Gender differences in volunteer's dilemma: Evidence from teamwork among graduate students*

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Abstract

Undertaking logistical tasks in a teamwork setting exhibits a volunteer's dilemma: it takes only one volunteer to take a costly action to generate a benefit to the entire team. Using naturally-occurring data in a top graduate professional school, I show that female students volunteer significantly more than male students in booking rooms for team meetings. I also find that the gender difference in undertaking this logistical task is statistically and quantitatively significant only when students have limited interaction prior to teamwork. This suggests that when students' preferences are not completely known to each other, gender stereotyping—beliefs that most female students will undertake such tasks or some male students will not—may disfavor female students who end up bearing a cost higher than males. Even though booking a room involves a relatively small time cost, such costs can add up, and also contribute to gender stereotyping in allocation of tasks in other team settings.

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1 Introduction

A number of studies have shown that women are more likely to undertake tasks with low promotability[1] than men. For instance, in academia there seem to be gender differences in the amount of time spent in committee work, which is typically not considered as a major factor for tenure decisions (e.g., Misra et al. 2012; Mitchell and Hesli 2013). While such gender differences can be partly explained by demand-side differences (i.e., women *being asked* to contribute more than men), evidence also points to supply-side differences (i.e., women *volunteering* to contribute more than men). For example, in a seminal paper, Babcock et al. (2017a) have found that at a large public university in the U.S., a significantly higher proportion of female faculty, relative to male faculty, volunteered to join the Faculty Senate Committee, even though all faculty received the same invitation to join. The series of laboratory experiments the authors run not only lend further support to supply-side differences, but also provide evidence that women, relative to men, are more likely to be asked to volunteer. Their findings that women, relative to men, are more likely to (i) volunteer, (ii) be asked to volunteer, and (iii) accept requests to volunteer, are concerning. As the authors point out, to the extent that spending more time on low-promotability tasks imply less time on high-promotability tasks, such gender difference can create barriers to the advancement of women.

In this paper, I use naturally-occurring data and explore whether such gender differences in volunteering exist among graduate students in a top graduate professional school. The low-

[1] Babcock et. al. (2017b) define low-promotability tasks as those that benefit the organization but are given relatively little weight in performance evaluations and promotion decisions.

promotability task I consider is booking rooms for teamwork, which does not require any special skills but involves a (relatively small) time cost. A team member deciding whether or not to book a room for a team meeting can be best described as being engaged in a volunteer's dilemma.[2] It takes one volunteer to generate a benefit for the entire team. Every team member prefers some other member to book the room for the meeting, but will do so if no one else is doing it.

My data contains room bookings done by Master in Public Policy (MPP) students at the Harvard Kennedy School (HKS) over the course of four academic years. Controlling for team characteristics and the number of rooms students have booked for individual purposes prior to the teamwork, I find that female students volunteer significantly more than male students to book rooms for their teams. The difference is particularly striking given the nature of the environment: the MPP student body consists of men and women of high academic and professional achievement, who are subject to identical admissions criteria, degree requirements, and academic expectations. Moreover, the bulk of MPP students at Harvard Kennedy School extol norms of gender equity.

Over the course of four academic years that I study, an exogenous change in the way teams were formed for a required, two-week, team-based policy analysis project provides an opportunity for a quasi-natural experiment. Due to this change, teams in two academic years were formed among students with limited prior interaction. I find that the gender difference is particularly large and statistically significant for those teams compared to teams under the prior method in which team members had repeated prior academic and social interaction. This suggests that when students' preferences are not completely known to each other, beliefs that most female (some male) students will (not) undertake such logistical tasks, or gender stereotyping, may disfavor female students who end up volunteering significantly more than male students. This finding is also consistent with the

[2] Volunteer's dilemma, named and popularized by Diekmann (1985), refers to a special case of a voluntary contributions game in which the provision point is one. It describes a situation where the benefit to the entire group arises when only one of the players volunteers to take a costly action.

experimental findings of Babcock et al. (2017a) where group composition plays an important role in decisions to volunteer (to undertake monetary investments). In particular, they find that the gender gap in volunteering is eliminated when participants are paired only with members of their own sex. Similarly, the authors interpret this finding to be driven by the beliefs participants hold about the likelihood of others to volunteer (that is, the belief that women volunteer more than men).

Unlike the previous field data used in this line of literature, in which beneficiaries of low-promotability tasks are large organizations such as universities, benefits in this setting accrue to a small number of team members. In this regard, this setting is more similar to the laboratory experiments set up by Babcock et al. (2017a, 2017b). To my knowledge, this paper is the first to use naturally-occuring data to show gender differences in volunteer's dilemma concerning teams. Furthermore, unlike some other tasks studied in the prior literature (e.g., joining faculty committees, advising students), the task subject to volunteering in this paper (i.e., booking rooms) is verily mundane and confers no personal or professional recognition. Last, but not least, my data allows me to explore if familiarity among team members–or lack of it–affects volunteering decisions. Although laboratory experiments with repeated settings can introduce some degree of familiarity among participants, in my data, approximately half of the teams were subject to six months of intense academic and social interactions prior to volunteering decisions.

This paper is also related to a set of experimental studies that have tested volunteer's dilemmas focusing on dimensions other than participants' gender, such as asymmetries in cost of volunteering (e.g., Diekmann 1993; Healy and Pate 2009 and 2018). A set of papers, most recently, Kopányi-Peuker (2019) and Gooere et al. (2017), have explored the relationship between volunteering and group size. While Kopányi-Peuker finds a non-monotonic group size effect on volunteering, Gooere et. al. find the probability of volunteering to be decreasing with group size. Similar to Gooere et al. and to an earlier work by Frazen (1995), I find both the individual number of bookings and the rate of volunteering, defined as the ratio of a student's bookings for the team to the total number of bookings for the team, to be decreasing with group size. Given the relatively small variation in team sizes in my data, this negative relationship is a strong sign of diffusion of responsibility.

The paper is organized as follows. I begin with a detailed description of the context and data. In Section 3, I present the analysis of the data for four academic years. In Section 4, I split the data according to the way in which the teams are formed and present the findings for each model. In Section 5, I discuss possible explanations of the findings. Finally, I conclude.

2 The context and data

A large number of rooms and study spaces at Harvard Kennedy School (HKS) are available for students' use, both for individual purposes (such as study, interviews, etc.) and for groups (teamwork, group studies, events, etc.). Allocation of such spaces is managed through an online system, SpaceBook, which requires students to specify the purpose of the booking. The data for this study concerns the participants of the Spring Policy Exercise (SPREX), which is required for the first-year MPP students. SPREX is spread over two weeks and involves students working in randomly assigned teams on a policy issue. Through SpaceBook data, I observe the room bookings of 863 SPREX participants over the course of four years, both before and during the SPREX. I combine this data with SPREX team information (size, gender composition) and student level data (gender) and ask if there are any gender differences in room bookings for teamwork.

