issues in this setting is 0.63, about half the Frequency in any of the other settings.\footnote{This result is very similar using Mention. The four women’s issues are summed.} Conversely, the setting that stands out for producing the greatest frequency of women’s references to women’s issues is majority rule with majority women (1.5) (not including all-female groups) – the same setting where women’s influence and speaking are highest. Frequency is in between these two extremes for unanimous rule groups with minority or majority women (1.1). (Descriptives and coding for all variables are in Table A2).
We now turn to regression analysis. We employ probit for *Mention* and OLS for *Frequency*, with robust cluster standard errors.\(^9\) We use two models: a dummy variable model, containing a set of dummy variables representing each condition, or a linear model, containing a dummy variable for majority versus unanimous rule, a variable counting the number of women, and a variable that multiplies the two, as indicated below. We control on number of liberals in the group (as a count from 0 to 5), a dummy variable for experimental site, the person’s pre-deliberation liberalism and pre-deliberation preference over redistribution, and (for *Mention*) the log of the person’s overall word count (see Table A7 for details).\(^{10}\)

Figure 1 displays the predicted values from a dummy-variable model for the combined topics we identified as of distinctive concern to women: the poor, children, family, and the ‘needy’, using *Frequency* (based on Table A7; *Mention* is in Figure A2).\(^{11}\) If descriptive representation enhances substantive representation, then it will increase talk on women’s distinctive concerns. And that is what we find, but, as predicted, only under majority rule. As the number of women increases, so too does the percentage of women who reference women’s topics. The effect is quite large; for *Mention*, it increases from 18% to 54% and for *Frequency*, from .11 to .36.\(^{12}\) Moreover, there is no effect under unanimous rule with either *Mention* or *Frequency*. To test the predicted interaction of rule and gender composition we estimated a linear model for the mixed-gender groups. The interaction term is significant, \(b= .37, p<.05\), confirming that the effect of descriptive representation differs under the two rules (Table A3). In addition to controlling for group and individual ideology, we also ran each analysis omitting

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\(^9\) We also employed OLS on *Mention*, finding similar results.
\(^{10}\) Women in our sample as in others are somewhat more liberal. We do not include an explicit control for word count when the DV is *Frequency*, as this measure already controls for overall verbosity in its denominator.
\(^{11}\) “Combined” for *Frequency* as this measure already controls for overall verbosity in its denominator.
\(^{12}\) These are differences between one and five women; 4-woman groups are essentially the same as enclaves. Figure A3 shows that these results are not limited to only one topic.
these controls, or replacing them with controls for pre-deliberation preferences and/or subjects’ age in a variety of different configurations. The inclusion or exclusion of age, liberalism or pre-deliberation preference controls has no effect on any of our key findings with respect to the use of women’s topics. (See Figure A4 and Table A4 for examples.)

Notably, Figure 1 also shows that the increasing talk of women’s issues is not found for masculine issues or for the ‘placebo’ category of ‘rich’. In fact, talk of masculine issues declines as the number of women increases.

We replicated these results using the TM method, which selects only the most frequently used words in the study. Among the most frequently used words are two that reference education (“school” and “education”). Crowder-Meyer found that women are “about seventy-five percent more likely than men to believe education is the most important problem facing the U.S.” (2007, 13). We grouped “school” and “education” with the feminine category, and find the same interaction pattern with these new words and with the overall feminine category generated by TM (see online appendix for words).

When women are outnumbered, the paucity of women’s topics can be quite striking. Under majority rule, lone women never mention family, and only 11% mention children. Only 13% of minority women mention children at least once. In the unanimous condition, however, 46% of minority women mention children (with similar findings for family; p<.01 for children and family; all from raw means). Women’s quiescence can reach the level of complete silence, making unanimous rule all the more important in protecting minority women’s voice.

