

**Who Has a Voice? The Role of Group Composition and Gender on Perceived Contribution
to Group Deliberation**

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Abstract

Citizens' assemblies have been heralded as a promising and valuable measure to address and engage in complex societal issues, such as climate change (policies). Ensuring diversity of perspectives is crucial to Citizens' assemblies in order to be representative of the broader population. But while a diverse representation of perspectives might be facilitated, not all individuals feel equally enabled to contribute. In fact, research has shown that in heterogeneous groups, members of the (ethnic/cultural) minority group contributed less compared to individuals from the majority group. In the current study, we investigate whether different group compositions with regards to gender affect participants' levels of perceived contribution. Based on theory of power imbalances between groups of differing social status, we hypothesize that levels of perceived contribution will be lower in the mixed-gender groups, while this relationship will be moderated by gender. We held 20 small-group discussions (10 homogeneous, 10 heterogeneous), in which participants ($N = 36$) were asked to find group consensus, before assessing their perception of contribution to deliberation. Results showed that perceived contribution was significantly higher among participants in the single-gender compared to the mixed-gender groups. Furthermore, a marginally significant moderation effect of gender was found, with women reporting higher levels of perceived contribution in the single-gender group while no difference between group conditions was found for men. Practical implications of the findings for policy-making and facilitators of deliberative measures, such as the potential benefits of all-female groups or single-gender break-out sessions are discussed. Limitations of the study and future research perspectives are proposed.

Keywords: group dynamics, contribution, deliberation, power imbalances

Who Has a Voice? The Role of Group Composition and Gender on Perceived Contribution to Group Deliberation

Recently, voices have been rising, attesting liberal democracies to be in a crisis rooted in a lack of representation (Dryzek & Niemeyer, 2019; Roberts, 2019). As a consequence, dynamics such as increasing polarization and authoritarian tendencies emerged, challenging liberal democracies (Nielsen & Sørensen, 2023; Roberts, 2019). At the same time, citizens' assemblies (CAs) are heralded by various scholars as holding promising potential to innovate and rethink democratic practices (King & Wilson, 2022; Pateman, 2012). An adequate representation of the respective population is crucial for CAs, not only to integrate different positions and interests, but also to ensure acceptability and legitimacy of prospective policies derived from the deliberative outcomes. Even more important, however, is that these diverse voices that bring in different perspectives to the table are ensured to be able to share their opinions and express their thoughts in the first place. With this paper, we aim to address this issue and investigate the underlying socio-psychological processes that influence different group members' perceived contribution to the deliberation process.

As one form of deliberative democratic practices, CAs can be understood as a forum that uses random stratified sampling to constitute a representative 'mini-public' of a specific population (maxi-public). Over the last years, a wave of CAs was implemented by national as well as regional authorities throughout Europe, often to address climate change and environmental issues (King & Wilson, 2022; Perlaviciute, 2021). CAs' potential for engaging in complex societal issues stems from the opportunity to make more nuanced and considered decisions through incorporating a wider range of perspectives in the deliberative process (Ellemers & Rink, 2016; Perlaviciute, 2021). That is, it is not only important to have a diverse

set of perspectives represented but also to ensure that these varying interests are articulated. This, in turn, is crucial not only for fairness. But also as deliberative outcomes when translated into policies can have substantial materialistic consequences for certain people and social groups. As Pateman (2012) points out, through participatory budgeting as one form of deliberative democratic practices in the city of Porto Alegre, contributions of people who were worse-off led to greater allocation of resources to poorer neighbourhoods. Without their contribution, resources would have potentially turned out to be distributed tending towards a reproduction of existing power and socio-economic imbalances in favor of the dominant societal groups. This underlines the importance to consider the composition of groups represented in deliberative settings as well as the necessity to better understand the conditions that may hinder or foster contribution to deliberative processes.

Deliberation and Diversity

CAs have their roots in the anti-authoritarian and civil rights movement of the late 1960s and early 1970s. Dissatisfaction with the contemporary state of democracy led to protests against centralized policy-making, resulting in the search for new forms of public participation (Pateman, 2012). Throughout the decades, different ideas about participative democratic practices converged to what is now considered as CAs in its contemporary meaning (Nielsen & Sørensen, 2023). Still, CAs can take different forms depending on the goals pursued. However, essential to this forum of a ‘mini-public’ is usually one form or another of a deliberation process. Such a process is embedded in a specific group constellation that tries to mirror the respective ‘maxi-public’ with the goal to eventually come up with some sort of consensus.

In this context, deliberation refers to collectively processing balanced information, weighing and reflecting on the consequences and benefits of different approaches to a public

issue. Moreover, it includes people contributing and justifying their own perspective on the matter (Abdel-Monem et al., 2010; Dryzek & Niemeyer, 2019). It is argued that the need to articulate one's own position in order to transform the opinions of others, results in less simplistic solutions, and in those that are more common-good orientated (Perlaviciute, 2021). Further, deliberation holds potential to integrate voices of marginalized groups that are otherwise often un(der)represented in decision-making (Dryzek & Niemeyer, 2019).

