

1 **Politics a 'chilly' environment for undergraduate women in Norway**

2 Cissy Ballen^{1,2,4}, Dahsol Lee¹, Lise Rakner³, and Sehoia Cotner^{1,4}

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4 ¹*Department of Biology Teaching and Learning, University of Minnesota, Minneapolis, MN, USA*

5 ²*E-mail: balle027@umn.edu*

6 ³*Department of Comparative Politics, University of Bergen, Bergen, Norway*

7 ⁴*BioCEED Centre of Excellence in Biology Education, University of Bergen, Bergen, Norway*

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10

11 **Abstract**

12 Gender differences in academic performance and attitudes are widespread in male-stereotyped
13 disciplines, but are rarely studied in the social sciences. To assess the extent that gender
14 influences the behavior of undergraduate women political science, participation was analyzed
15 in a large (N = 130) introductory comparative politics class at University of Bergen - a large
16 public university in Norway. Observers documented classroom behaviors of men and women in
17 Fall 2016 using a protocol characterizing types of in-class participation. Findings show women
18 participate less than expected given their observed numbers in the classroom. After the
19 semester ended, we provided an opportunity for students to describe why they chose to
20 participate and whether they felt barriers existed in the classroom that prevented them from
21 expressing their opinions. We characterize those responses here and present the first study to
22 draw conclusions about the gendered educational experience in political science by integrating
23 these qualitative and quantitative results.

24

25 **Biographical note**

26 Cissy J. Ballen is a postdoctoral associate in the department of teaching and learning at the
27 University of Minnesota, and in the BioCEED Centre of Excellence in Biology Education at the
28 University of Bergen, Norway. She can be reached at balle027@umn.edu. Dahsol Lee is an
29 undergraduate at the University of Minnesota. Lise Rakner is a professor in the department of
30 comparative politics at the University of Bergen. Sehoia Cotner is an associate professor in the
31 department of teaching and learning at the University of Minnesota, and in the BioCEED Centre
32 of Excellence in Biology Education at the University of Bergen, Norway.

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34 **Introduction**

35 Women are underrepresented across political science disciplines (American Political Science
36 Association 2005), underscoring the need for effective approaches that promote and retain
37 women who pursue American politics, political theory, international relations, or comparative
38 politics at the undergraduate level and throughout the ‘academic pathway’. Women experience
39 unique social challenges upon entering university, including feelings of marginalization in male-
40 dominated fields (Ceci, Williams and Barnett 2009; Steele, James and Barnett 2002), low self-
41 efficacy (Betz and Hackett 1981), and discrimination in and out of the classroom (Moss-Racusin,
42 et al., 2012; Banks 1988). Within the political sciences, previous work demonstrates
43 susceptibility of women to stereotype threat in political knowledge (McGlone, Aronson and
44 Kobryniewicz 2006). Stereotype threat is concern about confirming a negative stereotype about
45 one’s group, and occurs in competitive and evaluative contexts such as in a classroom or testing
46 environment (Steele 1997). For example, in one study, women performed better on a difficult
47 math test when the examiner described the test as not producing gender differences. In this
48 case, they lowered stereotype threat by lowering the sense of risk for the student to be judged
49 based on the stereotype that representatives of her gender (women) are bad at math (Spencer
50 et al., 1999). The outcome of repeated exposure to social challenges for women is their attrition
51 at the post-graduate, postdoctoral, and faculty levels of academic rank (American Political
52 Science Association 2005; Bates, Jenkins and Pflaeger 2012; Timperley 2013; Monroe and Chiu
53 2010). Among faculty, Timperly (2013) identifies a number of factors from the literature that
54 serve as barriers preventing women’s progression in political science, e.g., a negative culture of
55 research that discourages the examination of questions that fall outside the more ‘traditional’
56 scope of political science such as gender and family (Monroe et al., 2008); a ‘chilly’ professional
57 climate that devalues junior faculty who are women (Anonymous 1999); a ‘double bind’ that
58 results from conflicts between gender stereotypes and professional expectations (Ong et al.,
59 2011). Women in political science also engage in professional service more than their male
60 peers (Mitchell and Hesli 2013), which may contribute to the lower publication rates among
61 women across academic rank (Hesli and Lee 2011).