2.1 First-year MPP curriculum and required teamwork (SPREX)

Each year, around 200 students enroll at HKS's highly-selective two-year MPP program. Upon their enrollment, incoming MPP students are randomly assigned to one of four cohorts: Alpha, Beta, Gamma, and Delta. The first-year MPP curriculum consists of set of required courses, such as economics, quantitative analysis, ethics, politics, management and leadership, and negotiations. These core courses are taught in four sections. During the Fall semester, each section of a course is generally dedicated to a specific cohort of students (Alpha, Beta, Gamma, Delta).[3] Of particular interest to this paper is the SPREX, which is a requirement for all first-year MPP students. This exercise takes place in the Spring semester, and involves application of the tools and concepts students have acquired in the core curriculum. Since SPREX is a requirement for all MPP students, there are no self-selection concerns that may be inherent in elective course work.

I observe a total of 863 SPREX participants' room booking behavior before and during the SPREX. Female students constitute 47% of all SPREX participants. The number of all SPREX participants as well as the share of female students during the observation period are reported in Table 1.[4]

Table 1: Summary Statistics | SPREX Participants and Gender

	Overall	Female	
Academic Year	Number	Number	Share
2014-15	192	92	0.48
2015-16	227	114	0.50
2016-17	229	102	0.45
2017-18	215	101	0.47
All years	863	409	0.47

On average, SPREX participants are 26 years old and have 3 years of work experience prior

[3]Some mixing of cohorts happens in economics and statistics, as students can self-select into one of the four sections, which offers more advanced material. Students with strong backgrounds may also take an exam to be exempted from either course.

[4]These numbers also represent the first-year MPP student body for AY 2016-17 and 2017-18. A total of 14 (9 male, 5 female) and 7 (6 male, 1 female) first-year MPP students were exempted from SPREX in AY 2014-15 and 2015-16, respectively.

to their MPP studies. The average age of female students is slightly (8 months) lower than male students, and international students make up 35% of the SPREX participants (see Table A1 and Table A2 in Appendix A for this information by academic year).

As part of SPREX, students are randomly assigned to teams to develop policy recommendations on a given policy issue over the course of two weeks. It should be noted that, even though the team assignments are random, an explicit attempt is made to avoid gender-inbalanced teams, including single-sex teams. Since the team compositions are exogenously given to the students, there is no interaction between team formation and teammates' anticipated behavior in subsequent teamwork.

2.2 SPREX Team Data

SPREX team data are obtained from the MPP office and include the following information for each year: student name, gender, the assigned team and other members of the team, and the SPREX topic and date. There are a total of 163 SPREX teams over the course of four academic years, with a median team size of 5. A majority of the teams (110 out of 163) have 5 members. There are 51 teams with 6 members and 2 teams with 4 members (see Table A3 in Appendix A for the number and median size of SPREX teams by year).

Figure 1 shows the distribution of the female student ratio in teams. With the exception of ten teams, all teams are composed of either 40, 50, or 60 percent female (see A4 in Appendix A for the distribution of team size and female share).

As I will explain in greater detail in Section 4, team formation for the SPREX changed starting in AY 2016-17. During the first two academic years in my data, teams were randomly formed within four different cohorts of students, who had significant academic and social interactions prior to the SPREX. Following the change in the SPREX (last two academic years in my data), teams were formed randomly across all cohorts, which led to teammates who were less familiar with each other.

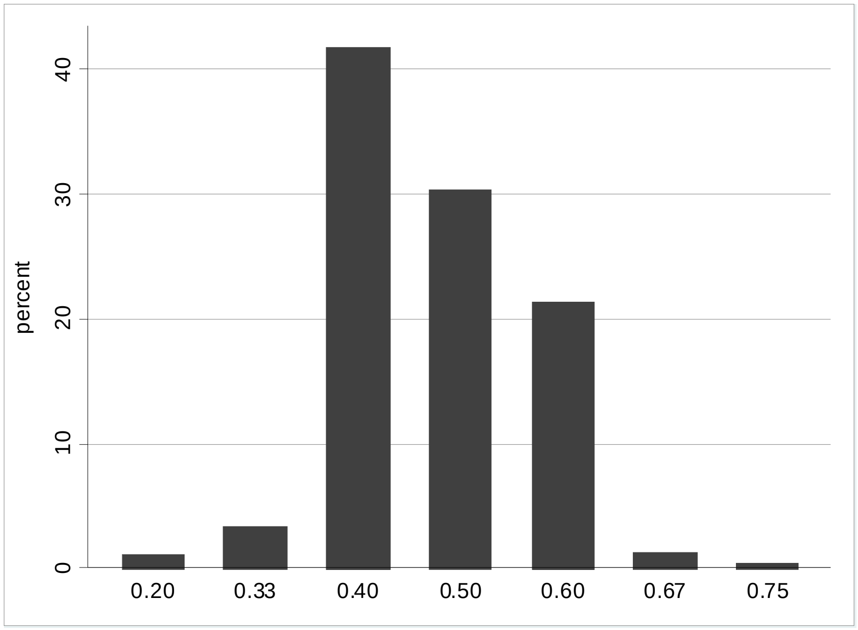

Figure 1: Distribution of Team Female Share (n=163)

2.3 Room Bookings Data

Rooms and study spaces at HKS have different capacities and can be booked for individual purposes (such as Skype or phone calls, interviews) or for a group (team meetings, study groups, social gatherings, caucus meetings, etc.). There is an arguably small fixed cost of learning how to book a room through SpaceBook. All incoming HKS students receive an e-mail with a document titled "How to Reserve a Study Space" which explains step-by-step how to book a room. These instructions are also available on HKS's intranet. Once the student learns how to book a room, then each booking involves a small constant marginal (time) cost; it takes about 2-3 minutes to complete a reservation.

The students' room reservation data is obtained from the Office of Facilities Management at HKS and consists of the following information for each reservation: Building [Name], Booking Date, Event Start [Time], Event End [Time], Room Description, Booking Status, Setup Count, Event Name, Client [Name], and Client Phone. Setup Count specifies the number of people that will be using the room, the Event Name specifies the purpose for booking, and Booking Date refers to the date for which the booking is made.

Table 2 provides summary statistics on individual SPREX participants' bookings, which are classified as pre-SPREX bookings (i.e., bookings that take place prior to SPREX) and SPREX bookings (i.e., bookings for SPREX team meetings).

