

# Leveraging Field-Campaign Networks to Identify Sexual Harassment in Atmospheric Science and Pilot Promising Interventions

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**Supplemental Materials: Leveraging Field-Campaign Networks to Identify Sexual Harassment in Atmospheric Science and Pilot Promising Interventions**

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## Supplement A: Methods

### Participants

Everyone ( $N = 517$ ) involved in the four field campaigns was emailed the pre- and post-survey. We removed participants from the dataset for three reasons: 1) the same individual participated in more than one field campaign and completed the survey more than once (thus, all but the first survey completion was deleted;  $n = 58$ ); 2) the individual was an integral part of this research project and thus their responses may not be representative of the general population ( $n = 5$ ); or 3) the individual responded carelessly or in a way that was obviously false ( $n = 3$ ).<sup>1</sup> Thus, the final number of participants evaluated for the purposes of the current study was  $N = 451$ . Number of team members varied by campaign, the smallest having 35 participants and the largest having 189 participants. Completion rates also varied significantly by campaign. The pre-survey had an average completion rate of 54.5% ( $n = 265$ ), with a range in completion rates between 29.5% and 97.1%. The post-survey had an average completion rate of 54.5% ( $n = 246$ ), again ranging between 35.6% and 85.7% across the campaigns. There were 186 participants who completed both pre- and post-surveys.

We also looked at whether the proportion of women and men who completed the survey differed by campaign. Three of the four campaigns had relatively similar proportions of women to men (33% women to 66% men), with one campaign having a slightly larger percentage of women (45% women to 55% men) We are not able to directly assess completion rates based on gender, because we did not have prior data indicating the gender identity of all team members (and thus the gender of non-participating team members is unknown). However, the PIs for all four campaigns indicated that there were more men working on the field projects than women (and this is consistent with gender diversity in the field of Atmospheric Science as a whole; Bernard & Cooperdock, 2018; Wilson, 2019).

The other important indicator that we assessed about the participants was their relative seniority (either being in a trainee or senior level position; for details please refer to the measures section). Senior-level team members were more likely to complete the surveys than trainee team members, with approximate proportions at 70% (senior) and 30% (trainee) for completion of each individual survey and for those that completed both surveys. We cannot assess whether seniority level influenced participation, as we did not have prior data regarding seniority (and thus the seniority of non-participating team members is unknown). However, PIs across the four campaigns indicated that it is typical to have more senior-level team members than trainee team members on field projects, and that this proportion was roughly equivalent to their own team's observations. Other potentially relevant demographic data about the participants is summarized in Supplement Table 1.

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<sup>1</sup> A small number of participants wrote irrelevant comments and/or selected answers that were highly unlikely (e.g., selecting every type of sexual harassment behavior as something they had experienced and something they engaged in). Thus, we do not include any data from these participants as their data were deemed unreliable.

## **Procedure**

Names and email addresses for every member of the four field campaigns was collected by the project's social science researcher from the PIs of the campaigns. Participants were randomly assigned an ID number that was used to connect survey responses, after which names and contact information were deleted. Approximately 6 weeks before the start of each campaign, all known members of the field campaigns were sent an email with information about the study, the voluntary nature of the study, and a request to fill out the (pre) study online through the survey software Qualtrics. Participants could complete the survey from any location at any time. Participants were allowed to leave and come back to the survey, but were not allowed to access the survey again after it was completed. Automatic reminders were sent from Qualtrics approximately once per week up until the start of the field campaign to those who had not yet completed the survey. Reminders were timed so that participants would receive them on different days of the week and during different times of the day. One issue we came across was that some government organizations' firewalls prevented emails being received by those participants. Although some participants contacted the PI or our researcher to request a link to the survey, this may have prevented a disproportionate number of participants at those organizations from completing the study.

Once participants logged into the study, they were presented with an Institutional Review Board-approved consent form for human participation in a research study. All participants were informed that the study was voluntary and that some of the questions would be personal or sensitive in nature. Participants were advised that they could skip any questions that they did not wish to answer, and that in some cases, the researchers may be required to report the data to authorities if there was reasonable evidence that someone may be in danger. For the most sensitive questions (e.g., whether participants had engaged in sexual harassment behaviors toward others), a separate, completely anonymous survey link was provided, and participants were advised that they could answer these questions separately if they wished to do so.

The pre-survey questions themselves asked participants about their attitudes related to work (e.g., job satisfaction), beliefs about social issues (e.g., women's rights in the workplace), experiences related to sexual harassment, previous training on sexual harassment, and a number of psychological assessments that measure orientation toward others, moral and social values, and finally, demographic information. We include data gathered on experiences of and engagement in sexual harassment, responses about training, and demographic information in this manuscript, and details about how these were measured is included below.

During the first week of each field campaign, the researchers worked with the PIs of the campaigns to implement a sexual harassment prevention training. The trainings were not identical, because our purpose was not to rigorously experimentally test the elements of the training. However, all four campaigns followed the general format of the ADVANCEGeo bystander intervention and workplace climate training workshops and were adapted to include scenarios relevant to field work and included key leaders within each campaign. Although participation in the training was encouraged, it was not mandatory, and not all members of every

field campaign participated in the training sessions. More specific information about the training sessions are provided in the main section of the paper and on the ADVANCEGeo website. The codes of conduct for these campaigns are included as Supplement D.

Within three months of the end of each field campaign, all known members of the campaign were sent an email requesting their participation in the post-survey. The email, survey software, informed consent information, and reminders were the same as those used in the pre-survey, with the exception that participants were informed that this was a follow-up to the original survey and that they could choose to participate regardless of whether they had completed the pre-survey. Post-survey questions were similar to those asked in the pre-survey, with the following important exceptions. First, questions relating to sexual harassment (experiences, responses, and engagement in behaviors) were specifically asked regarding the time period of the field campaign (e.g., “did you experience any of the following during the [name] field campaign?”). Second, we included new questions asking participants whether they attended the sexual harassment training and their perceptions of the training. Specifics of these questions are included in the measures section, below.