62 Although gender inequality in political science has been largely documented at the
63 faculty level, we expect that student experiences as undergraduates influence these later
64 outcomes. We can also take cues from research on undergraduates in male-dominated STEM
65 fields, where attrition of women is both progressive (i.e. the proportion of women decline in
66 more advanced positions) and persistent (i.e. little progress has been made in spite of efforts),
67 with its underlying drivers numerous and complex (Blickenstaff 2005; Burke and Mattis 2007).
68 Examining college experiences may be particularly important as peer interactions and academic
69 performance impact students while they navigate identities as competent political scientists.
70 Here we present the first, to our knowledge, study that documents academic inequity over the
71 course of a semester in an undergraduate political science classroom by first quantifying whole-
72 class participation, and then by presenting a qualitative investigation into the perspectives of
73 women and men about the classroom environment.

74

75 **Materials & Methods**

76 This study took place at University of Bergen (UiB), a public university located in Bergen,
77 Norway. Our study focused on one introductory comparative politics course (SAMPOL 100) that

78 is recommended to all Comparative Politics majors and attended primarily by students in their
79 first semester at UiB. In Fall 2016, SAMPOL 100 took place on campus in a traditional lecture
80 hall (N = 130 students completed the course)¹. The gender composition of the class was 48%
81 women. In our analyses, we expected that 48% of student participants would be women unless
82 something is preventing that group from speaking, and test the actual observed percentage
83 against this expected value.

84
85 *Classroom observations.* We used an observation protocol that characterized seven in-class
86 interactions between students and the instructor over an approximately 2-hour (2 x 45-minute)
87 class period (Eddy, Brownell and Wenderoth 2014). For each type of interaction, observers
88 noted the gender of students who participated. If the gender identity of the student was
89 unclear, observers asked the instructor for clarification. In our dataset, students interacted with
90 instructors using two of the seven different types of common interaction classifications (see
91 Ballen et al., 2017; Appendix 1) so we only include them here: 1) asking a spontaneous question
92 or making a comment and 2) volunteering an answer following an instructor-generated
93 question. The course is constructed as an introduction to the subject and the department: the
94 lead instructor holds 5 lectures at the beginning of the course, followed by ten individual
95 lectures from various faculty members (presenting area cases). The intended benefit of the
96 course structure is to give student exposure to the faculty and expertise during their first
97 semester. One unintended consequence may be that students – particularly women – feel less
98 comfortable participating when instructors change every week. Therefore, in our analyses, we
99 consider the effect of gender on student participation in guest lecture classes separately (N = 5
100 lectures and 55 observations) from our analysis of participation during the lead instructor's
101 lectures (N = 3 lectures and 77 observations). We only included instructors who had a total of
102 five or more student interactions in any of the pooled categories. This led to the exclusion of
103 two guest lecturers who were both men. The included guest lecturers were two women and
104 three men, and the lead instructor was a woman.

105
106 *Qualitative data analysis.* When the semester ended, the primary instructor revealed to
107 students that in-class observers quantified whole-class participation to examine gendered
108 behaviors. After sharing the observation data, the instructor gave students an invitation to an
109 online survey designed to elicit student responses to the data. Survey participation was
110 anonymous and voluntary, with only personal information collected being the participant's
111 gender. Specifically, students were asked to describe their views “as to why there is such a huge
112 difference between participation of women and men in class.” Students could answer as they
113 saw fit to this broad question by focusing on one of the following: (1) What could explain this?
114 (2) What made you participate during lectures? (3) What prevented you from participating? Of
115 the approximately 90 students who regularly attended the lectures, 17 students (19%)

¹Note that this is an introductory course with a mandatory short-term paper and a 6-hour final exam. Participation in lectures is not mandatory and it is customary for students to repeat the exam in their third semester to improve the grade (but not participate in class). This will account for approximately 30 of the 130 students that passed the December 2016 final exam.

116 participated in the survey. After reviewing student responses, the research team coded student
117 responses into three broad themes (Table 1).

118 **Statistical analyses**

119 We ran analyses separately for each type of student-instructor interaction (spontaneous
120 question or comment and volunteer response) and all combined interactions for guest lectures'
121 classes and then for the primary lecturer's classes. To assess whether there were gendered
122 patterns in response to each interaction type, we employed a one-sample t-test to examine
123 whether the proportion of interactions involving women in a class is more or less than one
124 would expect (given the number of women in the class) in each type of interaction individually,
125 and then all interactions combined.