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13 The overall correlation between gender and liberalism is weak at both the individual (ρ = .07) and group (ρ = .04) level.
14 The effect of number of women (1-4) on masculine issues using TM is -0.196, SE= .066 , p = 0.004, controlling on site, including a rule dummy and rule*number of women, excluding all-female groups.
15 All-female “enclaves” do not substantially increase women’s issues references above groups in which women predominate. Women raise women’s issues frequently in all-female groups, but not at a significantly greater rate than in three-female or four-female groups. Our hypotheses are about interaction in mixed-gender groups and we do not have strong a priori predictions about distinctive effects among all-female groups.
Figure 1. Frequency of Words Used among Women, by Rule

Effect of Group Composition - Feminine Categories Frequency

Effect of Group Composition - Masculine Categories Frequency

Effect of Group Composition - Rich Frequency
When Do Women Introduce Women’s Issues?

How do women’s issues get on the agenda in the first place? An important measure of women’s exercise of voice is whether they introduce the topics of distinctive concern to them into the agenda. Table 2 examines the effect of the conditions on the probability of first mention of women’s issues by an individual female, with controls.16 (The raw sample means for first mention by rule and condition are shown in Figure A6.)

Table 2. Probability of First Mention of Feminine Category among Women

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<tr>
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<th>Coefficient</th>
<th>Std. Error</th>
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<tr>
<td>Majority Rule</td>
<td>-1.735**</td>
<td>(.776)</td>
</tr>
<tr>
<td>Number of Women</td>
<td>-0.184</td>
<td>(.147)</td>
</tr>
<tr>
<td>Majority Rule*Number of Women</td>
<td>0.500**</td>
<td>(.225)</td>
</tr>
<tr>
<td>Frequency of Feminine Mentions</td>
<td>0.056</td>
<td>(.108)</td>
</tr>
<tr>
<td>Proportion Talk</td>
<td>1.564</td>
<td>(1.009)</td>
</tr>
<tr>
<td>Individual Liberalism</td>
<td>-0.323</td>
<td>(.574)</td>
</tr>
<tr>
<td>Number of Liberals</td>
<td>0.080</td>
<td>(.115)</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.790</td>
<td>(.554)</td>
</tr>
</tbody>
</table>

Observations      157
Pseudo R2          .053
Control for Experimental Location Yes

Note: Entries are probit coefficients. The dependent variable is the probability that an individual woman will make the first mention of a word in one of the four feminine categories. Cluster robust standard errors in parentheses. Women in all-female groups excluded. *** p<0.01, ** p<0.05, * p<0.10, two-tailed test.

16 The DV is coded 1 if the person was the first to mention any of the feminine issues, 0 otherwise. This variable is always 1 for one member of each group, and 0 for all other members; some groups have no mentions of one or more feminine categories, but every group includes at least one mention of some feminine category. The results become stronger when controls for a person’s frequency of feminine mentions and their overall percentage of group speech are omitted. Results are similar when excluding the controls for location/liberalism/number of liberals.
The pattern is familiar. Under majority rule, the average woman in the majority is the first to mention women’s issues much more often than the average minority woman; there is no such effect of gender composition under unanimity. The magnitudes are again striking: for example, no lone woman is the first to mention women’s issues under majority rule, but a lone woman produces the highest chance of mentions under unanimous rule, underscoring the importance of decision rule (Figure A5). These results hold in a probit with controls, and the statistical interaction of rule and composition is strong and significant (Table 2; all-female groups excluded).

Thus, women talk more about the topics they prioritize in one-on-one survey interviews, in groups in which women are the majority, or when the decision rule empowers them as minority voices (the unanimous decision-rule condition).

How Do Women’s Issues Compare to Men’s Issues?