### **Measures**

Participants responded to many of the same questions on the pre- and post-surveys, with some slight differences in the way that some questions were worded. We differentiate which questions were asked below by notating Wave 1 data (pre-survey) as W1 and Wave 2 data (post-survey) as W2.

*Past Sexual Harassment Experiences (W1).* We asked participants about their experiences of sexual harassment through a gradual, three-step approach. Because research indicates that victims of sexual harassment and assault often do not label their experiences as such (Koss, 1985; Stockdale & Vaux, 1993; Peterson & Muehlenhard, 2004), we first asked participants whether they had ever been sexually harassed at work, with possible response options on a 6-point scale (0=never, 1=once, 2=a couple times, 3=several times, 4=often, 5=regularly). The second step of the questions asked participants whether they “ever personally experienced inappropriate or sexual remarks, comments about physical beauty, sex differences in ability, or other jokes, at a research field site?;” “ever experienced physical sexual harassment, unwanted sexual contact, or sexual contact in which you could not or did not give consent or felt it would be unsafe to fight back or not give your consent at a research field site?;” and if they had “ever observed other field site researchers or colleagues making inappropriate or sexual remarks toward someone else?”. Responses were measured on the same scale as the first general question about sexual harassment (0=never to 5=regularly). If participants gave any response other than “never” to any of these questions, they were then asked “if you are willing, please describe your experience,” with an open-ended textbox response option.

Next, we asked participants whether they had experienced a list of 26 specific behaviors or situations that could fall under the general category of sexual harassment. This list was compiled from a variety of sources, including the AAUW study on sexual harassment in schools (Hill & Kearn, 2011), the Tripartite Model of Sexual Harassment (Gelfand et al., 1995), and the

Sexual Experiences Questionnaire (SEQ; Fitzgerald et al., 1999). Some items were combined or collapsed into a more general experience for brevity and to address the spectrum of possible sexual harassment without asking too detailed of questions. All items are listed in Supplement Table 2. Participants were asked to indicate if they had “ever (at any time) experienced any of the following situations at work? (Including during any time or activities related to your work)” by placing a check mark next to any of the 26 possible situations. In addition, participants were given the option to respond to a separate anonymous survey if they did not feel comfortable with providing confidential information on the original survey.

For the purposes of our analyses, we categorized sexual harassment experiences in two different ways that are common in the sexual harassment literature. First, we split the reported experiences into either “hostile work environment” or “quid-pro-quo” harassment, and refer to this categorization as “impact type.” Second, we also split the full set of experiences into four specific types of harassment based on the type of behavior that occurred: visual harassment, verbal harassment, physical harassment, and physical assault. We refer to this second form of categorization as “behavior type.” Categorization of each individual example of harassment is indicated in Supplement Table 2.

*Demographics of the Perpetrator (W1 and W2).* If participants indicated that they had experienced any of the situations described above, we then asked about the seniority (W1 and W2) and gender (W2) of the perpetrator.<sup>2</sup> Participants were first asked to indicate if the person engaging in any of the behaviors listed previously was “more senior or more junior to you? (If more than one person has engaged in a behavior listed above, please choose the category that best fits the majority of experiences).” Response options were “more senior to me,” “more junior to me,” or “at the same level as me.” They were then asked “if you experienced any of the situations above, what was the gender of the person engaging in the behavior?”, with the response options of “woman”, “man”, “transgender person”, “other”, or “I do not wish to answer.” Because of the low number of responses and familiarity between participants, we collapsed the response options to “woman,” “man,” or “other/I do not wish to answer,” the latter which also included “transgender.”

*Responses to Harassment (W1 and W2).* If participants indicated that they experienced one or more of the sexual harassment behaviors listed, they were then directed to questions about how they responded to the harassment. We used the Coping Strategies in Response to Sexual Harassment Scale (Malamut & Offermann, 2001), which includes 21 response strategy items across three subscales. The avoidance/denial subscale (4 items) includes responses such as “I acted as if it didn’t bother me,” the social coping subscale (9 items) includes responses such as “I discussed it with or got advice from a colleague,” and the confrontation/advocacy-seeking subscale (7 items) includes responses such as “I reported it to my immediate supervisor.” Additionally, an “other” response item allowed participants to self-report a coping strategy not included on the list, although this option was not used by any participants and was not included in any of the other subscales. Participants had the option of checking a box next to any responses

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<sup>2</sup> The question about the gender of the perpetrator was mistakenly left off of the pre-survey.

that they took. Thus, the overall response rate reflects the total number of responses selected. In analyses comparing the likelihood of selecting one type of response strategy over another, we calculated a proportion score by dividing the total number of responses checked by participants out of the total number of possible responses in each sub-category.

Based on informal feedback from the first two surveyed campaign team members at conferences and lunch-and-learn sessions, we decided to add a question about how sexual harassment experiences made the participant feel on the W1 surveys for the later two campaigns. For instance, “someone putting their hands on your shoulders” could be a negative, neutral, or even positive experience. Thus, participants from the second two campaigns were asked “You indicated that you experienced [*piped text from sexual harassment situation/behavior list*]. How did this make you feel?” Response options ranged from 1=extremely negative to 7=extremely positive with a mid-point of 4=indifferent/it didn’t bother me. Responses were averaged across the types of sexual harassment experiences indicated above (i.e., impact type and behavior type) in order to compare participants’ feelings about different types of harassment.