Although empirical literature on diversity in the specific context of CAs is still scarce, recent research suggests potential benefits that an integration of diverse perspectives holds (Abdel-Monem et al., 2010; Paulis et al., 2024; Perlaviciute, 2021). Among the positive effects observed were greater acceptance of climate policies, because people felt included in the decision-making process (mini-public) (Perlaviciute, 2021). Moreover, a diverse representation has been linked to the reduction of political tension within the 'maxi-public' (Nielsen & Sørensen, 2023). As Liu et al. (2020) showed, (climate) projects' acceptance in the 'maxi-public' might be explained through an increased procedural fairness as a result of greater public participation in the decision-making process. Furthermore, people within the 'mini-public' seem to evaluate decision-making more positively and indicate more satisfaction, when they perceive all interest groups affected have been involved in the process (Abdel-Monem et al., 2010; Perlaviciute, 2021). In that sense, it is crucial to acknowledge that diversity goes beyond categories of ethnicity, race, gender, and also implies a variety of markers such as socioeconomic and educational background as well as political views (Paulis et al., 2024).

However, more diverse representation in group deliberation and decision-making contexts can also hinder the unfolding of the potential benefits mentioned above. In a research done by Homan et al. (2007) on diversity (beliefs) in small-groups, heterogenously composed

groups have been associated with increased interpersonal tensions and conflict. Furthermore, emergence of group dynamics that prevent certain group members from voicing their positions was linked to groups that consisted of a greater variety of representatives of differing social status (Daily & Teich, 2001; Perlaviciute, 2021). These findings underline the necessity to better understand what factors constitute equal participation and under what conditions diversity can foster individuals' contribution to deliberation processes.

Perceived Contribution

Oetzel (1998) referred to a member's contribution in relation to their group-specific distribution of turns. A turn is defined as being "equivalent to a speech act" (Oetzel, 1998, p. 142). In line with this objective conceptualization of contribution, Kirchmeyer and Cohen (1992) developed an inter-rater measure to assess participants' true contribution. In contrast, in the current study, a subjective conceptualization of contribution is used. It is defined as the extent to which one *perceives* expressing their opinions and articulating their perspectives. A subjective feeling of contribution can be important for individual acceptability and satisfaction with the group's deliberation process and outcome (Abdel-Monem et al., 2010). Furthermore, especially for members of minority groups it is of importance that they feel they are contributing to the decision-making outcome, as their perspectives are often underrepresented in hegemonic discourse.

Group Composition and Gender in Small Groups

Group composition refers to the "makeup of the group and varies in degree from homogeneous to heterogeneous" (Oetzel, 1998). For example, groups are considered to be homogeneous with regards to gender when only women (or only men) are members of this group. In turn, heterogeneous groups consist of both men and women.

In small-group contexts, group composition was generally shown to have a significant effect on various outcomes, such as the quality of and satisfaction with the groups processes' results (Kent & McGrath, 1969; Seltzer & Kilmann, 1977). On the one hand, diverse groups hold potential for more creativity, innovation, and outcome acceptability (Ellemers & Rink, 2016; Liu et al., 2020). On the other hand, Staples and Zhao (2006) showed that less satisfaction and cohesiveness in the group, as well as more conflict was found in diverse groups compared to the culturally and ethnically homogenous groups. In line with that are findings from Kirchmeyer and Cohen (1992), showing lower levels of contribution among members of ethnic minorities when they are mixed in diverse groups with members of the white majority group. In contrast, studies have shown that in homogeneous groups, satisfaction with the process among members is higher than compared to heterogeneous groups (Oetzel, 1998; Seltzer & Kilmann, 1977). Dissatisfaction and lower cohesiveness in heterogeneous groups might be an indication for exclusive intra-group dynamics, hindering a balanced distribution on contributions.

A possible explanation for such dynamics are power relations that come into play as soon as groups are constituted by both members of a minority and non-minority group. Power relations are constituted by a social hierarchy that is, in turn, based on differing social status, as Skvoretz (1988) pointed out. If it is the case that systemic imbalance in contribution arises through dynamics of hierarchy emerging from differing social status, then these processes could be generalized to other groups that are considered to be of lower social status. With Lockheed and Hall (1976) who conceptualized sex as a status characteristic, women may be considered to be of lower social status, but also other social groups that are marginalized due to their sexual identity or orientations. In the light of this line of reasoning, Smith-Lovin and Brody (1989) suggest that power imbalance in groups that are heterogeneous in terms of gender can be

accounted for by, for example, the observation that men interrupt women much more frequently than vice versa, while men interrupt other men less frequently.

Other research has been done, examining behavioral differences between genders such as in dominance or wage negotiating (Demirović et al., 2023; Kimble & Musgrove, 1988). However, so far, little research has been done investigating the role of gender in small-group settings on women's and men's contribution to deliberative processes. That is, with the present study, we want to fill this gap in the literature by investigating the effect of group composition on members' perceived contribution to a deliberation-task process and examining to what extent this relationship is influenced by gender.