We can see more clearly how women’s priorities shape the discussion by taking the ratio of average Frequency mentions of women’s distinctive topics to men’s distinctive topics. The predicted probabilities for women’s speech are displayed in Figure 2, and support our interaction hypothesis (from estimates in Table A7). Majority status matters under majority but not unanimous rule: the ratio of women’s topics to men’s topics mentioned among women increases under majority rule from .77 as a minority to 1.96 as a majority, but remains essentially unchanged under unanimous rule. Numbers benefit women only under majority rule, while

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17 The absolute value of this ratio is largely a function of the number and overall scarcity of words in the masculine and feminine categories. Thus, a ratio under one does not imply a general female disadvantage, nor does a ratio over one imply a general female advantage.
unanimous rule protects minority women’s voice (.77 with majority rule vs. 1.49 with unanimous rule).\textsuperscript{18}

\textbf{Figure 2. Ratio of Feminine Words to Masculine Words among Women}

We have focused primarily on women since it is women’s voice that is at issue in the theoretical and political debates that prompt this study. However, men’s changing agenda constitutes a measure of the indirect effect of women’s descriptive representation. Figure 3 shows that men are affected by women’s descriptive representation under majority rule in the same way women are, and by a large magnitude, with the predicted ratio of women’s topics mentioned to men’s topics mentioned doubling from 1.01 to 1.99. Under unanimous rule, the ratio increases much less, from 1.16 when women are the minority to 1.39 when women are the majority (estimates from Table A7). Again we see that majority rule is a catalyst of the powerful

\textsuperscript{18} Also, under unanimous rule, all-female groups produce a higher ratio than mixed-gender groups.
effect of descriptive representation. However, unlike its effect on women, unanimous rule does not elevate men’s references to women’s priorities when women are a minority.\textsuperscript{19}

\textbf{Figure 3. Ratio of Feminine Words to Masculine Words among Men}

Some illustrative examples flesh out the size of the effect. Under majority rule, with one woman present, the average man’s probability of talking about children or family, versus taxes or salaries, is approximately 15\% or 28\%, versus 50\% or 74\%, respectively. However, surrounded by four women, the average man turns his priorities on their head: he now mentions children or family with a 68\% or 57\% probability, and taxes or salary with a 23\% and 53\% chance respectively (predicted probabilities from the dummy model using \textit{Mention}, Table A7).

\textsuperscript{19} As with women’s issues, we replicate the findings on men’s issues with TM.
Finally, the overall substantive representation of women’s issues can also be measured by an overall group ratio, including both women and men. As seen in Figure 4, the story is consistent: the ratio of feminine to masculine Frequency goes up substantially – almost doubling – as women go from minority to majority, but only under majority rule (from 1.00 to 1.93; for unanimous rule, from 1.24 to 1.46).\textsuperscript{20} However, unlike our findings for women’s voice, for overall substantive representation, we find that unanimous rule confers only slight benefits in minority-female groups, as the ratios hardly change across rule (from 1.00 under majority rule to 1.24 under unanimous rule).\textsuperscript{21}

\begin{figure}
\centering
\includegraphics[width=\textwidth]{figure4}
\caption{Ratio of Feminine Words to Masculine Words, Group Average}
\end{figure}

\textsuperscript{20} Similar findings obtain when we analyze the group’s overall Frequency of feminine words instead of the ratio.
\textsuperscript{21} The biggest effect on men is an increase in talk of children in the four-female groups under majority rule. It is only when women are a super-majority in a setting where majorities rule that men talk about this most distinctively feminine topic.
Are Women’s Voices Disadvantaged Relative to Men’s?

So far we have not asked if women’s voices are disadvantaged relative to men’s, that is, if a gender gap in voice exists, or how it changes with the conditions. We do so using the *Mention* measure, which can be interpreted as the chance that a given person refers to the issue and allows us to move the question from how much a person talks to how many people talk. We ask whether women are less likely to raise their distinctive concerns than men are to raise theirs, in the conditions prevalent in the real world – majority rule and minority women. The answer is yes: in these conditions, women’s probability of mentioning women’s issues is 57%; men’s probability of mentioning men’s issues is 81% (p<.03; using *Mention*). Thus in most political settings there is a gender gap in voice. When women compose a majority under majority rule, the percentages reverse: 89% and 68%, respectively (they differ at p<.04; the percentages in this paragraph appear in Figure A6).\(^{22}\) But that is not the only way to remedy women’s disadvantage. Leaving women as a minority but changing the decision rule from majority to unanimous also helps, raising women’s probability of mentioning women’s issues to 91% and lowering men’s probability of mentioning men’s issues to 72% (in these groups, these percentages differ at p<.05). That is, women are severely disadvantaged relative to men as a minority under majority rule and heavily advantaged as a majority under majority rule or as a minority under unanimous rule.\(^{23}\) (As a majority under unanimous rule, there is virtually no gender gap and nearly each individual mentions their gender’s distinctive issues.)