*Engagement in Harassment (W1).* In addition to asking participants about their experiences as the target of sexual harassment, we also asked participants whether they had ever personally engaged in any form of sexual harassment at work. Participants were asked to indicate if they had “ever (at any time) engaged any of the following situations at work? (Including during any time or activities related to your work)” by placing a check mark next to any of the 26 possible situations. If participants indicated that they had ever engaged in any of the sexual harassment behaviors listed towards anyone in the workplace, we then asked about the gender and seniority of the target of their behavior. The questions were the same as those in the “Demographics of the perpetrator” measure above, with the exception that the question was phrased “if you engaged in any of the behaviors above, what was the [gender/position] of the person you engaged in the behaviors toward?” Again, participants were given the option to respond to a separate anonymous survey if they did not feel comfortable with providing confidential information on the original survey. Engagement in specific sexual harassment behaviors were grouped into the same Impact and Behavior Type categories listed previously (Supplement Table 2).

*Seniority of Participants (W1 and W2).* Each campaign created a specific list of roles applicable to the members on their team, which was implemented in the survey. Participants were asked to select one of the roles that most closely fit their current role on the field campaign. The researchers then assigned roles for each campaign to a “senior” or “trainee” position in collaboration with the PIs of each campaign. Examples of senior positions include PI (principal investigator) or CoPI, faculty in a position of leadership, tenured faculty, untenured faculty, and research scientist, and technical staff (e.g., airplane crew). Examples of trainee positions include graduate or undergraduate student and postdoc. Although we did not expect seniority level to

change between the pre- and post-surveys, this question was asked on both surveys in case the participant had not completed the other survey.<sup>3</sup>

*Training Attendance (W2).* Participants were asked to indicate whether they had attended the “[campaign name] safety and sexual harassment training” with the options of “yes,” “no,” or “unsure,” and whether their attendance was “in person,” “online,” or “other.” They were also asked whether they attended the “entire training” or if they “left part of the way through.” Only participants who indicated “yes,” either “in person” or “online,” and “I attended the entire training” were coded as attending the training, while all other participants were coded as “no” for the purposes of analysis.

*Experiences of the Training (W2).* In order to understand participants’ responses to the sexual harassment training implemented as part of the field campaign, we evaluated both emotional responses to and agreement with various potential beliefs or attitudes about the training. *Emotions* included nine positive (e.g., happy, confident) and eight negative (e.g., sad, angry) emotions taken from various psychological scales, as well as three neutral or ambivalent emotional responses (e.g., surprised, bored). We also included a general “positive” and “negative” response option. Participants were given the statement “The [campaign name] safety and sexual harassment training made me feel…” and were asked to indicate by a check mark whether they had experienced each emotion (see list of emotions in main text Figure 4). Overall positive and negative emotion scores were calculated by summing the total number of emotions selected from each category. In analyses comparing the amount of overall positive vs. negative emotions, a proportion score was calculated (i.e., total positive emotions selected out of 9 possible positive emotions given). *Attitudes/beliefs* about the training were created through a process of informal feedback from the participants, researcher observations, and a review of the literature about sexual harassment training in general. We attempted to counterbalance the valence of the statements in order to capture whether participants could have perceived various outcomes as positive or negative (e.g., “the training made me worry that I need to watch my back / confident that I don’t need to watch my back”). Responses were recorded on a 7-point Likert scale (1= strongly disagree, 4 = neither agree nor disagree, 7 = strongly agree). A full list of attitudes/beliefs about the training can be found in Table 3.

*Experiences of Sexual Harassment during the Field Campaigns (W2).* Participants were given the same list of questions relating to potential sexual harassment experiences and response options as in W1, with a different preceding statement. During the post-survey, participants were asked specifically whether any of the experiences happened “DURING the [ ] project (in any time or activity related at all to the project).” Like the pre-survey, participants were given the option to respond to a separate anonymous survey if they did not feel comfortable with providing confidential information. Like the pre-survey, those who indicated that they had experienced one or more of the individual (step 3) situations, they were then asked questions about the gender

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<sup>3</sup> We did not include seniority as a predictor in the W1 analyses because senior participants had more experiences of harassment in the past than trainees, but we could not determine whether this was an effect of seniority or simply time working in the field.



and position of the harasser, and how they responded to the situation (see the section on Responses to Harassment above).

*Engagement in Harassment during the Campaigns (W2).* Participants were again asked whether they engaged in any of the sexual harassment behaviors and given the same response options (check or not) as in W1, but the preceding statement again specified whether the behavior happened “DURING the [name] project (in any time or activity related at all to the project).” Like the pre-survey, participants were given the option to respond to a separate anonymous survey if they did not feel comfortable with providing confidential information.

*Observations of Harassment during the Campaigns (W2).* In addition to personally experiencing or engaging in behaviors related to sexual harassment, we also asked participants whether they personally observed sexual harassment during the field campaign. This was done for two primary reasons: 1) not everyone completed the survey, so we might be able to capture some instances of sexual harassment that were not directly reported, and 2) participants might be hesitant to identify themselves as either the target or perpetrator of harassment, but may be willing to describe their experience through the lens of an observer. Participants were asked to indicate along the same list of 26 sexual harassment situations “Did you observe any of the following behaviors among other people DURING the [name] project (in any time or activity related at all to the project)?” Like the experiences of sexual harassment measure, if participants indicated that they observed one or more situation, they were then asked to complete the “responses to sexual harassment” measure described previously.

*Participant Demographics (W1 and W2).* At the end of the survey, participants were asked about a variety of demographic characteristics. Because of the small sample pool and the ability for participants to potentially identify each other, we only report gender, race/ethnicity, and sexual orientation here. Participants were asked “what is your gender identity?” with the response options “female/woman,” “male/man,” “trans woman,” “trans man,” “gender fluid,” “not gender-identified,” or “other” with the option to add a text response. Because of the small, compact nature of this population, we collapsed all responses that were not female/woman (from here on: women) or male/man (from here on: men) into the category of “other” for the purposes of this report. Additionally, there were not enough participants who fell outside of the women and men categories to have statistical significance in any of the analyses below, thus, those categorized as “other” were not included in analyses of gender.