Table 2: Summary statistics | pre-SPREX and SPREX bookings

	Number			Average		
	Overall	Male	Female	Overall	Male	Female
Pre-SPREX bookings	7,367	3,252	4,115	8.54	7.16	10.06
Group (G)	5,591	2,435	3,156	6.48	5.36	7.72
Individual (I)	1,776	817	959	2.06	1.80	2.34
SPREX bookings	1,223	465	758	1.42	1.02	1.85
All bookings	8,590	3,717	4,873	9.95	8.19	11.91

Pre-SPREX Bookings As can be seen in Table 2, I observe 7,367 pre-SPREX bookings made by the SPREX participants over the course of four academic years. Using the Setup Count and Event description, I classify bookings prior to SPREX into two categories: Group Bookings (G-bookings), and Individual Bookings (I-bookings).

Group Bookings include all bookings that have a setup count larger than one. The exception is the bookings with the Event Name specified as "office hours." I classify such bookings as Individual Bookings, as students who hold teaching assistant positions at HKS book rooms and spaces for their office hours as part of their teaching responsibilities.

Individual Bookings include all bookings that have a setup count of one, but exclude any booking if the description includes "team," "group," "meeting" or any other word that suggests that the booking is made for a group of students rather than an individual. Group Bookings constitute 76 percent of the pre-SPREX bookings.[5]

A non-trivial proportion of SPREX participants, 165 out of 863, have not booked any room prior to SPREX. There is no significant gender difference in proportion of these non-bookers (20 percent of male versus 18 percent of female students; a Fisher's exact test yields $p = 0.553$).[6] A majority of the students who have not booked a room prior to SPREX (150 out of 165) do not book any room for SPREX either.

On average, female students book significantly more rooms than male students prior to SPREX (10.06 versus 7.16; Welch's two-sample t test yields $p < 0.001$). This difference is driven by the average G-bookings (7.71 by female versus 5.36 by male; Welch's two-sample t test yields $p < 0.001$). There is no significant gender difference in average number of bookings made for individual purposes (2.34 by female versus 1.80 by male; a two-sample two-tailed z test for means yields $p = 0.072$).

SPREX Bookings SPREX bookings happen over the course of two weeks each year. There are a total of 1,223 SPREX bookings in the data; on average, a SPREX participant books 1.42 rooms for SPREX team meetings.

Based on my informal exchanges with former students, there seems to be no standard procedure that SPREX teams follow for booking rooms. Some teams set one or two meetings at a time, and once a student books the room for the meeting, the student sends the booking information to the team. Some other teams set meetings for a whole week (and in some cases for the full two weeks of

[5] The true number of bookings used by groups of students must be higher as some of these bookings are likely to be misidentified as individual bookings. This is because spaces with set up 1 can accomodate up to 3-4 students, and such spaces tend to be used for small group work and meetings, especially during the busy times.

[6] See Table B1 in Appendix B for the breakdown by academic years.

the SPREX) and book rooms in that moment. Since SpaceBook only registers the date and time for the booking (and not the date and time when the booking is done), I am unable to explore a pattern. Students I have talked to reported that their teams had not assigned a particular person to book rooms. However, as I explain in Section 3.3., I observe 45 teams with a single team member (23 female and 22 male) undertaking all the bookings. Some of these teams may have explicitly assigned this task to a team member. Finally, SpaceBook does not permit a single student to book more than two hours of room reservations in a single day, therefore, teams planning several hours of meetings on a given day may have to coordinate on room bookings.

A large number of students, 543 (313 male and 230 female), made no bookings for SPREX team meetings (see Table B2 in Appendix B for the gender information of these students by academic year). Notably, 393 of these students (72 percent) have booked at least one room prior to SPREX, meaning they had already incurred the fixed cost of learning how to book a room.

The proportion of female participants who have volunteered to book at least one room for their team meeting (44 percent) is significantly higher than the proportion of male participants who have done so (31 percent) (a Fisher's exact test yields $p < 0.001$).

As reported in Table 2, the average number of SPREX bookings made by female and male participants are 1.85 and 1.02, respectively. On average, female participants book more rooms than male participants (Welch's two-sample t test yields $p < 0.001$).

3 Analysis

Combining booking data with SPREX participants and team data, I generate student-level observations with each student's gender, number of pre-SPREX G-bookings, number of pre-SPREX I-bookings number of SPREX bookings, size of the student's team, female share in team, total number of SPREX bookings made by the team, and the "volunteering rate" of the student, defined as the ratio of the student's SPREX bookings to the total number of bookings made for the same team.

To study gender differences, I use three different specifications for volunteering: (i) probability of volunteering, (ii) individual number of SPREX bookings, and (iii) rate of volunteering.

In my first specification, the dependent variable is an indicator (1=volunteer, 0=don't volunteer); if the student has booked at least one room for SPREX team meetings, then the student is a volunteer. This zero-one measure captures an aspect of volunteering decisions. However, different from settings which involve only binary decisions, such as accepting or rejecting to volunteer, or investing or not investing a given amount for the group's benefit, participants in my setting also decide on how much to volunteer. In my second specification, the dependent variable is the individual number of bookings made for SPREX team meetings, which partly captures level of volunteering. Although a higher number of individual SPREX bookings indicates a higher level volunteering in absolute terms, this specification does not take into account the size of the individual contribution (individual number of SPREX bookings) relative to the public good produced by the team (total number of bookings made for the SPREX team). Hence, I use rate of volunteering in my third specification.

3.1 Probability of volunteering

Similar to Babcock et al. (2017a), the dependent variable in my first specification is the individual decision to volunteer. It is an indicator variable which takes the value 1 if the student has volunteered to book at least one room for SPREX meetings and 0 otherwise.

Table 3: Probability of volunteering | Probit estimates

	(1)	(2)	(3)	(4)
Female	0.126***	0.123***	0.114***	0.130***
	(0.031)	(0.031)	(0.031)	(0.032)
Team size		−0.110*	−0.097*	
		(0.044)	(0.044)	
Female share in team		0.112	0.104	
		(0.226)	(0.222)	
Pre-SPREX I-bookings			0.017***	0.021***
			(0.004)	(0.004)
Team fixed effects	No	No	No	Yes
Number of observations	863	863	863	758

Notes: The dependent variable: individual decision to volunteer (1=volunteer, 0=don't volunteer). The table reports marginal effects. Delta-method standard errors in parenthesis. Year dummies included in all regressions. Standard errors clustered by 163 (columns 1-3) and by 143 (column 4) SPREX teams.*** Denotes significance at 0.1% level; ** denotes significance at 1% level; * denotes significance at 5% level.

As noted in the previous section, 165 out of 863 students have not booked any rooms prior to SPREX, and there is no significant gender difference among these pre-SPREX non-bookers. The probability of a random draw of a student to have at least one booking prior to SPREX is 0.81. This probability is much lower for SPREX bookings, 0.37.