126 **Results**

127 In Fall 2016, we observed 55 interactions among guest lecturers across five class periods; in the
128 primary instructor's classes we observed 77 interactions across three class periods.

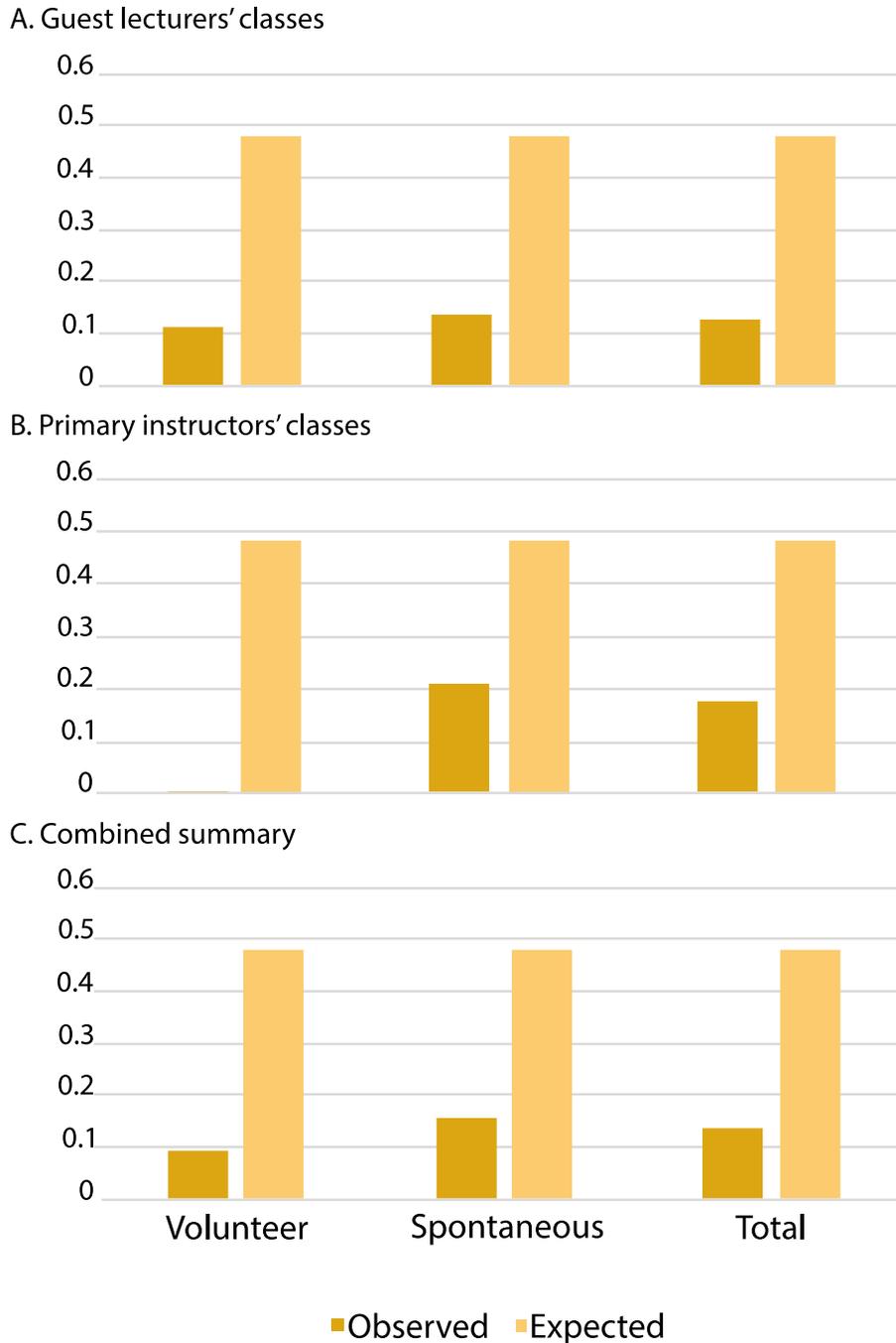
129 Among guest lectures, we found significant differences between the amount of women
130 enrolled in the class (48%) and the number of questions asked or comments made
131 spontaneously (i.e. without being prompted by the instructor) by women (2 out of 18; $t(17) =$
132 5.36 , 2-tailed $p < 0.0001$). The number of volunteer responses attributed to women (5 out of
133 37) was significantly lower ($t(36) = 6.76$, $p < 0.0001$) than would be expected based on the
134 number of women in the classroom. In other words, after an instructor posed a question to
135 students, a woman was far less likely to raise her hand than a man. Combined, the total number
136 of women who spoke in the classroom across the observed class periods was significantly lower
137 than expected based on the women who were in the classroom (7 out of 55; $t(54) = 8.66$, $p <$
138 0.0001 ; Figure 1). In the primary instructor's lectures we also found a significant difference
139 between the amount of women enrolled in the class (48%) and the number of spontaneous
140 questions asked or comments made by women (0 out of 13; $p < 0.0001$) or the number of
141 volunteer responses attributed to women (11 out of 64; $t(63) = 7.32$, 2-tailed $p < 0.0001$). When
142 we combined these values, the total number of women who spoke during the primary
143 instructor's classes were significantly less than would be expected (11 out of 77; $t(76) = 9.40$, 2-
144 tailed $p < 0.0001$; Figure 1).