\(^{22}\) These are raw means; the same relative effects obtain from predicted probabilities for *Mention* using controls for locations, liberalism, and log word count.

\(^{23}\) The advantage minority women receive from unanimous rule does not mean that the overall ratio of feminine to masculine issues changes dramatically, in part because where women are outnumbered they receive a much lower weight in the group average.
Does Talk of Women’s Issues Decrease Women’s Perceived Influence?

One potential caveat about the results is that while mentioning women’s issues benefits women’s voice, it may also decrease women’s perceived influence. If this were true, increasing women’s substantive representation by changing the agenda would not be as beneficial overall for women’s authority and thus their representation. However, we find that there is no association between a woman’s Frequency of women’s issues and her perceived influence after deliberation.24 Women’s overall substantive representation does not suffer from women’s voice.

To illustrate these effects, we provide a few qualitative examples in the online appendix. They show that in conditions of gender equality, women introduce women’s topics; when these topics are introduced they are taken up by subsequent speakers; and women tend to mention these topics to argue for generosity, help, or meeting a need. In conditions with gender inequality these are less likely, and when a women’s topic is mentioned, it tends to die in the conversation.

Does Talk of Women’s Issues Change the Group’s Decision?

The final question is whether discussion of women’s issues and the group’s subsequent chosen poverty line are linked. Children are far more likely to live in poverty than adults.25 To the extent that poverty policy is more generous to the poor, children will especially benefit. So people concerned with the needs of children may well be more interested in a generous minimum income for the poor, which allows a higher standard of living; and the more that the discussion focuses on the needs of children and their care, the higher that poverty line will move. In addition, all the referents of women’s issues – children, families, the needy and the poor – tend to

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24 We tested the effect of Frequency of feminine issue mentions on pre-deliberation self-confidence, post-deliberation self-efficacy in group discussion, and post-deliberation vote count of which group member was most influential in deliberation. With respect to all subjects, women only, and minority women in majority-rule groups, the effect on all three measures is not significant, with and without controls for individual and group liberalism.

be viewed favorably or sympathetically (Gilens 1999); so the more they are discussed as beneficiaries of assistance, the more generous the assistance is likely to be.

The evidence supports this prediction, but again, women’s position in the group affects this relationship in important ways. Table 3 shows that the ratio of the average woman’s Frequency of women’s issues to men’s issues raises the group’s generosity but only when women are empowered as a majority under majority rule. That is, under majority rule, the presence of a female majority translates women’s voice into group generosity (see the significant positive coefficient on $\text{Ratio} \ast \text{Majority Women}$). But under unanimous rule, women’s voice does not increase generosity either alone or in interaction with women’s numbers (and the coefficients on $\text{Ratio} \ast \text{Majority Women}$ under the two rules differ in a Chi-Square test, $p < .04$).

Figure 5 shows the interaction of women’s numbers and rule, displaying estimated values from the model (holding $\text{Ratio}$ constant at its mean). It confirms that women’s numbers increase generosity only under majority rule. Figure 5 also shows the protective effect of unanimous rule for minority women. Moreover, Table 3 also shows that when women are a minority under majority rule, the more women talk about women’s issues at the expense of men’s issues, the less generous the group becomes (see the significant negative effect on $\text{Ratio}$ in column 1). This pattern indicates the depth of women’s powerlessness when they are outnumbered under majority rule: women have to talk in male terms in order to produce a more generous outcome. Raising women’s issues more than men’s issues actually backfires on them.