I find no gender difference in probability of booking at least one room prior to SPREX. A probit estimate yields a Female marginal effect of 0.018, which is not significant (Delta method standard error 0.027). This is not true for SPREX bookings. The marginal effects of probit estimates, which are reported in Table 3, show that female participants' probability of booking a room for SPREX team meetings is significantly higher than male participants'. Female coefficient is 0.126 and significant at 0.1% level with only year dummies. After adding controls for team characteristics such as team size and female share in team, and the number of pre-SPREX I-bookings students have made (columns 3-4), the female coefficient remains positive and significant (0.114, significant at 0.1% level). Note that G-bookings involve other teamwork and group studies, and hence, booking behavior is likely to be correlated with the SPREX booking behavior. For this reason, it is not included as a control variable.

Controlling for team fixed effects in lieu of controls for team characteristics yields the female coefficient 0.130 (significant at 0.1% level).[7]

I also find that students with a higher number of pre-SPREX I-bookings have a higher likelihood to book a room for their SPREX team meetings (see columns 3 and 4; the coefficient for Pre-SPREX I-bookings is positive at 0.1% level).

The size of the team has a negative marginal effect on the probability of booking a SPREX room, which is consistent with findings in the volunteer's dilemma experiments that suggest a negative relationship between probability of volunteering and group size (e.g., Franzen 1995 and Gooere et al. 2017). The coefficient for Team size is -0.097 (significant at 5% level) with all the controls. Given relatively small variation in the team size (161 out of 163 teams are composed of either 5 or 6 students), this negative effect shows a strong size effect.

[7] Probit with team fixed effects drops 16 teams with zero reservations predicting failure perfectly, and 4 teams predicting success perfectly.

3.2 Individual number of SPREX bookings

Recall that on average, students book 1.42 rooms for their SPREX team meetings (the average of students with a positive number of SPREX booking is 3.82). For the individual number of SPREX bookings, I run Tobit estimates with the data censored at zero at the low-end. Results of OLS regressions are provided in Table C1 in Appendix C as a robustness check.

Table 4: Individual number of SPREX bookings | Tobit Estimates

	(1)	(2)	(3)	(4)
Female	2.094***	2.049***	1.897***	1.924***
	(0.453)	(0.448)	(0.442)	(0.460)
Team size		−1.750**	−1.543**	
		(0.554)	(0.556)	
Female share in team		1.348	1.307	
		(2.701)	(2.641)	
Pre-SPREX I-bookings			0.249***	0.288***
			(0.045)	(0.061)
Team fixed effects	No	No	No	Yes
Number of observations	863	863	863	863

Notes: Year dummies included in all regressions. Standard errors in parenthesis. Standard errors clustered by 163 SPREX teams. *** Denotes significance at 0.1% level; ** denotes significance at 1% level; * denotes significance at 5% level.

As can be seen from Table 4, there is a significant gender difference in the individual number of SPREX bookings; the female coefficient is 2.094 and significant at 0.1% with no controls other than year dummies. After adding controls (column 2-3) and including team fixed effects (column 4), the female coefficient remains relatively large and significant at 0.1%.

Similar to probit estimates on the probability of volunteering, individual number of I-bookings made prior to SPREX has a significant (albeit relatively small) positive effect on individual bookings made for SPREX team meetings. When the team fixed effects are included, the Pre-SPREX I-bookings coefficient is 0.288, and is significant at 0.1% level. Similar to probit estimates, team size has a negative effect on individual number bookings for SPREX team meetings, significant at 1% level.

3.3 Rate of Volunteering

Rate of volunteering is defined as the ratio of an individual student's SPREX bookings to the total bookings made for the team. This measure provides additional information, as teams meet with varying frequencies, so two students on different teams with the same number of bookings could be volunteering with different rates. The number of observations with this specification is 778, as there are four teams each academic year (total of 16 teams with 85 students) that has no SPREX bookings.

Let $v_i \in [0, 1]$ denote the rate of volunteering for Student i. Free-riders in SPREX bookings refer to students who have made no SPREX bookings but are on teams with a positive number of SPREX bookings ($v = 0$). The proportion of free-riders among male students is significantly higher than among female students (0.66 versus 0.51; a Fisher's exact test yields $p < 0.001$).

Full volunteers in SPREX bookings ($v = 1$) refer to the students who undertake all of the SPREX bookings for their team. I observe 45 teams with only one volunteer. There is no gender difference among full volunteers; 5 percent of male students and 6 percent of female students book all the rooms for their teams (a Fisher's exact test yields $p = 0.645$).

The average volunteering rate among SPREX participants is 0.189 (see Table D1 in Appendix

D for the distribution of rate of volunteering by gender). The average volunteering rate among male students is significantly lower than than among female students (0.148 versus 0.235; Welch's two sample t-test for one tail yields $p < 0.001$). The gender difference is mainly driven by the higher proportion of free-riders among male students. When free-riders are excluded from the sample, the average volunteering rate among male and female students are not statistically different (0.434 for male and 0.480 for female; right-tailed z-test yields $p = 0.092$).

Table 5 reports the marginal effects of probit estimates of the rate of volunteering. The coefficient for female is positive and significant at the 0.1% level (columns 1-4). When team fixed effects and individual number of I-bookings made prior to SPREX are added as controls, the female coefficient is 0.130 (column 4).[8]

Similar to previous specifications, team size has a negative effect on rate of volunteering. Different from previous specifications, the probit estimates on rate of volunteering show that female share in team has a positive effect on rate of volunteering (0.383), but this is significant (at 5% level) only when the number of pre-SPREX I-bookings is not included in the controls (column 2). This is somewhat in contrast with Babcock et al. (2017a). The authors also find individual's propensity to volunteer to be sensitive to the group's gender composition, but they find that women volunteer less in all-women groups (compared to mixed-sex groups), and men volunteer more in all-men groups (compared to mixed-sex groups). According to the authors, this differential response to the gender composition of groups may be driven by the belief that women are more likely to volunteer than men. In this setting, where students decide on how much to volunteer, such a belief structure can also explain the higher rate of volunteering in teams with more female students. Akin to the case of conditional cooperators, students may be willing to contribute conditional on their expectations (or observations) of others' contributions, and presence of a higher female ratio in a team may

[8] Probit with team fixed effects drops 4 teams predicting success perfectly.

imply more optimistic beliefs in that regard.