Participants were also asked to select one or more categories that fit their racial and ethnic identity, from the following options: “European,” “Asian,” “African,” “Latina/o,” “Native American,” “Pacific Islander,” “Black,” “Caucasian,” “Middle Easterner,” and “other” with the option to add a text response.

Finally, we asked participants about their sexual identity in order to evaluate whether people of sexual minority status experienced or perpetrated different levels of sexual harassment. Participants were asked to indicate the category that best describes their sexual orientation, with the response options of “homosexual/gay/lesbian,” “heterosexual/straight,” “bisexual,” “asexual,” “pansexual,” and “other” with the option to add a text response. Because of low

response rates in some categories and in order to protect participants' privacy, we collapsed these categories into "heterosexual" and "homosexual/bisexual/other," with all responses other than "heterosexual/straight" being coded into the second category.

## Supplement B: Results

### Pre-Survey Results

#### Past Experiences of Sexual Harassment at Work

First, we examined the number of participants who indicated whether they had “ever been sexually harassed at work” (step 1 question). Fifty-two participants (39 women and 13 men) said that they experienced this at least once, with women being more likely to say “once,” “a couple times,” “several times,” and “somewhat often” more than men. Analyses of gender differences in responses to this question using a univariate ANOVA indicated that women were significantly more likely to report greater levels of experiences of sexual harassment than men,  $F(1, 257) = 54.59, p < .001, \eta_p^2 = .18, M_{women} = 0.98, M_{men} = 0.14$ .

Next, we examined gender differences in more specific sexual harassment questions (step 2) that have happened on past research field sites. Seventy-one participants (36 women and 35 men) said they had “personally experienced inappropriate or sexual remarks, comments about physical beauty, sex differences in ability, or other jokes, at a research field site” at least once, and the results of a univariate ANOVA indicated that the frequency of this experience was, on average, significantly higher for women than for men,  $F(1, 213) = 7.84, p < .01, \eta_p^2 = .04, M_{women} = 1.17, M_{men} = 0.66$ . Further, two participants (both women) indicated that they had “experienced physical sexual harassment, unwanted sexual contact, or sexual contact in which you could not or did not give consent or felt it would be unsafe to fight back or not give your consent at a research field site.” Due to the small response rate, statistical tests were not performed for this data. Additionally, about equal numbers of women (38%) and men (30.5%) indicated that they had “observed other field site researchers or colleagues making inappropriate or sexual remarks toward someone else.” Frequency of these responses was not statistically different based on participant gender.

Last, we examined whether participants had experienced any of the 26 specific sexual harassment behaviors in the past (step 3; Supplement Table 2). A total of 63 survey participants (69%) reported experiencing at least one kind of sexual harassment at their current workplace or in a workplace similar to their current workplace. Interestingly, similar proportions of women (31.6%) and of men (30.6%) reported no harassment. However, we did find significant gender differences in the types of harassment women and men did experience.

In order to examine differences in past experiences of harassment, we conducted six separate ANOVAs for each of the six types of harassment using participant gender as the predictor variable.<sup>4</sup> Three types of harassment had significant or marginally significant gender differences: hostile work environment,  $F(1, 202) = 3.375, p < .07, \eta_p^2 = .02, M_{women} = 2.544, M_{men} = 1.837$ ; quid-pro-quo harassment,  $F(1, 113) = 13.53, p < .001, \eta_p^2 = .11, M_{women} = 0.490, M_{men} = 0.063$ ; and verbal harassment  $F(1, 176) = 2.93, p < .09, \eta_p^2 = .02, M_{women} = 1.493, M_{men} =$

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<sup>4</sup> Separate ANOVAs were conducted instead of a MANOVA because there were only 90 participants who completed responses for all variables in the analysis, which limited our ability to gain statistical power in some instances.

1.057. In all cases, women experienced more harassment than men, see Figure 1 in the main paper).

We also compared whether certain types of harassment were more frequent than others depending on the participant's gender. In order to control for differences in the possible number of experiences that were categorized into different types of harassment, we conducted a repeated measures ANOVA with proportion of experiences within each harassment type as the within-subjects variable and participant gender as the between-subjects variable. First, we compared impact types of harassment, and found that participants were more likely to have experienced hostile work environment ( $M = .084$ ) than quid-pro-quo harassment ( $M = .054$ ),  $F(1, 111) = 7.47, p < .01, \eta_p^2 = .06$ , and women ( $M = 1.29$ ) were more likely to have experienced any kind of harassment than men ( $M = 0.581$ ),  $F(1, 111) = 5.29, p < .05, \eta_p^2 = .05$ .

Next, we compared behavior types of harassment, and found a significant main effect of type of harassment,  $F(3, 315) = 10.53, p < .001, \eta_p^2 = .09$ , such that participants were most likely to experience visual harassment ( $M = 0.125$ ), followed by verbal harassment ( $M = 0.083$ ), physical harassment ( $M = 0.068$ ), and physical assault ( $M = 0.037$ ). Post-hoc tests using the Bonferroni correction indicated that visual harassment differed significantly from physical harassment ( $M_{difference} = .057, p < .01$ ) and physical assault ( $M_{difference} = .088, p < .001$ ), but not verbal harassment ( $p = .20$ ). Verbal harassment differed significantly from physical assault ( $M_{difference} = .047, p < .01$ ), but not from physical harassment ( $p > .99$ ). Reported experiences of physical harassment and physical assault did not statistically differ ( $p = .09$ ). There were no significant differences across the behavior types of harassment based on gender.