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26 In mixed-gender groups, the ratio of the average Frequency of feminine to masculine issues for all members in the group (men and women) increases generosity regardless of gender composition or rule ($p<.05$, one-tailed test). We use a one-tailed test with these group-level analyses because we have clear directional hypotheses.

27 The number of groups is slightly smaller under majority rule because in some groups, no women raised men’s issues at all, which would make the denominator in the computation of the ratio 0.
Table 3. Effects of Women’s Discussion of Women’s Issues on Group Generosity  
(Mixed-Gender Groups Only)

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(1) Majority</th>
<th>(2) Unanimous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ratio of Frequency of Women’s to Men’s Issues</td>
<td>-2,565.59**</td>
<td>316.70</td>
</tr>
<tr>
<td></td>
<td>(1,196.24)</td>
<td>(241.64)</td>
</tr>
<tr>
<td>Majority Women in Group</td>
<td>1,330.64</td>
<td>-2,735.79</td>
</tr>
<tr>
<td></td>
<td>(3,459.47)</td>
<td>(3,152.06)</td>
</tr>
<tr>
<td>Ratio*Majority Women</td>
<td>2,439.20**</td>
<td>523.20</td>
</tr>
<tr>
<td></td>
<td>(1,272.63)</td>
<td>(463.34)</td>
</tr>
<tr>
<td>Number of Liberals</td>
<td>-358.74</td>
<td>2,166.87**</td>
</tr>
<tr>
<td></td>
<td>(1,336.94)</td>
<td>(1,105.95)</td>
</tr>
<tr>
<td>Constant</td>
<td>24,246.35***</td>
<td>20,549.72***</td>
</tr>
<tr>
<td></td>
<td>(2,922.43)</td>
<td>(2,470.15)</td>
</tr>
</tbody>
</table>

Observations 25 32  
R-squared 0.45 0.45 

The dependent variable is the group’s chosen dollar amount for a minimum standard of living. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10, one-tailed test.

Figure 5. Effects of Discussion Content on Generosity (Mixed-Gender Groups)
The general lesson is clear: under majority rule, women do not influence the group's decision toward greater generosity by raising their distinctive issues unless they have substantial descriptive representation in the group. Because women’s voice is endogenous, however, we need to confirm the relationship between women’s status in the group and generosity using only exogenous measures – namely, the experimental conditions. Doing so confirms our expectations. Women’s descriptive representation under majority rule results in more generous redistribution of income to the poor (controlling on location and group liberalism): the guaranteed minimum income groups choose is $3,580 higher in majority female than minority female groups (p<.05, one-tailed test). In groups deciding by unanimity, however, this model produces no statistically significant difference in generosity between majority- and minority-female groups (Table A5). Thus, as predicted by our interaction hypothesis, women interacting with men do best as a numerical majority, but only under majority rule, where they are most likely to talk about women’s issues relative to men’s issues. Under those conditions, women achieve a more generous minimal standard of living for a population that they tend to want to benefit.

Discussion

In previous work, we reported that when we vary the number of women and the decision rule of deliberating groups we either produce a gender gap in participation during discussion and in ratings of a member’s influence, or we close that gap. Our starting point thus was the notion that composition and rule interact to shape women’s status in the group. Here we report that in

28 A similar pattern is seen in enclaves, where women raise women's issues most frequently; these are the most generous, with average poverty lines well above $30,000 (under both decision rules).
29 The interaction of rule and the number of women is marginally significant at p<.10 (one-tailed test, mixed-gender groups with controls for experimental site; Table A6).
the same conditions where women speak more and carry more influence, women are also more likely to speak to their distinctive concerns, and to align the group’s decision with these concerns. Women are worst off in groups with few women and majority rule. Unanimous rule dampens, eliminates, and even reverses this deleterious effect of minority status for women. As we found with participation and influence, so it is with the agenda and its influence over the outcome – when women are numerical minorities they are better off with unanimous rule, and as majorities, better off with majority rule. Under unanimous rule, large numbers help women’s substantive representation in shaping the agenda only in all-female groups.