In line with the presented literature on the effect of group composition on group processes and outcomes we, first, hypothesize that

H1: group composition will affect participants' perceived contribution, showing higher levels of perceived contribution for homogeneous groups compared to heterogeneous groups.

Based on the previously discussed research on power imbalances between members of groups of different social status and its effects on participation in small groups we, further, hypothesize that

H2: the effect of H1 will be moderated by gender, with women's perceived contribution being higher in the homogeneous group composition compared to the heterogeneous one, while men will not show any significant difference between the two conditions.

Methods

Participants

In total, 37 participants took part in the study. Participants were mainly undergraduate students and above the age of 18. With the study's aim of investigating gender differences,

participants who were unable to identify themselves as either male or female were excluded from participation. The convenience sample consisted of participants who were either recruited online through the SONA platform and via digital posters, or in-person. The digital posters that included a qr-coded invitation link were distributed throughout the researchers' own social network (see Appendix B). First-year undergraduate students of psychology who were recruited through the SONA platform were granted 1.3 course credits as compensation. Others had the opportunity to participate in a raffle to win one out of four vouchers worth 25€.

Research Design

The study was conducted based on a mixed design with group composition as the within-subject factor (single/mixed-gender) and gender as the between-subject factor (male/female). To experience both conditions, all participants were asked to participate in two rounds of group discussion.

To recreate a situation similar to CAs, participants were asked to discuss the topic of budget cuts at the university. For each round of group discussion, participants were given a list of six of the university's educational or supportive programmes (see Appendix B). From these six programmes, each group had to collectively reach a consensus on 2 programmes to cut, 2 to keep, and 2 they felt neutral about.

To compare measures of perceived contribution between the homogeneous and heterogeneous group composition condition (H1), a one-tailed matched-pairs t-test statistics was performed. To test H2, a mixed-design ANOVA was used. Both analyses were conducted in the open-source software JASP. An a priori power analysis was conducted to estimate the appropriate number of participants. The power analysis was calculated with the open-source tool G*Power (Faul et al., 2007). Calculations with power of 80% and $\alpha = 0.05$ suggested a minimum

of $N = 52$ with $d_z = 0.35$ for the one-tailed matched-pairs t-test as well as $N = 52$ with $f = 0.2$ for the mixed-design ANOVA.

Procedure

Data was collected during multiple in-person discussions between April and May 2025. Previously to that, the study received approval from the Ethics Committee of the University of Groningen.

For each session, participants were first given instructions about the study's procedure and then asked to give their informed consent. Also, participants were informed about their right to withdraw consent later on which would lead to their removal from the analysis. They were then asked to fill out a first questionnaire with a set of outcome variables to assess baseline measures (perceived contribution was not assessed at baseline). Next, two 15-minutes long discussions in groups of a maximum of four (minimum of two) were held. Participants had to deliberate and, ultimately, form consensus on which programmes affected by the university's budget cuts to keep or to drop. After each discussion, a questionnaire was given out and participants were asked to indicate their perceived contribution during the deliberations, among other outcome variables. If a session started with the first discussion being held in a group composed homogeneously in terms of gender, participants were reshuffled afterwards to hold the second discussion in a mixed-gender group, and vice versa.

Measures

Perceived Contribution

Four items were used to measure participants' perceived contribution after each group discussion. One item was taken from Kirchmeyer and Cohen (1992) and was slightly adjusted to fit the context of the study (*"I was able to contribute to the group discussion"*). Another item

was adapted from the *Voice*-subscale of the Feeling-Heard Scale (FHS) by Roos et al. (2023) (“*I could express my thoughts*”). The other two items were self-developed but closely related to the *Voice*-subscale of the FHS (“*I was able to share my ideas during the discussion*” and “*I had opportunities to voice my opinions*”). Participants were asked to report their perceived contribution on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree).

For the four items used to measure perceived contribution, Cronbach’s Alpha was $\alpha = 0.88$, indicating good internal reliability.

Results

Preliminary analysis

Throughout five sessions, 20 group discussions (10 homogeneous, 10 heterogeneous) were held. 37 different individuals participated in the study in total. One participant left the study after the first round of discussion and was therefore removed from the analysis. Ultimately, 36 participants, comprising 55% men ($N = 20$) and 45% women ($N = 16$), were included in the final analysis.

Assumptions of normality and heterogeneity of variances were checked for and not found to be violated prior to the main analysis (see Assumption Checks in Appendix A for details). Both analyses were underpowered in terms of sample size, which is important to consider when interpreting the results.

A first descriptive analysis revealed that, overall, participants indicated generally high levels of perceived contribution ($M = 5.83$). Higher perceived contribution was indicated by participants in the homogenous groups ($M = 5.98$) compared to those in the heterogeneous groups ($M = 5.67$). Moreover, standard deviation was greater in the single-gender groups ($SD =$

1.05) compared to the mixed-gender groups ($SD = 0.83$), suggesting less variance in levels of perceived contribution for the latter. Table 1 summarizes the descriptive statistics.