### **Demographics of the Perpetrator**

We also examined whether there were significant differences in the demographics of perpetrators of harassment using a multinomial logistic regression. Although completion rates for this measure were low ( $n_{women} = 16, n_{men} = 17$ ), results indicated that the seniority of the perpetrator of harassment differed significantly based on the participant's gender,  $X^2(2) = 19.32$ , Nagelkerke  $R^2 = .52, p < .001$ .<sup>5</sup> Specifically, women (62.5%) were more likely than men (0%) to experience harassment by someone more senior compared to someone at the same level (women = 31.3%, men = 82.4%) as themselves,  $Wald(df = 1) = 1364.27, p < .001, OR = 1.22E^7$ , and women were more likely than men to experience harassment by someone senior compared with someone junior to themselves (women = 6.3%, men = 17.6%),  $Wald(df = 1) = 274.62, p < .001, OR = 7.64E^{-10}$ . Participants were also less likely to experience harassment by someone junior compared to someone at the same level as themselves,  $Wald(df = 1) = 5.86, p < .01$ , but this did not vary significantly by gender ( $p = .96$ ).

### **Responses to Sexual Harassment**

In order to examine differences in ways that participants coped with or responded to harassment, the proportion of strategies reported (out of the total number of strategy items in each subtype) was submitted to a repeated measures ANOVA with the subtype of coping

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<sup>5</sup> Although several of the gender differences were significant, the low response rate warrants further inquiry about whether this small subsample is representative of the population.

strategy as the within-subjects variable and participant gender as a between-subjects variable. Results indicated a main effect of response strategy type,  $F(2, 32) = 17.24, p < .001, \eta_p^2 = .52$ , but no effect of gender or an interaction. Post-hoc tests using a Bonferonni correction revealed that participants were more likely to use Avoidance/Denial as a response strategy ( $M = 0.59, SE = 0.06$ ) than Social Coping ( $M = 0.28, SE = 0.04, p_{\text{difference}} < .001$ ) or Confrontation/Advocacy-Seeking ( $M = 0.29, SE = .05, p_{\text{difference}} = .002$ ). There was not a significant difference in the tendency to use Social Coping and Confrontation/Advocacy-Seeking ( $p > .99$ ).

### **Feelings about Sexual Harassment Experiences**

For the subset of participants who received the questions about their feelings related to potential sexual harassment experiences, we analyzed average feelings reported by those who indicated experiencing one or more instances of sexual harassment. First, we calculated an overall average of feelings across all potential SH situations, which was submitted to a univariate ANOVA with gender as the predictor. Results indicated that women ( $M = 2.21; 95\% \text{ CI } [1.92 - 2.49]$ ) felt significantly more negative in response to their experiences of SH than men ( $M = 3.27; 95\% \text{ CI } [3.05 - 3.48]$ ),  $F(1, 114) = 34.76, p < .001, \eta_p^2 = .241$ . However, the 95% confidence intervals for women nor men do not include the mid-point of the scale (4 = “indifferent/it didn’t bother me”), indicating that both women and men felt more negative than indifferent. We were unable to compare feelings across the different types of SH using a repeated measures ANOVA with gender as the between-subjects variable because too few participants ( $n_{\text{women}} = 5, n_{\text{men}} = 1$ ), indicated that they had experienced all types of harassment to provide enough statistical power for analyses.

In addition, we tested gender differences in feelings about three specific situations of sexual harassment that could be interpreted as innocuous: “someone putting their hands on your shoulders,” “someone using obscene/abusive language,” and “someone invading your personal space.”<sup>6</sup> Results revealed that women ( $M = 2.88; 95\% \text{ CI } [2.38 - 3.38]$ ) felt significantly more negative than men ( $M = 4.41; 95\% \text{ CI } [4.04 - 4.79]$ ) about “someone putting their hands on your shoulders,”  $F(1, 43) = 24.02, p < .001, \eta_p^2 = .369$ . Further, examination of the 95% confidence intervals indicates that women felt significantly more negative than indifferent, while men’s feelings were, on average, “indifferent/it didn’t bother me.” Similar results were obtained for gender differences in participants’ feelings about “someone invading your personal space,”  $F(1, 25) = 8.33, p < .001, \eta_p^2 = .250$ . Women felt significantly more negative than men and than indifferent ( $M = 2.17; 95\% \text{ CI } [1.69 - 2.65]$ ) while men did not feel significantly different from the neutral response ( $M = 3.33; 95\% \text{ CI } [2.65 - 4.01]$ ). There were not significant gender differences in the way that “someone using obscene/abusive language” made women and men feel,  $F(1, 49) = 2.99, p = .09, \eta_p^2 = .06$ , but both women ( $t(11) = -8.04, p < .001$ ) and men ( $t(38) = -7.49, p < .001$ ) felt significantly more negative than “indifferent/it didn’t bother me” (comparison value = 4).

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<sup>6</sup> Participants of the first two field campaigns (who completed the survey before the inclusion of the feelings measure) communicated with the researchers in informal discussions after the survey that they indicated these behaviors occurred on the survey but that they didn’t interpret the behavior as harmful. Thus, we felt it was important to examine whether these behaviors had negative consequences for participants.

## Engagement in Sexual Harassment Behavior

Over 37% of survey respondents indicated that they had engaged in at least one behavior that could qualify as sexual harassment toward someone else at work in the past, and of those participants, 81% were men. We analyzed the tendency to engage in harassment behavior by type of harassment and gender using two separate repeated measures ANOVAs: the first tested the difference between harassment categorized by impact type (quid-pro-quo vs. hostile work environment) and the second tested the difference between harassment categorized by behavior type (visual, verbal, physical harassment, and physical assault).

Results of the first test indicated that there was a significant main effect of impact type harassment: no participants reported engagement in quid-pro-quo harassment ( $M = 0.00$ ), while the average number of reports of engaging in hostile work environment harassment was around 1% ( $M = 0.011$ ,  $SE = 0.004$ ),  $F(1, 101) = 7.68$ ,  $p < .01$ ,  $\eta_p^2 = .071$ . There was also a main effect of gender, such that men were more likely to engage in Hostile Work Environment behaviors ( $M = 0.033$ ) than women ( $M = 0.013$ ),  $F(1, 131) = 5.21$ ,  $p < .05$ ,  $\eta_p^2 = .039$ .<sup>7</sup>

Results of the second repeated measures ANOVA using behavior types of sexual harassment indicated a significant main effect of behavior type,  $F(3, 303) = 3.45$ ,  $p < .05$ ,  $\eta_p^2 = .033$ , but no effect of gender. Specifically, post-hoc tests using a Bonferroni correction indicated that participants engaged in significantly more physical harassment behavior ( $M = 0.016$ ,  $SE = 0.005$ ) than visual harassment ( $M = 0.00$ ,  $SE = 0.00$ ,  $p_{\text{difference}} = .012$ ), but that there were no other significant contrasts including between verbal harassment ( $M = 0.01$ ,  $SE = 0.006$ ) and physical assault ( $M = 0.004$ ,  $SE = 0.003$ ).