When it comes to substantive representation, different types require different settings. To maximize women’s voice on women’s issues, the settings are those with many women and majority rule, or all-female groups under either rule. If the goal is to increase the overall voice for women’s issues, or to transform men, the settings that maximize these forms of substantive representation are many women under majority rule, where men adopt the feminine agenda. To maximize the relative emphasis of women’s to men’s issues in the overall discussion, the setting is again majority rule with many women, or all-female groups under either rule. To translate women’s voice into decisions that improve the lot of the disadvantaged or the unfortunate, in line with women’s distinctive priorities, one needs many women under majority rule. If one had to pick the one setting that yields the most forms of substantive representation for women, one should pick majority rule with many women. To avoid the single most deleterious setting for women, avoid majority rule with few women.

Our measures have important limits. Mention of a topic does not indicate a particular position on the left-right policy spectrum. We have three responses to these valid criticisms. First, studies we reviewed suggest that women’s mention of these topics corresponds to a more
liberal position on these topics. Second, we provided evidence that the mentions in our study are almost never negative. Third, the salience of a topic is itself an important type of substantive representation; in fact, some theorists argue that the presence of an issue on the agenda is the most important measure of political power (Bachrach and Baratz 1962; Gaventa 1982). The disagreement cannot come to light and no view on the issue can be aired if the topic remains off the agenda. We do note, however, that in groups where people mention women’s issues but women lack power, the outcome runs against women’s general preference for generosity to the vulnerable. Nevertheless, our evidence suggests that the conditions where women speak to their distinctive topics on the whole tend to foster group decisions in line with women’s preference for generous aid to the needy. All this tells us that counting words is a useful way to analyze representation, though we do so in a way that accounts for the direction toward which these words lead.\textsuperscript{30}

However, we highlight some caveats about our results. Our groups did not include discussion moderators; their presence may mitigate gender inequality, since moderators can exercise a meaningful influence over members (Humphreys et al. 2006). However, it is unlikely that most moderators equalize discussion time or content by gender; moderators are often not focused on assuring equal floor time for disadvantaged populations, and are not focused at all on gender equality (Mansbridge et al. 2006). Also, women’s disadvantage, and the effects we found, may diminish or reverse when the topic is clearly feminine. In addition, our study was conducted with non-Hispanic whites since the effects may differ for other populations; this can be tested in future work. Our group size is not uncharacteristic in real-world deliberations (e.g, Esterling, Fung, and Lee 2010), but worth further study as a possible moderator. Culture may be another

\textsuperscript{30} Validation of these results comes from the experiment on ‘mock-juries’ in a simulated sexual assault case reviewed earlier (Golding et al. 2007). Women’s higher priority on protecting children was much more likely to find expression in the deliberations – and verdicts – of the majority-female groups.
moderator, though we do replicate the results in two very different cultural milieus in the U.S.—one a socially conservative, religious community in the West, and the other a liberal, secular community on the East Coast.\textsuperscript{31} Replicating across site suggests that the results are not limited to only conservative, or liberal, women or men.

The findings here may generalize to settings where citizens congregate in small groups to discuss matters of common concern: juries, local boards and commissions, neighborhood councils, and the plethora of community and civic meetings that characterize the U.S. (Burns et al. 2001). Some states use deliberation to plan state budgets, and environmental assessments routinely include citizen meetings (Gastil 2000). Approximately 45% of Americans attended a meeting at least once in the past year ([redacted] 2006; see also Conover et al. 2002, Table 3). The APSA’s Standing Committee on Civic Education and Engagement notes that “most large American cities have systems of neighborhood councils, with most being officially recognized by city government” (Macedo et al. 2005, 66; see also Cramer Walsh 2007). Well over a million U.S. citizens serve on deliberating juries each year, and a large percentage of U.S. citizens will have served on a jury at some point in their lives (Devine et al. 2001, 622).