145 Our second objective was to qualitatively explore, through interviews with students,
146 barriers in the classroom that may prevent women from participating ($N = 17$; Table 1). The
147 participants reported many reasons why women do not participate in class, but three recurring
148 themes became apparent and we identify them from the interviews: 1) women are scared of
149 being wrong, 2) people who speak are more prepared, 3) men more naturally speak up. Of the
150 17 student responses, we categorized 15 responses (88%) into one of the three constructed
151 themes. The pooled themes are outlined below.

152

Pooled response category	Example from student comments
Women are scared of being wrong (N = 7)	"I think girls are more insecure and scared they're wasting other people's time." (Woman respondent)
	"I don't raise my hand because I have to think through my answer [and by the time I form a response it is] too late to answer. This is because I am scared of answering the question wrong, and have to think it through until I am absolutely sure. I think this is typical for a lot of female students." (Woman respondent)
	"...it seems like girls are more scared of getting the answer wrong, and thus choose to not answer at all, as they might be wrong. Furthermore I'm not scared of talking in front of bigger groups, and if I get something wrong I don't really feel like other students are judging me or that it will affect my grades. You learn by your mistakes." (Man respondent)
People who speak are more prepared (N = 5)	What made me participate in class was reading up on what we would go through in the lecture ahead of the lecture, so that I had a certain idea of what it would be about. (Man respondent)
	"The problem is that too many people have strong opinions... It's also a fact that some students are very smart and read a lot, and this makes other students dread to participate with whatever knowledge they might possess." (Man respondent)
	"This is my first course in politics and I started studying with an interest for the course but with no previous knowledge." (Woman respondent)
Men more naturally speak up (N = 3)	"Boys have a more powerful and dominant voice and I think it's more natural for them to speak up in big crowds. I never raised my hand during a lecture but would never have a problem answering the question if someone gave me a chance to answer." (Woman respondent)
	"Biological differences between the genders. I [participated] and would from time to time disagree with comments from other students that I felt needed to be corrected." (Man respondent)

153 *Table 1.* The participant-reported views as to why there is such a huge difference between
154 women and men in whole-class participation behavior (N = 17).



155
 156 *Figure 1.* Observed (dark yellow bars) versus expected (light yellow bars) proportions of
 157 participants who are women in whole-classroom discussions in introductory comparative
 158 politics across randomly observed (A) guest lecturers' classes, (B) primary instructors' classes,
 159 and (C) a combined summary of all guest and primary instructors' classes. We show two
 160 different types of instructor-student interaction in the classroom, including volunteer responses
 161 and spontaneous responses. All observed proportions of participating students who are women
 162 are significantly less than would be expected given the number of women in the classroom,
 163 therefore *all* $p < 0.05$.

165 **Discussion**

166 Although Norway is lauded as one of the most politically equitable countries in the world
167 (Bekhouche, Hausmann, Tyson and Zahidi 2013), undergraduate women in an introductory
168 comparative politics course spoke up significantly less than men across all measures of
169 participation, a result more dramatic than that previously observed in some STEM courses
170 (Ballen et al., 2017; Eddy et al., 2014). Students reported reluctance of women to participate
171 may be due to a fear of being wrong, because those who speak in class – woman or man – are
172 more prepared and knowledgeable on the subject, or because men more naturally speak up in
173 groups.