Table 1: Descriptive Statistics

Descriptives of Perceived Contribution between Group Composition split by Gender

Group comp.	Gender	N	Mean	SD	SE
homogeneous	F	16	6.31	0.88	0.22
	M	20	5.71	1.12	0.25
	Overall	36	5.98	1.05	0.18
heterogeneous	F	16	5.64	0.98	0.25
	M	20	5.70	0.71	0.16
	Overall	36	5.67	0.83	0.14

Main analysis

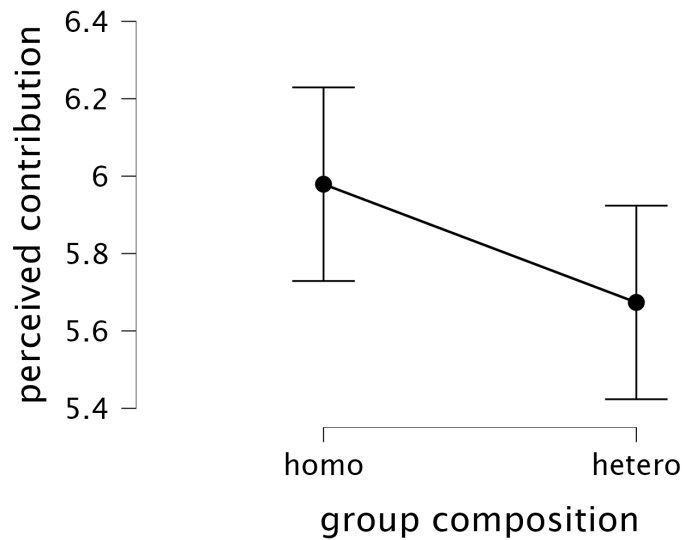
Hypothesis 1: Differences in Perceived contribution

For the first hypothesis, a difference in perceived contribution was predicted. Higher levels of perceived contribution were hypothesized to be found in the single-gender compared to the mixed-gender group composition. To test this hypothesis, a one-tailed matched-pairs t-test was performed. In line with H1, a difference in mean level perceived contribution between homogeneous and heterogeneous group composition was found. Overall, perceived contribution was higher in the single-gender groups ($M = 5.98$, $SD = 1.05$) compared to mixed-gender groups ($M = 5.67$, $SD = 0.83$). The observed differences appear to be statistically significant ($t(35) = 1.75$, $p = 0.04$, $d = 0.29$).

In line with the first hypothesis made, the results show a statistically significant difference in mean perceived contribution between both group composition conditions. This suggests that the composition of groups with regards to gender has a substantial influence on individuals' perceptions of contribution to the deliberation process (see Figure 1).

Figure 1: Descriptive plot

Comparison of Mean Perceived Contribution with 95% CI Between the two Group Compositions

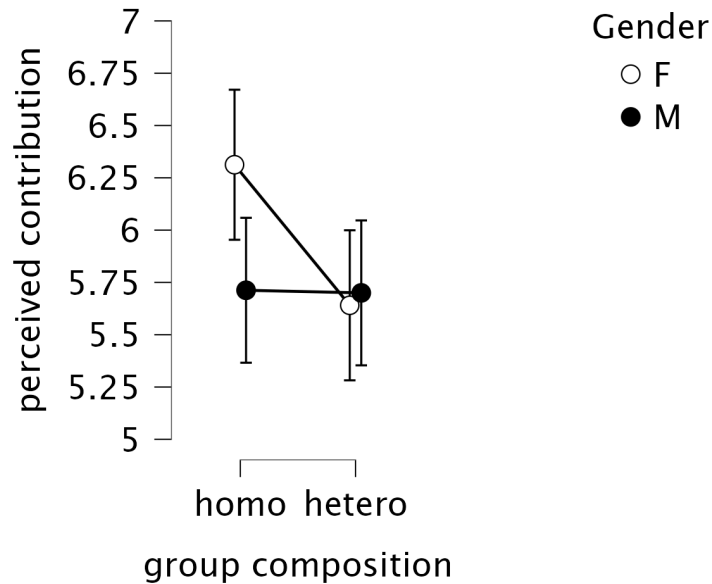


Hypothesis 2: Moderating Effect of Gender

For the second hypothesis, a moderation effect of gender on the main effect of group composition on perceived contribution was predicted. To test this hypothesis, a mixed-design ANOVA analysis was conducted. Before calculation, all required assumptions have been checked and met. A first descriptive analysis revealed that in the heterogeneous group condition for both men and women levels of perceived contribution were quite similar ($M = 5.70$, $SD = 0.71$ and $M = 5.64$, $SD = 0.98$, respectively). In contrast, for the homogeneous group condition scores of perceived contribution were higher for women ($M = 6.31$, $SD = 0.88$), while no change was shown for men ($M = 5.71$, $SD = 1.12$) (see Table 1). This means that women in all-female groups perceive their contribution to the deliberation process to be higher compared to their perceived contribution in mixed-gender groups. Men's perceived contribution appears not to be affected by either form of group composition. Figure 2 illustrates these results.