Moreover, our study shares a number of similarities with real settings. The task resembled the task in many deliberative settings in that the members were making decisions about the distribution of resources both to themselves and to others in society. Examples include town planning ([redacted] 2005), school budgeting (Myers 2011), designing a new electoral system for the province as in British Columbia (Warren and Pearse 2008), and reforming the country’s resource allocation (Humphreys et al. 2006). In that sense the task facing our participants is not dissimilar from what real world deliberating citizens may do. While our group

\textsuperscript{31} Our sample was unusually educated yet we found that these women’s attempt to put their distinctive agenda on the table is highly dependent on the gender norms around them.
decisions were non-binding outside of the experimental setting, so are the recommendations of many actual citizens’ deliberative bodies. Neither is our degree of control unusual; in many real world settings deliberations are structured and directed by officials or authorities. They take place in formal settings that are not always familiar, much as ours did. In addition, while we assembled people unfamiliar with each other to avoid the confounding effects from familiarity, so do many real world settings. As Jacobs et al. find (2009, 72), in general, meeting attenders are unlikely to know each other.

Our study has both the virtues and liabilities of high control and thus strong internal but weaker external validity. However, as noted, our study resembled the ‘real world’ in several important ways. While the results should be replicated in actual settings, the setup here is less artificial than it might seem at first. And indeed, a study of numerous public meetings replicates some of our findings, noting a pervasive (and in that study, largely unexplained) gender gap in speaking turns (Bryan 2004). We have some evidence, then, that among actual attenders and in actual settings, we see similar gendered patterns.

This study makes a number of methodological contributions. Although studies have documented that female representatives act on a distinctive set of concerns from male representatives (e.g., Carroll 2001; Swers 2002), we are not aware of studies showing that women articulate different topics or words from similar men in public discussions (for excellent small-N studies, see Kathlene 1994 and Mattei 1998). No study of inequality in representation has used any of the features we use: a large number of groups; randomly assigned treatments; or links between the person’s and group’s pre- and post-deliberation attitudes with actual speech behavior during deliberation. Linking speech to pre-deliberation preferences allows us to control on pre-deliberation ideology and preferences over the group decision, and thus isolate the effects
of gender from the effects of these attitudes and preferences. Thus we can conclude that conditions that increase women’s talk of women’s topics do so by altering the gender dynamic specifically and not because they shift people regardless of gender. Our placebo tests further indicate that the shift occurs on women’s issues only and is not causes by non-gendered conformity or majority-induced dynamics. In addition, we are not aware of studies documenting that men adopt speech similar to women’s, and do so as women’s influence rises. The rich data allow us to conduct a large number of tests and do so rigorously.

The key point of our study is that women’s voice in deliberative settings varies a great deal with the institutional setting. Studies of women’s representation in legislatures recognize the importance of institutional rules and norms (Carroll 2001; Grunenfelder and Baechtiger 2007). Our results suggest that rules and norms also shape interactions among citizens. These norms of communication affect men as well as women. They also produce quite different levels of conversational salience for the topics that tend to concern women. In these ways institutional settings can contribute to or detract from equal substantive representation for unequal social groups. Rules and descriptive representation interact to shape substantive representation. To the extent that our results apply to legislative settings and more elite groups, our study also makes a broader contribution to the study of descriptive representation by unpacking the process of interaction and showing how gender composition and rules affect it.

Our results have implications for the debate over substantive versus descriptive representation. As Mansbridge (1999) notes, descriptive representation can affect the quality of deliberation in political institutions by bringing in the commonly-shared perspectives of the disadvantaged group. We have taken a step toward unpacking the black box of deliberation to show how, and when, descriptive representation matters for substantive representation.
References


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Iowa Code §69.16A