## Results: Post-Survey

### Feelings about the training

*Attitudes/beliefs.* Each attitude/belief statement was regressed onto participant gender, participant seniority position, and the interaction between the two using univariate ANOVAs. Results of the average agreement with each item are listed in Supplement Table 3. First, examination of the grand means and 95% confidence intervals allowed us to verify that participants were more likely to agree than disagree with all the positive attitudes/beliefs related to the training, and were more likely to disagree than agree with all the negative attitudes/beliefs related to the training. The one exception was the statement “the training repeated all the same information I have heard before,” which did not differ significantly from the neutral midpoint of the scale. In addition, there were no differences in level of agreement between women vs. men or senior vs. trainee participants, with three exceptions. Women were significantly more likely to agree that “the training made me trust those in charge” compared to men, although both men and women were more likely to agree with this statement than neither agree nor disagree,  $F(1, 113) = 5.71$ ,  $p < .05$ ,  $\eta_p^2 = .048$  ( $M_{\text{women}} = 5.368$ , 95% CI [4.96 - 5.78];  $M_{\text{men}} = 4.74$ , 95% CI [4.41 - 5.07]). Men were more likely to indicate that they neither agreed nor disagreed with the

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<sup>7</sup> Because there were no responses for Quid-Pro-Quo harassment, the analysis for gender was re-analyzed as a Univariate ANOVA looking only at proportion of Hostile Work Environment behaviors.

statement “the training repeated all the same information I’ve heard before,” while women were more likely than men to significantly disagree with this statement,  $F(1, 115) = 20.74, p < .01, \eta_p^2 = .075$  ( $M_{women} = 3.47, 95\% \text{ CI } [3.02 - 3.92]$ ;  $M_{men} = 4.36, 95\% \text{ CI } [3.99 - 4.72]$ ). Finally, men were significantly more likely to disagree with the statement “the training made me nervous to interact with those in charge” compared to women, although both women and men were more likely to disagree with this statement than to neither agree nor disagree,  $F(1, 114) = 7.49, p < .01, \eta_p^2 = .062$  ( $M_{women} = 2.03, 95\% \text{ CI } [1.62 - 2.44]$ ;  $M_{men} = 2.76, 95\% \text{ CI } [2.43 - 3.09]$ ).

*Emotions.* The overall total number of positive emotions selected by participants were submitted to a 2 (gender) X 2 (position) ANOVA. Results showed that trainee participants ( $M = 1.52$ ) were more likely than senior participants ( $M = 0.74$ ) to report positive emotions about the training,  $F(1, 194) = 9.59, p < .01, \eta_p^2 = .047$ , but there were not significant gender differences in positive feelings. On the other hand, there were no differences in negative emotions about the training reported by gender or seniority of participants. We also analyzed gender and seniority differences by selection of each individual emotion, see Figure 4, main paper.<sup>8</sup> Statistical differences in the selection of each emotion were only possible for those emotions that had at least nine or more responses, thus, we cannot verify whether gender or seniority differences exist for many emotions. Among those emotions with enough responses, results indicated that women were significantly more likely than men to report feeling supported,  $X^2(1) = 6.96, p < .01$ , while men were significantly more likely than women to report feeling annoyed,  $X^2(1) = 6.32, p < .05$ , and bored,  $X^2(1) = 4.97, p < .05$ . Trainee participants were significantly more likely than senior participants to report feeling supported,  $X^2(1) = 4.53, p < .05$ , positive,  $X^2(1) = 7.29, p < .01$ , confident,  $X^2(1) = 4.46, p < .05$ , trusting,  $X^2(1) = 6.56, p < .01$ , and empowered,  $X^2(1) = 6.60, p < .01$ .<sup>9</sup>

### **Experiences of Sexual Harassment during the Field Campaigns**

Similar to the analyses of experiences of sexual harassment in the pre-survey, we looked at reporting of sexual harassment experiences during the field campaigns using 3 sets of gradually more specific questions. First, we examined the number of participants who indicated whether they were “sexually harassed during the [*campaign name*] project (during any time or activity related to the project)” (step 1 question). Only two participants gave a response other than “never:” one senior-level man responded “once” and one trainee woman responded “a couple times.” Statistical analyses were not performed because of the low variability in responses.

Next, we examined gender differences in more specific sexual harassment questions (step 2) that happened during the campaigns. Similar to pre-survey responses, the number of participants who reported that they had “personally experienced inappropriate or sexual remarks, comments about physical beauty, sex differences in ability, or other jokes, during the [*campaign*”

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<sup>8</sup> Regressing each individual emotion on gender and seniority of participants was not possible because of the small  $n$  of participants in each subcategory who selected each emotion. Further, we could not compare whether some individual emotions were statistically more likely to be selected than others because the  $n$  of participants who selected both emotions was often  $< 1$ .

<sup>9</sup> Trainee participants also felt significantly more helpless than senior participants,  $X^2(1) = 4.32, p < .05$ , but  $n_{trainee} = 2$  and  $n_{senior} = 0$ , which reduced our confidence in making conclusions based on this low number of responses.