Figure 2: Descriptive plot

Mean Perceived Contribution with 95% CI between Group Composition split by Gender



Results of the mixed-design ANOVA analysis suggest a significant main effect of group composition on perceived contribution ($F(1, 34) = 4.12, p = 0.05, \eta^2_p = 0.11$), showing a medium sized effect. Investigating the relationship between group composition and gender, a marginally significant interaction effect ($F(1, 34) = 3.82, p = 0.06, \eta^2_p = 0.10$) with medium effect size was found. Although only marginally significant ($p = 0.06 > 0.05$), the observed tendency suggests an interaction effect between group composition and gender on perceived contribution (see Table A1, Appendix A). Further examination yielded a statistically significant simple main effect of group composition for females ($p < 0.05$), while a simple main effect of group composition for males could not be observed ($p > 0.05$) (see Table A2, Appendix A).

To conclude, H2 was rejected as a general moderation effect of gender on the relationship between group composition and perceived contribution was only marginally significant. Still, a significant simple main effect of group composition for females but not for males was found. This means that compared to the heterogeneous group condition, women's perceived contribution is significantly higher in the homogeneous group. For men, group composition has no effect on

their level of perceived contribution. These findings suggest that gender plays an important role in shaping individuals' perception of contribution to deliberative processes in the context of differently composed groups settings.

Discussion

Representation and integration of different perspectives are crucial aspects of successful CAs that, for example, achieve to increase acceptability of policies and societal issues in both the 'mini-public' and 'maxi-public' (Liu et al., 2020; Perlaviciute, 2021). However, with greater diversity of positions and members of varying social groups, the risk emerges that some feel less enabled to contribute to the group's deliberation and decision-making process. To better understand the factors that either hinder or foster group participation, the current study examined how individuals' perceived contribution to small-group discussions is influenced by differently composed group settings. In line with literature on power imbalances among members of differing social status groups, the study further investigated the extent to which gender moderates the effect of group composition on individuals' perceptions of contribution.

The first hypothesis predicted higher levels of overall perceived contribution in the homogeneous groups compared to the heterogeneous groups. Results showed that the overall perceived contribution of members was higher in single-gender groups compared to mixed-gender groups, yielding significant evidence to accept our H1. It was further hypothesized that the observed effect of group composition on group members' perceived contribution would be moderated by gender (H2). Showing only a marginally significant interaction between group composition and gender, H2 was rejected. Still, a statistically significant simple main effect was found between females but not males and group composition. This suggests that the marginally significant moderating effect of gender was mostly explained by differences in perceived

contribution within women between both group conditions. The lack of statistical significance for the general moderating effect of gender might be explained by an underpowered study design due to small sample size.

Theoretical Implications

With our findings of the significant difference in perceived contribution between the heterogeneous and the homogeneous group condition, we provided further empirical evidence in favor of the body of literature proposing an effect of group composition on various (group) outcome variables (Kent & McGrath, 1969; Oetzel, 1998; Seltzer & Kilmann, 1977; Staples and Zhao, 2006). As such, the findings further emphasize the importance of composition of groups in the context of CAs.

For the heterogeneous group condition, the current study's results indicate no meaningful difference between women and men's perceived contribution to the deliberation process. These findings contradict expected outcomes that were derived from theory on power imbalances. For example, Kirchmeyer and Cohen (1992) showed that lower levels of contribution among members of ethnic minorities were reported when they were mixed together in diverse groups with members of the white majority group. As power imbalances are founded on social hierarchy, it was expected that these findings will be replicated between men and women when considering sex as a status characteristic, with women belonging to the lower social status group. In that sense, our findings did not replicate the previously observed imbalance in participation between differing social groups for participants' perceived contribution in mixed-gender groups. However, drawing on these findings to neglect that power imbalances in heterogeneous groups exist might be an oversimplification of the group dynamics at play. One potential explanation for the indifference in perceived contribution in the heterogeneous group condition could be the

homogeneity of the sample conducted. Despite their gender, participants shared many similarities with regards to age, educational background and field of study. That is, women might not have felt as a minority group in that context. The overall high levels of perceived contribution among all conditions support this explanatory hypothesis.

In contrast to the mixed-gender group condition, the findings showed a prevalent imbalance in levels of perceived contribution between gender in the single-gender group condition. While women's level of perceived contribution is significantly higher in the homogeneous group compared to the heterogeneous group, men's mean perceived contribution does not change at all between conditions. At least for women, these findings are in line with a line of research that has previously shown members of homogenous groups to report higher level of satisfaction with group performance, cohesiveness, and more equal distribution of turns (Oetzel, 1998; Seltzer & Kilmann, 1977; Staples and Zhao, 2006). To explain their findings, Staples and Zhao (2006) emphasized group identification and cohesiveness. The explanatory potential of this reasoning, however, appears to be limited when trying to be applied to the current findings. It might hold for explaining the general difference of mean perceived contribution between heterogeneously and homogeneously composed groups. However, when taking gender's moderating role into account, this reasoning's explanatory power is undermined, because it cannot explain why women's perceived contribution is increased in the homogeneous group condition while men's perceived contribution does not change at all between both conditions. Apparently, gender plays a crucial role in influencing group dynamics in a way that shapes individuals' experience in different group compositions – and, as such, affecting group members' perceived contribution to the group processes.