Table 5: Rate of volunteering | Probit estimates

	(1)	(2)	(3)	(4)
Female	0.146***	0.136***	0.128***	0.130***
	(0.034)	(0.034)	(0.034)	(0.032)
Team size		−0.123**	−0.108*	
		(0.039)	(0.039)	
Female share in team		0.383*	0.369	
		(0.192)	(0.193)	
Pre-SPREX I-bookings			0.017***	0.021***
			(0.004)	(0.004)
Team fixed effects	No	No	No	Yes
Number of observations	778	778	778	758

Notes: The table reports marginal effects. Delta-method standard errors in parenthesis. Year dummies included in all regressions. Standard errors clustered by 147 SPREX teams for columns (1-3) and 143 SPREX teams for (4). *** Denotes significance at 0.1% level; ** denotes significance at 1% level;* denotes significance at 5% level.

4 A natural experiment: cohort-based versus topic-based teams

In AY 2016-17, SPREX was changed in a way that has some bearing on the results of this paper. Until then, i.e., during the first half of my data window, all students worked on the same policy topic, and SPREX teams were randomly formed within each of the four cohorts. This meant that students worked with their cohort-mates whom they knew since the beginning of the Fall semester.[9] I will refer to teams formed with this model as "cohort-based teams."

During the second half of our data window, students were provided with four different topics to choose from. Teams were then formed randomly, but this time, based on the topic students chose. This meant that students worked with students from other cohorts, with whom they had limited interaction prior to SPREX. I will refer to teams formed with this model as "topic-based teams." Note that, even though it is possible for students from different cohort to know each other, on average, mixed-cohort teams imply less familiarity among the members than same-cohort teams.

When divided up this way, the data contains 78 cohort-based teams (with 419 students) and 85 topic-based teams (with 444 students). While cohort-based teams consist of students from a single cohort, the average number of cohorts represented in a topic-based team is 3.19 (median 4).

Table 6 reports (i) proportion of students with a positive number of SPREX bookings, (ii) average number of SPREX bookings, and (iii) average rate of volunteering for each type of teams and gender.

[9] Besides taking the same sections of the courses, students organize and participate in various cohort-specific social activities, such as retreats, potlucks and other gatherings. Quoting from a student: "As MPPs we are assigned to a cohort, I know, it may not sound like a life changing experience, but it is, trust me. The cohort becomes your family (...) . I never imagined that I was going to feel so comfortable with a group of people that 6 months ago were total strangers. We have shared everything together, long hours solving problem sets, failures and successes, parties, brunches and trips." HKS Admissions Blog (http://hksadmissionblog.tumblr.com/post/157535823033/2017-student-life-insight-series-post-5)

Table 6: Cohort-based versus Topic-based teams									
	Proportion of students with a positive number of SPREX bookings			Average number of SPREX bookings			Average rate of volunteering		
Type of teams	Male	Female	All	Male	Female	All	Male	Female	All
Cohort-based	0.31	0.38	0.35	1.14	1.83	1.47	0.154	0.219	0.186
Topic-based	0.31	0.49	0.39	0.93	1.88	1.36	0.143	0.251	0.192
All teams	0.31	0.44	0.37	1.02	1.85	1.42	0.148	0.235	0.189

Before I present the estimates for each of the three specification, I summarize the findings in Table 7 below. There is a significant gender difference among topic-based teams in all three specifications. Regardless of the team type (cohort-based or topic-based) and the volunteering specification, the individual number of pre-SPREX I-bookings have a positive significant effect on volunteering for SPREX bookings. The effect of team size is negative, but is only significant for the topic-based teams.

Table 7: Summary of findings

		Cohort-based teams		Topic-based teams	
Independent variable	Dependent variable	sign	significance	sign	significance
Female	Ind. decision to volunteer	(+)	not significant	(+)	at 0.1%
	Ind. number of SPREX bookings	(+)	not significant	(+)	at 0.1%
	Rate of volunteering	(+)	not significant	(+)	at 0.1%
Team size	Ind. decision to volunteer	(−)	not significant	(−)	at 1%
	Ind. number of SPREX bookings	(−)	not significant	(−)	at 5%
	Rate of volunteering	(−)	not significant	(−)	at 1%
Pre-SPREX I-bookings	Ind. decision to volunteer	(+)	at 1%	(+)	at 1%
	Ind. number of SPREX bookings	(+)	at 0.1%	(+)	at 0.1%
	Rate of volunteering	(+)	at 1%	(+)	at 1%

Notes: Results are reported for the estimates with the following controls: team size, female share in team, pre-SPREX I-bookings, and year dummies.

Tables 8, 9, and 10 report the estimates on the probability of volunteering, individual number of SPREX bookings, and rate of volunteering for each sub-sample (cohort-based and topic-based teams).

Since the way SPREX teams are formed is irrelevant for pre-SPREX bookings, the effect of gender on a student's probability of booking a room prior to SPREX is not expected to be different between these two sub-samples. Probit regressions confirm this for pre-SPREX individual bookings; the marginal effect of female yields coefficients of 0.063 and 0.072 in cohort-based and topic-based samples, respectively. However, these marginal effects are not statistically significant (Delta-method standard error is 0.048 for both).

Table 8: Probability of volunteering by team types | Probit estimates

	Cohort-based teams		Topic-based teams	
	(1a)	(1b)	(2a)	(2b)
Female	0.060	0.069	0.165***	0.188***
	(0.046)	(0.052)	(0.040)	(0.044)
Team size	−0.044		−0.132**	
	(0.066)		(0.059)	
Female share in team	0.031		0.123	
	(0.315)		(0.305)	
Pre-SPREX I-bookings	0.017**	0.019**	0.018**	0.024**
	(0.005)	(0.007)	(0.006)	(0.008)
Team fixed effects	No	Yes	No	Yes
Number of observations	419	371	444	387

Notes: The dependent variable: individual decision to volunteer (1=volunteer, 0=don't volunteer) The table reports marginal effects. All regressions include year dummies. Standard errors in parenthesis, and are clustered on 78 (1a), 69 (1b), 85 (2a), and 74 (2b) SPREX teams. *** Denotes significance at 0.1% level; ** denotes significance at 1% level; * denotes significance at 5% level.

The marginal effect of gender on the probability of booking a room for the SPREX team, however, depends on the type of teams. As can be seen from Table 8 with probit estimates, the marginal effect of female on the probability of volunteering is not significant for cohort-based teams, whereas it is has a relatively large positive and significant effect (at 0.1% level) for topic-based teams

(0.165 with all controls, and 0.188 with team fixed effects).[10]

The marginal effect of team size is negative for both sub-samples, but it is significant only for topic-based teams. Regardless of the team type, the number of I-bookings made prior to SPREX has a positive marginal effect on probability of volunteering.