*name*] project” at least once increased ( $n = 26$ ). Results of a univariate ANOVA using gender and seniority as the predictor variables indicated that the frequency of these experiences was not significant based on gender or seniority, but the pattern of results suggests that trainee women ( $M = 0.43$ ) were more likely to experience these behaviors than senior women ( $M = 0.18$ ), trainee men ( $M = 0.15$ ) or senior men ( $M = 0.23$ ). No participants indicated that they had “personally experienced physical sexual harassment, unwanted sexual contact, or sexual contact in which you could not or did not give consent or felt it would be unsafe to fight back or not give your consent” during the campaigns.

Last, we examined whether participants had experienced any of the 26 specific sexual harassment behaviors in the past (step 3). A total of 30 participants across the four field campaigns reported at least one experience of sexual harassment during the campaign. This represented between 6-9% of participants in three of the four campaigns. However, one campaign had a significantly higher number of participants (30%) who reported experiencing one or more situations of harassment,  $\chi^2(12) = 21.70, p < .05$ . Because of the small sample pools of participants and because we determined that further analysis could undermine the confidentiality of participants’ responses, we chose not to publish which campaign this was nor any other factors relating to differences among the campaigns. The most frequent behaviors reported were “someone using obscene/offensive language” and “someone putting their hands on your shoulders.” Most behaviors reported were categorized as verbal harassment and some included physical harassment. No reports of personal physical assault were made by the survey participants. All harassment reported was considered “Hostile Work Environment” harassment, and no “Quid-Pro-Quo” harassment was reported.

In order to examine differences in experiences of sexual harassment during the field campaigns by demographic characteristics, we conducted 2 separate repeated measures ANOVAs on the impact and behavior types of harassment using participant gender and participant seniority as the predictor variables.<sup>10</sup> Results indicated that trainee participants reported significantly more experiences of harassment than senior participants,  $F(1, 194) = 6.36, p < .05, \eta_p^2 = .032$ , and that this effect was qualified by a marginally significant interaction between seniority and gender,  $F(1, 194) = 3.54, p = .06, \eta_p^2 = .018$ . Specifically, trainee women reported more harassment experiences than any other group, see Figure 4. Because no quid-pro-quo harassment was reported, these results were a direct reflection of differences based on hostile work environment harassment.

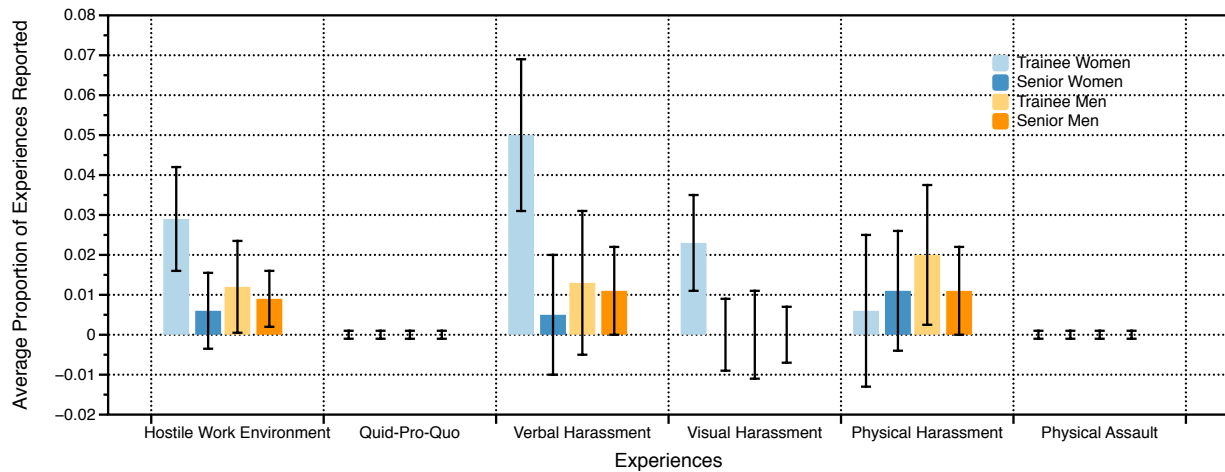
Similar patterns emerged based on the behavior types of harassment. Results of experiences of harassment by behavior type indicated a significant 3-way interaction between behavior type, gender, and seniority,  $F(3, 582) = 4.54, p < .01, \eta_p^2 = .023$ . Specifically, trainee women experienced significantly more visual and verbal harassment than any other group of

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<sup>10</sup> Like the analyses in the pre-survey, we also looked at gender (and seniority) differences among each subtype of harassment, because these analyses had more power, but found that the pattern of the results was largely the same as those reported for the repeated measures ANOVAs. Specific findings can be obtained from the second author.



participants, see Supplement Figure 1. No participants reported personally experiencing physical assault during the campaign.



**Figure S1:** Types of harassment experienced by participants during the field campaigns. Brackets indicate 95% confidence intervals.

As a follow-up, we also looked at whether there were significant differences in the experience of each of the 26 sexual harassment behaviors based on the participants’ gender and seniority. Results of a MANOVA using gender and seniority as predictor variables indicated that women were significantly more likely than men to experience “unwanted sexual looks or gestures,”  $F(1, 194) = 5.13, p < .05, \eta_p^2 = .03, M_{women} = 0.03, M_{men} < 0.001$ ; “someone calling you “babe,” “honey,” or similar words,”  $F(1, 194) = 5.76, p < .05, \eta_p^2 = .03, M_{women} = 0.05, M_{men} < 0.001$ ; “someone whistling at you,”  $F(1, 194) = 5.76, p < .05, \eta_p^2 = .03, M_{women} = 0.05, M_{men} < 0.001$ ; and “someone making kissing sounds, howling, or smacking lips,”  $F(1, 194) = 5.13, p < .05, \eta_p^2 = .03, M_{women} = 0.03, M_{men} < 0.001$ . Two of these behaviors were qualified by a gender X seniority interaction, which indicated that trainee women were significantly more likely than any other group to experience these specific forms of harassment: “unwanted sexual looks or gestures,”  $F(1, 194) = 5.13, p < .05, \eta_p^2 = .03, M_{TraineeWomen} = 0.07$ , all other  $M$ ’s  $< 0.001$ ; and “someone whistling at you,”  $F(1, 194) = 5.13, p < .05, \eta_p^2 = .03, M_{TraineeWomen} = 0.07, M_{SeniorWomen} = 0.02$ , all other  $M$ ’s  $< 0.001$ . In addition, trainees were significantly more likely to experience “unwanted sexual teasing, jokes, remarks, or comments” than senior participants,  $F(1, 194) = 6.38, p < .05, \eta_p^2 = .03, M_{trainees} = 0.07, M_{seniors} < 0.01$ .