Without taking power imbalance into account, it remains unclear why women as members of a group considered to be of lower social status are indicating significantly higher levels of perceiving contribution compared to men, when in a group solely with other women, while a similar effect is not observable for men. Empirical evidence for the theory of power imbalance was proposed by Smith-Lovin and Brody (1989) who argued that asymmetries in social status due to sex can be accounted for by the fact that men interrupt women much more frequently than vice versa while they do not similarly interrupt other men.

On the one hand, in the current study's context, power imbalances in the mixed-gender groups may be less salient. Reasons for that might be similar age, professional, and educational background. Accordingly, women and men may have perceived themselves as being of equal status, explaining the observed indifference in perceived contributions in the heterogeneously composed groups. On the other hand, however, actual nivellation of gendered power imbalances in the all-female group composition might explain the rise of mean perceived contribution among women. In turn, men as members of a higher social status group experienced no difference in perceptions of contribution in either group condition.

In line with that reasoning is a phenomenon that feminist theorists have called female solidarity, sisterhood, or *sororidad*. According to Calderón et al. (2017), *sororidad* can be understood as supportive networks that are based on the construction of relationships of complicity, mutual support, and solidarity among women. Concepts that were linked to *sororidad* are solidarity, empathy, respect, mutual care, recognition of the other, among others (Diez & Bossio, 2024). This could explain the observed differences in perceived contribution between females and males in the homogeneous group condition. Perhaps, among the women in the single-gender groups, female solidarity emerged during the group discussions leading to greater

interpersonal support and an atmosphere of care and trust. This, in turn, could have led to higher confidence in voicing their opinion and less pressure to hold back, explaining women's greater perceived contribution to the deliberation process. This line of reasoning is empirically supported by Dasgupta et al. (2015), who reported higher verbal participation among women in all-female group settings. The phenomenon of female solidarity could also be accounted for by the finding that men in the single-gender groups did not experience a similar increase in perceived contribution, due to the gendered essence of this theoretical concept.

Practical Implications

Based on the findings, several practical implications can be drawn.

First, given that women reported higher perceived contribution in single-gender groups, when organizing CAs these findings should be considered when planning and facilitating group composition. For example, during early phases of the deliberation process or through occasional breakout sessions, single-gender female groups could be beneficial for fostering women's confidence in voicing their opinions and, thus, elicit participative engagement. This could help reduce barriers to participation for women, who may otherwise speak less in mixed-gender group contexts.

Moreover, the imbalance in perceived contribution between genders suggests the need for educational training for staff and facilitators to recognize and counteract group dynamics that inhibit equal participation. These moderators could provide additional support during group discussions by managing turn-taking, dominance, and inclusion of opinions. This is especially crucial for mixed-gender group compositions, or more generally those that include members of differing social status groups, where some voices may be marginalized.

Lastly, incorporating the opportunity for (anonymous) feedback after group discussion could help to monitor individuals' perceptions of contribution and, thus, identify where moderation or adjustment of the group structure might be required. Such dynamic feedback cycles could help to improve deliberative processes in real-time, and, ultimately, improve CA's processes and overall outcome qualities.

Limitations and Future Research

The current study's aim was to contribute to a better understanding of how belonging to a group of differing social status affects the (im)balance of contribution in different small-group discussion contexts. While with our findings we hoped to shed light on the role of gender on the relationship between group composition and group members' perceived contribution, several limitations should be considered when interpreting the results of this study.

First, the sample used consisted primarily of undergraduate psychology students from a single European university. This puts limits on the generalizability of the findings to other populations, cultural contexts, and environmental settings. As such, the results should not be easily extended to individuals from different age groups, professional occupations, and cultural or ethnic background. At the same time, our findings might be more salient in different group settings where power dynamics are more overt and explicit. Especially individuals' levels of perceived contribution in the heterogeneous group contexts might be affected by changing demographic contexts.

In addition to that, another factor limiting the external validity of the findings is the artificial nature of our experimental design. The experimental setting may not be representative of and, thus, lack the potential to accurately replicate real-world group dynamics. It is possible

that the outcomes observed in our experimental context may differ in more naturalistic social environments, such as actual CAs, or everyday group settings.

Furthermore, the underpowered study design due to the relatively small sample size ($N = 36$) may have limited the ability to detect less prominent but still meaningful effects. Future research should, for example, focus on the small tendency in differently perceived contribution levels across genders in the heterogeneous group condition. Additionally, due to feasibility and limited resources, the study was conducted based on a binary gender construct, excluding non-binary individuals, who should be given attention in future research. Thus, especially gender-related findings should be considered with caution.

Ultimately, our findings are at risk to have been influenced by third variables. Potential confounding factors that have not been measured or controlled for are, for example, socioeconomic status, political orientation, and educational background. Consequently, it is possible that these factors may be partially accountable for explaining the observed effects. Therefore, future research should try to replicate the presented findings while considering the potential confounding factors mentioned above.