Table 9: Individual number of SPREX bookings and team types | Tobit estimates

	Cohort-based teams		Topic-based teams	
	(1a)	(1b)	(2a)	(2b)
Female	1.396	1.454	2.242***	2.256***
	(0.714)	(0.745)	(0.569)	(0.585)
Team size	−1.530		−1.420*	
	(0.944)		(0.659)	
Female share in team	1.301		0.796	
	(4.397)		(3.165)	
Pre-SPREX I-bookings	0.242***	0.255**	0.265***	0.328***
	(0.067)	(0.084)	(0.064)	(0.088)
Team fixed effects	No	Yes	No	Yes
Number of observations	419	419	444	444

Notes: All regressions include year dummies. Standard errors in parenthesis, and are clustered on 78 cohort-based and 85 topic-based SPREX teams. *** Denotes significance at 0.1% level; ** denotes significance at 1% level; * denotes significance at 5% level.

Findings are very similar when the specification for volunteering is the individual number of

[10] Similar to the estimates with all types of teams, Probit with team fixed effects drops 9 cohort-based and 11 topic-based teams.

SPREX bookings. A positive and significant (at 0.1% level) female coefficient for topic-based teams; negative effect of team size, which is significant only for topic-based teams (at 5% level), and a significant positive effect of prior I-bookings (at 0.1% level), regardless of the team type.

Table 10: Rate of volunteering by team types | Probit estimates

	Cohort-based teams		Topic-based teams	
	(1a)	(1b)	(2a)	(2b)
Female	0.070	0.070	0.182^{***}	0.188^{***}
	(0.051)	(0.052)	(0.043)	(0.044)
Team size	-0.046		-0.156^{**}	
	(0.060)		(0.050)	
Female share in team	0.038		0.583^{*}	
	(0.301)		(0.246)	
Pre-SPREX I-bookings	0.018^{**}	0.019^{**}	0.012^{**}	0.024^{**}
	(0.006)	(0.007)	(0.006)	(0.008)
Team fixed effects	No	Yes	No	Yes
Number of observations	376	371	402	387

Notes: The table reports marginal effects. All regressions include year dummies. Standard errors in parenthesis, and are clustered on 70 (1a), 69 (1b), 77 (2a), and 74 (2b) SPREX teams. *** Denotes significance at 0.1% level; ** denotes significance at 1% level; * denotes significance at 5% level.

Finally, Table 10 reports the marginal effects of probit estimates for rate of volunteering. The female coefficient is positive and significant at 0.1% level for topic-based teams. Female share in team has a positive effect on the rate of volunteering, but this is significant (at 5% level) only for topic-based teams.

Regardless of the specification for volunteering, gender difference is significant for SPREX teams whose members are less familiar with each other (topic-based teams). This points to incomplete information as a potential explanation for gender differences in volunteering. In the next section, I use a highly stylized 2x2 volunteer's dilemma game and show that when players' preferences are not completely known to each other, beliefs that most female (some male) will (not) volunteer, or gender stereotyping, may disfavor the female player who end up bearing a cost of volunteering.

5 Discussion and interpretation

Volunteer's dilemma in teamwork

In this section, I provide a theoretical explanation of the findings using a simple two-player volunteer's dilemma game. Consider two-players, Female and Male, simultaneously making a binary decision: Volunteer (V) or Don't Volunteer (D). In the payoff matrix below, b denotes the benefit that both players receive if either volunteers, c denotes the cost of volunteering, and the payoff of the players when no one volunteers (and hence there no public good is provided) is normalized to zero without any loss of generality.

Symmetric Volunteer's Dilemma			
		Male	
		V	D
Female	V	$b-c$, $b-c$	$b-c, b$
	D	b, $b-c$	$0, 0$

As is well known, this game features a volunteer's dilemma if $b > c > 0$. The distinctive feature of volunteer's dilemma is that the cost of volunteering is small relative to the benefit it generates to the volunteer. Therefore, each player prefers to volunteer if the other player is not volunteering, yielding two Nash equilibria in pure strategies, (V, D) and (D, V).[11]

Payoff dominance does not select the equilibrium, since neither equilibrium Pareto dominates the other. It is also straightforward to show that risk dominance à la Harsanyi and Selten (1988) does not help select the equilibrium either. Not volunteering in this game involves a risk, as players may receive a payoff of 0 if no one ends up volunteering. Players receive a sure payoff of $(b-c)$ from playing Volunteer, and the less risky strategy for each player points to a different equilibrium.[12] Therefore, in this symmetric game, both pure-strategy equilibria are plausible. If booking rooms for teamwork is well characterized by this symmetric game, we should expect no significant gender differences in room bookings.

Potential sources of asymmetries One of the two equilibria may stand out if we introduce a slight asymmetry in the payoffs. Consider the case, for instance, where Female is more efficient in volunteering. Let c_F and c_M denote the cost of volunteering for Female and Male, respectively. While preserving the volunteer's dilemma feature of the game, let's consider that $c_F < c_M$. The asymmetric version of this volunteer's dilemma game yields the same two pure-strategy equilibria.[13] Even though it would be more efficient for Female to undertake the task, neither equilibrium Pareto dominates the other. Risk dominance, however, selects (V, D) over (D, V), even for small asymmetries.[14] To see this, let $GFV = (b - c_F)$. That is, the gain Female obtains from correctly predicting that Male will play as in (V, D) and playing her best-response to that prediction (which brings her $(b - c_F)$) instead of wrongly predicting that Male will play as in (D, V) and playing her

[11] There is also a mixed strategy equilibrium in which each player volunteers with probability $(b-c)/b$, and yields each player an expected payoff of $(b-c)$. The $n-$player game yields $n-$Nash equilibria in pure strategies, with a different player volunteering for the group benefit in each equilibrium.

[12] Let $\overline{r}_M$ (and $\overline{r}_F$) denote the threshold probability of Male (Female) volunteering, below which volunteering is the risk-dominant strategy for Female (Male). In this symmetric game, we have $\overline{r}_M = \overline{r}_F = \overline{r} = (b-c)/b$. For a given b, a lower cost of volunteering implies a higher threshold. Risk dominance does not select the equilibrium; if $r < \overline{r}$, (V, D) involves less risk for Female, whereas (D, V) involves less risk for Male.

[13] A set of experimental papers, most recently Healy and Pate (2018) and Kopányi-Peuker (2019), have examined the effect of cost asymmetries in volunteer's dilemma.

[14] See Cabralesa et al. (2000) for set of cases where this selection mechanism might be most appropriate.

best-response to that prediction (which would bring her 0).

Let $GMD = c_M$. That is, the gain Male obtains from correctly predicting that Female will play as in (V, D) and playing his best-response to that prediction (which brings him b) instead of wrongly predicting that Female will play as in (D, V) and plays his best-response to that prediction (which brings him $(b - c_M)$). Similarly, let $GFD = c_F$ and $GMV = (b - c_M)$.