174 Although our results reveal a strong pattern, we recognize a limitation of this study is
175 that we present data from one classroom and across one semester. Further, the origin of the
176 observed gap in participation remains unclear – as well as the extent of the gender gap in
177 student performance and attrition in political science. While students suggest that those who
178 speak in class are more prepared or have more knowledge, we are not aware of research that
179 supports those claims. This would require measures of preparation, or how much students
180 study the material prior to lecture, or a gauge of student knowledge through validated
181 knowledge assessment inventories. Another possibility is that women suffer a higher
182 susceptibility to stereotype threat, which inhibits academic performance of individuals who
183 identify within domains where negative ability stereotypes exist. Previous research has
184 demonstrated this phenomenon as it affects ethnic minorities (Steele and Aronson 1995; Steele
185 1997; Nguyen and Ryan 2008) and women e.g. within male-stereotyped STEM disciplines
186 (Spencer, Steele and Quinn 1999; Cheryan, Plaut, Davies and Steele 2009). Fortunately,
187 empirical research demonstrates multiple strategies to combat stereotype threat in the
188 classroom, such as removing cues that endorse or confirm stereotypes (Logel, Walton, Spencer,
189 Iserman, von Hippel and Bell 2009; Cheryan et al., 2009; Steele and Aronson 1995; Danaher and
190 Crandall 2008). For example, Cheryan et al., (2009) showed that women lose interest in
191 computer science classrooms when the objects in the room signal that the people there are
192 geeky men (e.g., Star Trek posters, empty soda cans from all-night coding sessions) as opposed
193 to a neutral physical environment. If the décor sends signals about who belongs in a computer
194 science learning environment, a semester focused on powerful male leaders in history may also
195 send a strong message to students – even if these are messages that the instructor does not
196 intend to convey through the course content.

197 One clear avenue for future research is to examine the effects of presenting diverse
198 political leaders in a comparative politics course, and quantify similar output variables such as
199 participation, performance, or intention to stay in the discipline. Other examples of ways to
200 reduce threat include using gender- and culture-fair tests and curriculum materials to ensure
201 there are not biases against certain groups in measures of academic performance (Good,
202 Aronson and Harder 2008; Spencer et al., 1999; Steele and Aronson 1995), conveying to
203 students that diversity is valued (Purdie-Vaughns et al., 2008), supporting students' sense of
204 belonging (Walton and Cohen 2011), engaging students in value-affirmation activities (Cohen et
205 al., 2009; Martens, Johns, Greenberg and Schimel 2006), and improving intergroup relations
206 (Steele 1997; Page-Gould, Mendoza-Denton and Tropp 2008). In addition, women may feel
207 marginalized due to lack of exposure to other women as examples featured in lecture. Women
208 are underrepresented globally in politics ("The Global Gender Gap Report" 2016), a

209 phenomenon that may be self-fulfilling: the representation of political power as exclusively
210 male may affect the behavior and performance of women. Therefore, one simple solution may
211 be to create a critical mass by increasing visibility of underrepresented groups in the field
212 (Murphy, Steele and Gross 2007; Purdie-Vaughns et al., 2008; Cotner et al., 2011). Women may
213 also be subject to the 'double bind' of conflicting expectations. In whole-class discussion,
214 women face limited options – they can choose to be more, less, or similarly opinionated and
215 knowledgeable as male students. Acting more opinionated and outspoken counters peer
216 expectations of feminine behavior, resulting in potential social costs of speaking out regularly
217 (Jamieson 1995). Making participation part of the students' grade or using a random number
218 generator to call on students may normalize outspoken behavior, and serve as a way to lower
219 the perceived threat of classroom participation (Eddy et al., 2014). Other simple in-class
220 interventions that benefit underrepresented groups such as women include small group
221 discussions (Freeman et al., 2014; Haak et al., 2011; Pollock, Hamann and Wilson 2011;
222 Lorenzo, Crouch and Mazur 2006) and women-majority group work.

223 Our assessment presents political science as a discipline with a unique opportunity to
224 apply and monitor evidence-based methodologies to close the classroom gender gap. The
225 striking lack of participation of women is a problem in urgent need of attention. If promising
226 young political scientists do not speak up in the classroom, we cannot expect them to assert
227 their opinions farther along the academic pathway or in a political arena outside of academia.
228 Fostering an inclusive classroom environment that explicitly values diversity will improve access
229 to political science for all students.

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