Conclusion

Taken together, the study's results provide further empirical evidence underlining the important role of group composition on shaping individuals' experience of contribution to deliberative group processes. In fact, women but not men were found to report significantly higher levels of perceived contribution within the single-gender group settings, suggesting not only theoretical but also practical implications to improve the quality and equality of participation in deliberative settings like CAs. The observed effects might be explained by supportive and participation fostering dynamics due to reduced power imbalances for women in

the all-female group context. Men as generally being members of groups of higher social status might not be affected by power imbalances as such, potentially, explaining the observed indifference in their perception of contribution among different group compositions. Despite methodological limitations, the results highlight the importance of considering group composition with regards to gender when planning and facilitating deliberative group practices, as done in the context of CAs. Especially for women, single-gender group constellations hold the potential value of enhancing their perceptions of contributions by fostering participative engagement and personal confidence in voicing their opinions. These findings can help to develop strategies to enhance the quality of deliberative practices by promoting equitable participation. As CAs often influence public policy, ensuring that women, and other minority group members perceive to contribute meaningfully is not only crucial for pushing towards emancipative equality, but also for the legitimacy of policy recommendations as results from such deliberative democratic practices. Future research should further investigate the role of social status in deliberative group settings and try to extend our findings to more diverse populations and real-world settings.

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Appendix A

Table A1

Within Subjects Effects and Interaction Effects

Cases	Sum of Squares	df	Mean Square	F	p	ω^2
Group comp	2.08	1	2.08	4.12	0.05	0.03
Group comp * Gender	1.93	1	1.93	3.82	0.06	0.02
Residuals	17.20	34	0.51			

Note. Type III Sum of Squares

Table A2

Simple Main Effects - Group Composition on Gender

Level of Gender	Sum of Squares	df	Mean Square	F	p
F	3.61	1	3.61	7.97	0.01
M	0.002	1	0.002	0.003	0.96

Note. Type III Sum of Squares

Figure A1

Boxplots - Mean Perceived Contribution with 95% CI in Homogeneous Group Condition

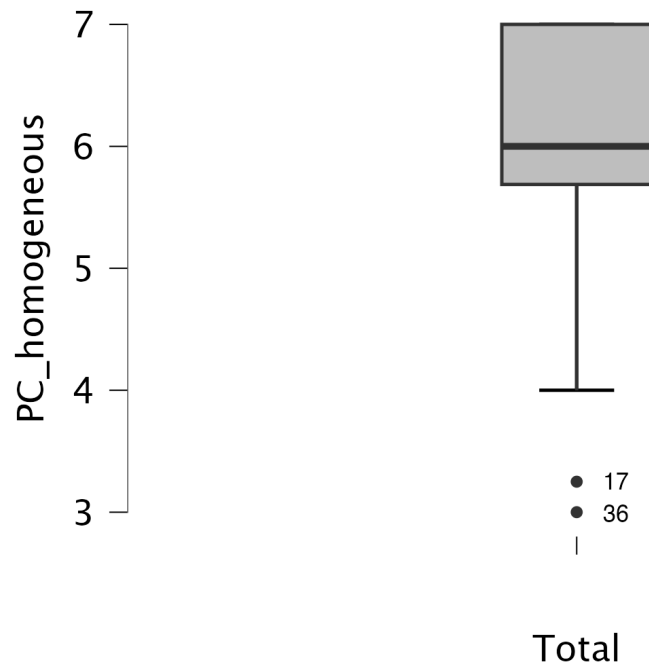


Figure A2

Boxplots - Mean Perceived Contribution with 95% CI in Heterogeneous Group Condition