According to Harsanyi and Selten (1988), (V, D) risk dominates (D, V) if $GFV \cdot GMD > GFD \cdot GMV$, in this case if

$$(b - c_F)(c_M) > (c_F)(b - c_M),$$

which holds for any $c_M > c_F$. Diekmann (1993) refers to players with a lower cost of volunteering (or more efficient in the provision of the public good) as "strong players" and shows that they may be "taken advantage of" by the "weak players."

One could argue that there are potential asymmetries in the perceived benefits. A recent body of literature points to gender differences in social preferences as the source of asymmetric payoffs, and hence different behaviors between male and female players.[15] If for example, women are more altruistic, one could imagine Female player to internalize (at least to some degree) the benefits from volunteering that accrue to Male player, and hence perceive a higher benefit from volunteering (i.e., $b_F > b_M$). Technically, a higher benefit is tantamount to a lower cost for the same player, and hence, risk dominance selects (V, D).

Finally, one could also consider that Female perceives a higher benefit (in gross terms) if she volunteers than when someone else does. That is, along with the benefit she receives from the public good, she obtains an additional payoff from being the one who provides it. If the volunteer's dilemma feature is preserved (if the benefit she receives when the other player volunteers is greater

[15] In a comprehensive survey, Niederle (2016) highlights the three most common traits studied in this line of work: attitudes to competition, altruism or cooperative attitudes, and risk attitudes.

than the net benefit when she volunteers), risk dominance once again selects the equilibrium in which Female volunteers.

In the context of room bookings at HKS, the cost of volunteering is less likely to be a source of asymmetry. None of the first-year MPP students (female or male) have prior experience in using HKS's online room booking system, SpaceBook. As part of their orientation, all students receive an E-mail with clear instructions about how to book a room, which is relatively straightforward, and involves a small time cost. Learning how to use this tool has no other benefits (long-term or otherwise) than the benefit one obtains through the use of the booked room.

Asymmetries in risk preferences in an otherwise symmetric volunteer's dilemma could also lead to an outcome where the more risk-averse player ends up volunteering.[16] This would be similar to considering a lower payoff for Female than Male in the event no one volunteers, which would also lead to selection of (V, D) with risk dominance.

In short, under complete information, differences in gender preferences and/or efficiency in volunteering could explain why a particular equilibrium in which Female volunteers may stand out. However, the findings in this paper are also consistent with symmetric gender preferences under incomplete information.

Volunteer's dilemma with incomplete information

Consider a variant game with asymmetric information, in which Female is uncertain about Male's preferences. Male could be one of two possible types: With probability p, he has the same payoff structure as in the symmetric Volunteer's Dilemma game (I will call him $V - type$), and with probability $(1 - p)$ his dominant strategy is not to volunteer, D (I will call him $D - type$). The latter type's dominant strategy may be D if the cost of volunteering for him is too high and/or the

[16] Based on the review of lab and field evidence Croson and Gneezy (2009) find women to be more risk-averse than men (with the exception of those in managerial positions).

perceived benefit from the public good is too low.[17]

There are two equilibrium strategy profile candidates in this Bayesian game: (V, DD) and (D, VD), where the first and second letters describing Male's strategy refer to $V-type$'s and $D-type$'s actions, respectively. Both equilibria involves, $D-type$ male playing D (since this is his dominant strategy), and $V-type$ male playing the opposite action to Female (by nature of the volunteer's dilemma). While (V, DD) yields Female a payoff of $(b-c)$, (D, VD) yields her an expected payoff of pb. Therefore, for $p < \overline{p} = (b-c)/b$ the Bayesian Nash Equilibria involves Female volunteering, and Male of both types not volunteering. Notice that when $c \to 0$, we have $\overline{p} \to 1$, meaning, when the cost of volunteering is very small, a very large range of priors support (V, DD) as the Bayesian Nash Equilibria. In the context of room bookings, since the cost of volunteering is relatively small, even a small likelihood of having a $D-type$ Male in the game results in the equilibrium outcome where Female ends up volunteering.[18]

Not surprisingly, the threshold probability below which this equilibria where Female volunteers emerges, is the same as $\overline{r}$ (the threshold probability of Player 2 playing D, below which V is the risk dominant strategy for Player 1) in the complete information game. The interpretation here is slightly different though. Consider that we have $p < \overline{p}$, but that the actual type of Male in the game is $V-type$ (whose best-response to D is V). Asymmetric information puts Female at a disadvantage, since with the uncertainty in Male's payoffs, the Female ends up taking the costly action to provide the group benefit. Under complete information, however, when Female knows Male is $V-type$, the equilibrium in which Male volunteers (D, V) is plausible.

[17] Healy and Pale (2018) consider asymmetric costs in volunteer's dilemma with private information, and show that uncertainty about fellow group members' costs incentivizes greater volunteering. This, however, does not result in welfare gains due to inefficient duplication of volunteering efforts. Here, I consider a simple two-type case with only one-sided asymmetric information. Unlike Healy and Pale (2018), however, the state of world with the $D-type$ (which can be interpreted as the high-cost type) does not feature a volunteer's dilemma game, as the cost of volunteering is too high a cost relative to its private benefit.

[18] For the sake of simplicity, I have considered a two-person game. In the $n-$person version of this game with k number of female players, for any given $k \in (0, n]$, there exists a sufficiently small p, which yields k pure-strategy Bayesian Nash equilibria, each of which involves a female player volunteering.

Alternatively, one could consider private information held by Female, who could either have preferences depicted as in the original game (would volunteer only if Male is not volunteering) or be a type who would always undertake the task. If Male holds a prior that Female is more likely to be the latter type, then in equilibrium Male ends up not volunteering whereas Female volunteers regardless of her type.

This may explain why the gender difference in booking behavior is very significant when teams are formed by students from a mix of different cohorts. In contrast to single-cohort teams, teammates have spent a full semester together, both in classroom and in social settings, and hence, the game resembles one with complete information. If female students were more efficient in booking rooms and/or derived more benefit from having a room for the team meeting, we would expect the room behavior to be very similar, regardless of the way in which teams are formed.

6 Conclusion

A series of studies based on both field data and laboratory experiments has established that women volunteer more than men in undertaking low-promotability tasks. In this paper, I provide further evidence on gender differences in volunteering, in the context of teamwork among graduate students in a top professional school. Using naturally occurring data from four consecutive academic years, I find that female students volunteer significantly more than male students in booking rooms for their team meetings.

Why do high-achieving female students, who are subject to identical admissions criteria, academic requirements, and expectations as male students, volunteer disproportionately for this logistical task?

One possible explanation is that female students are more efficient at organizational and logistical tasks (i.e., have a lower cost of volunteering) and/or obtain more satisfaction from getting such tasks done (i.e., derive a higher individual benefit from volunteering). The findings of this paper, however, refute this possibility. I find no significant gender difference in volunteering when teams are formed among students who had one semester of academic and social interactions prior to their teamwork. Instead, the gender difference is highly significant when the team members are less familiar with each other. These differential findings point to (lack of) information as the more likely explanation. That is, a common belief that a proportion of male students (albeit small) would not undertake such tasks (or that most female students would), might be the reason why female students volunteer more than their male peers.

Should we be concerned that female students book more rooms for their teams than their male peers?

First, unlike other team tasks–such as policy analysis, drafting policy memos, etc.–booking rooms does not advance students' learning and is not relevant to their future professional careers. Second, even though logistical tasks such as booking rooms may be important for a productive team meeting, undertaking them does not require any special skill or talent and confers no personal or professional recognition. Finally, the task comes with a cost. Even though the time cost involved in booking rooms is relatively small, these costs can add up easily. More importantly, the full cost may extend beyond the time and effort spent on the task. Gender differences in undertaking logistical tasks can contribute to reinforcing gender stereotyping in allocation of tasks in other, more significant professional settings.

It is possible to envisage specific interventions that can help move towards a fairer allocation of this logistical task and possibly others. It may not be always feasible (or desirable) to have teams whose members are familiar with each other. It may be, however, possible to introduce a team-building exercise prior to the teamwork to help reduce stereotyping. A more direct intervention would involve supervisors–faculty in this instance–providing guidance on task allocation.

Even though gender differences in volunteering for low-promotability tasks is well-documented in (non-team) settings where beneficiaries of volunteering are relatively large (e.g., universities, institutions), further research is needed to understand gender dynamics in team settings. In particular, it would be important to ascertain whether the findings of this paper are generalizable to team settings other than those in professional graduate school.

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Appendix

Appendix A: Summary statistics on SPREX participants and teams

Table A1: Age and years of professional experience of the SPREX participants

	Average					
	Age			Professional Experience		
Academic Year	Overall	Male	Female	Overall	Male	Female
2014-15	25.9	26.2	25.5	2.8	3.2	2.5
2015-16	26.2	26.2	26.1	3.1	3.1	3.0
2016-17	26.4	26.8	26.0	3.3	3.7	2.9
2017-18	26.2	26.8	25.7	2.9	3.3	2.6
All years	26.2	26.5	25.8	3.0	3.3	2.7

Table A2: International SPREX participants

	Share of international SPREX participants		
Academic Year	Overall	Male	Female
2014-15	0.29	0.27	0.30
2015-16	0.38	0.37	0.40
2016-17	0.39	0.35	0.43
2017-18	0.35	0.35	0.35
All years	0.35	0.34	0.37

Table A3: Number and size of SPREX teams		
Academic Year	Number	Median Size
2014–15	38	5
2015–16	40	6
2016–17	45	5
2017–18	40	5
All years	163	5

Table A4: Distribution of team size and female share (n=163)

	Team Size			Female Share						
	4	5	6	0.20	0.33	0.40	0.50	0.60	0.67	0.75
Nb. of teams	2	110	51	2	5	72	45	36	2	1

Appendix B: Summary statistics on room bookings

Table B1: SPREX participants with no pre-SPREX booking

	All		Male		Female	
Academic Year	Number	Overall share	Number	Share of Male	Number	Share of Female
2014–15	33	0.17	18	0.18	15	0.16
2015–16	44	0.19	26	0.23	18	0.16
2016–17	53	0.23	30	0.24	23	0.23
2017–18	35	0.16	17	0.15	18	0.18
All years	165	0.19	91	0.20	74	0.18

Table B2: SPREX participants with no booking for SPREX team meetings

	All		Male		Female	
Academic Year	Number	Overall share	Number	Share of Male	Number	Share of Female
2014–15	129	0.67	74	0.74	55	0.60
2015–16	145	0.64	73	0.65	72	0.63
2016–17	145	0.63	92	0.72	53	0.52
2017–18	124	0.58	74	0.65	50	0.50
All years	543	0.63	313	0.69	230	0.56

Appendix C: OLS Estimates

Table C1: Individual number of SPREX bookings | OLS Estimates

	(1)	(2)	(3)	(4)
Female	0.825***	0.812***	0.750***	0.743***
	(0.194)	(0.191)	(0.191)	(0.132)
Team size		−0.656**	−0.573**	
		(0.208)	(0.209)	
Female share in team		0.427	0.372	
		(1.015)	(0.991)	
Pre-SPREX I-bookings			0.119***	0.132***
			(0.030)	(0.037)
Team fixed effects	No	No	No	Yes
No. of observations	863	863	863	863

Notes: Year dummies included in all regressions. Standard errors in parenthesis.

Standard errors clustered by 163 SPREX teams. *** Denotes significance at 0.1% level;

** denotes significance at 1% level; * denotes significance at 5% level.

Table C2: Individual number of SPREX bookings and team types | OLS estimates

	Cohort-based teams		Topic-based teams	
	(1a)	(1b)	(2a)	(2b)
Female	0.608*	0.598	0.900***	0.897**
	(0.282)	(0.312)	(0.256)	(0.285)
Team size	−0.818*		−0.412*	
	(0.368)		(0.247)	
Female share in team	0.615		0.038	
	(1.581)		(1.260)	
Pre-SPREX I-bookings	0.094*	0.107*	0.149**	0.163**
	(0.040)	(0.047)	(0.046)	(0.057)
Team fixed effects	No	Yes	No	Yes
Number of observations	419	419	444	444

Notes: All regressions include year dummies. Standard errors in parenthesis, and are clustered on 78 cohort-based and 85 topic-based SPREX teams. *** Denotes significance at 0.1% level; ** denotes significance at 1% level; * denotes significance at 5% level.

Appendix D: Rate of volunteering

Table D1: Summary statistics for rate of volunteering ($n = 778$)

	Male ($n = 412$)		Female ($n = 366$)		Overall	
	Number	Ratio	Number	Ratio	Number	Ratio
$v_i = 0$ (free-riders)	271	0.66	187	0.51	458	0.59
$v_i = 1$ (full volunteers)	22	0.05	23	0.06	45	0.06
$v_i \in (0, 0.20)$	37	0.09	39	0.10	76	0.10
$v_i \in [0.20, 0.40)$	42	0.10	44	0.12	86	0.11
$v_i \in [0.40, 0.60)$	22	0.05	29	0.08	51	0.07
$v_i \in [0.60, 0.80)$	13	0.03	34	0.09	47	0.06
$v_i \in [0.80, 1)$	5	0.01	10	0.03	15	0.02
Mean v	0.148		0.234		0.189	