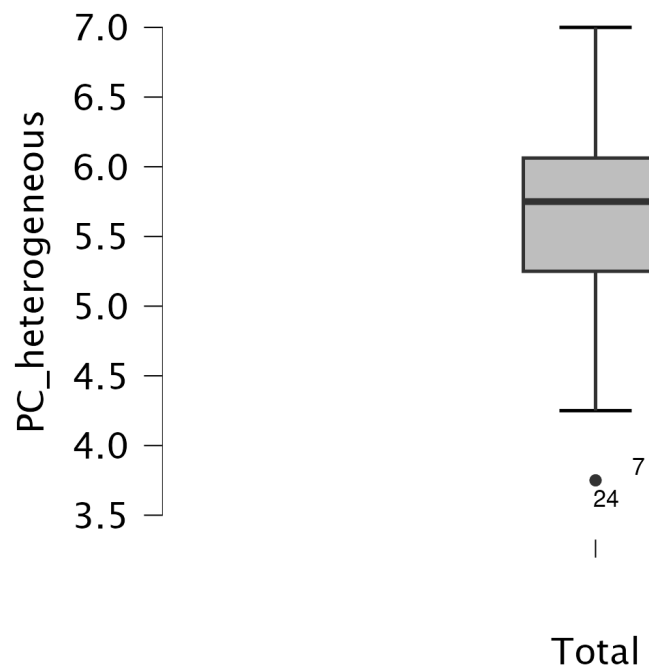
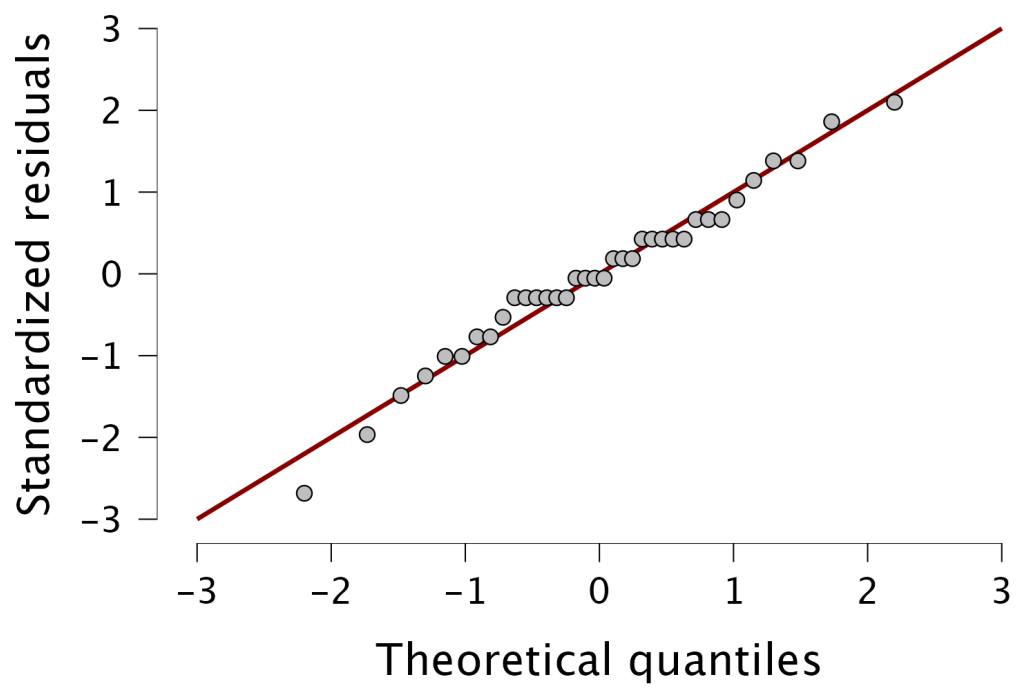


Figure A3

Q-Q Plot for Perceived Contribution Between Homogeneous and Heterogeneous Group

Composition



Appendix B

Study Design Materials

Digital Study Invitation Poster

Distributed through researchers' personal network and shared via social media

WE INVITE YOU TO JOIN OUR STUDY ON

CITIZEN ASSEMBLIES & BUDGET CUTS AT RUG

*Join a 1-hour study on budget cuts at Uni
and share your voice!*

-  Two 15-min group discussions
on budget cuts at Uni
-  Quick surveys before & after

TOTAL TIME: 1 HOUR

Everyone is welcome!

INTERESTED?

Scan me



*There are various time
slots to choose from*

Snacks provided :)

**CHANCE TO WIN
25€ VOUCHER**
(or song credits for 1st year RUG
psychology students)

**THANK YOU FOR YOUR
INTEREST AND SUPPORT! <3**

List of University's Programmes Affected by the Budget Cuts

Center for Social Safety. A safe, confidential space for students and staff to seek support around harassment, intimidation, sexism or boundary-crossing behavior. The Center for Social Safety (CSS) offers trauma-informed guidance, peer support, and prevention training. With over 60 Active Bystander training sessions held, we empower our community to speak up, step in, and support others.

Diversity, Equity and Inclusion Team. The Diversity, Equity, and Inclusion (DEI) team aims to make students and staff feel at home at the UG and experience a sense of belonging, regardless of gender or other differences. They drive an active diversity and inclusion policy that ensures to create equal opportunities as well as a stimulating and inclusive work and study environment for everyone.

Elite Sports Student Grant. Many top athletes are studying at the UG. The Elite Sports Student Programme helps them to combine their studies with their sport. Students with an elite sports student status are also eligible for financial compensation: the elite sports student grant, a joint scheme offered by Hanze UAS and the University of Groningen.

Rosalind Franklin Fellowship. The Rosalind Franklin Fellowship programme promotes the advancement of international female researchers. It gives talented female scientists the opportunity to secure a tenure-track position leading to full professorship.

The Groningen University Institute for Drug Exploration (GUIDE). GUIDE performs and stimulates innovative and drug-oriented research. These new insights lead to the development of new drugs and/or treatment options or optimization of existing therapies. The research revolves around central themes like healthy ageing, personalized medicine, and suicide

prevention – a concern of great importance, particularly given the rising mental health challenges observed among younger populations.

Student Service Centre. Many students encounter stress, identity struggles, anxiety, or depression during their studies. The Student Service Centre (SSC) supports students through study-related and psychological challenges. The SSC has launched a therapeutic app to provide education, resources, and access to therapists and specialized treatment programs.