### Demographics of the Perpetrator

*Gender of the harasser.* For those participants who indicated they experienced one or more of the 26 harassment behaviors during the campaigns, we calculated the percent of participants who indicated that the harassment was perpetrated by a woman, a man, or someone of another gender identity/someone whose gender identity the participant did not want to reveal, see Figure 2a. In order to statistically test for differences in these patterns, we conducted a multinomial logistic regression to explore whether gender or seniority of the participant

predicted differences in the gender of their harasser.<sup>11</sup> Although 100% of women's harassers were men and men's harassers included women (15%) and other/not identified (25%), there were not enough participants in each gender or seniority group to confirm this was a statistically different distribution. Further, the perpetrators of harassment were 2:1 times more likely to be senior to women than junior, but were 1:2 times more likely to be senior to men than junior. Again, this analysis was underpowered and thus results did not reach statistical significance.

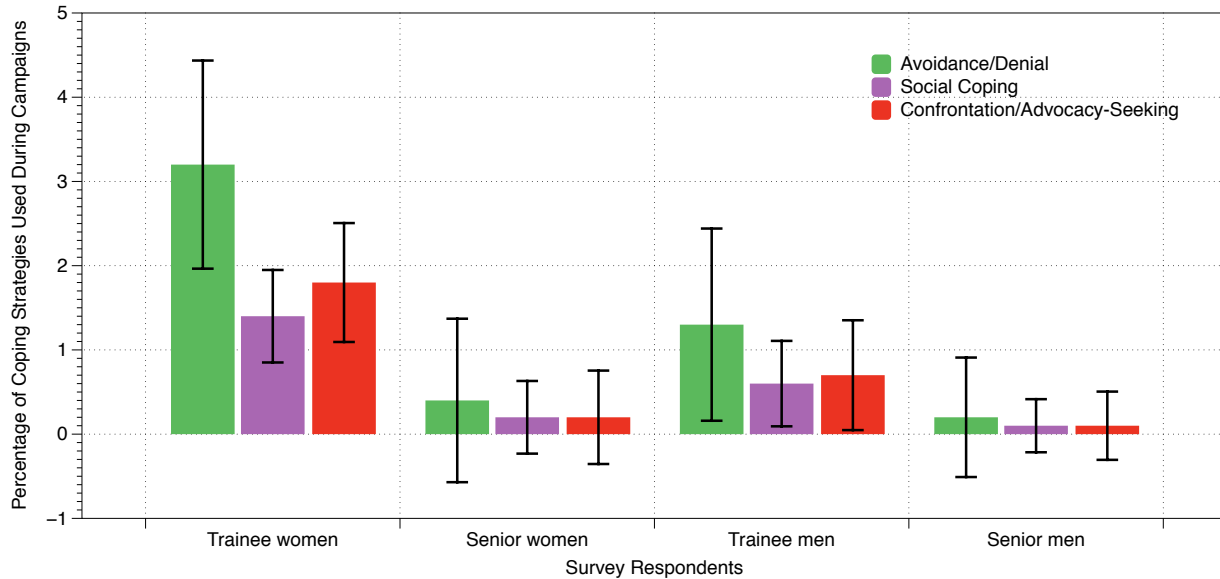
*Position of harasser.* Similar statistical analyses were conducted as "gender of the harasser" (above), instead using the seniority of the harasser as the outcome variable (more junior, more senior, or at the same level). Again, despite that 58.3% of women's harassers were more senior and 30.4% of men's harassers were more senior, there were not enough responses/power to find statistical differences. Similarly, the pattern of results based on participants' seniority indicated that while approximately 57% of trainees' harassers were someone senior to them, only 33% of senior participants' harassers were senior. Again, this result was not statistically significant.

### **Responses to Sexual Harassment on the Field Campaign**

In order to examine differences in ways that participants coped with or responded to harassment during the campaigns, the proportion of strategies reported (out of the total number of strategy items in each subtype) was submitted to a repeated measures ANOVA with the subtype of coping strategy as the within-subjects variable and participant gender as a between-subjects variable. Results indicated a difference in the coping strategies used, qualified by multiple two-way interactions, see Supplement Figure 2. A significant interaction between coping strategy and gender indicated that although both women and men were more likely to use Avoidance/Denial as a response to harassment compared to Social Coping or Confrontation/Advocacy-Seeking, women were significantly more likely to use Avoidance/Denial than other strategies compared to men,  $F(2, 388) = 4.14, p < .05, \eta_p^2 = .021$ . A similar pattern emerged for the interaction between coping strategy and seniority of the participant, such that trainees were more likely to use Avoidance/Denial as a response to harassment compared to Social Coping or Confrontation/Advocacy-Seeking, while senior participants' used fewer and significantly indifferent coping strategies than trainees,  $F(2, 388) = 13.90, p < .001, \eta_p^2 = .067$ .

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<sup>11</sup> We did not have enough statistical power to examine the interaction between the participants' gender and seniority on these outcomes.



**Figure S2:** Average percentage of coping strategies used during the field campaigns, controlling for proportion of item choices. Brackets indicate 95% confidence intervals.

**Engagement in Sexual Harassment on the Field Campaign**

Only 7 survey respondents (2 women and 5 men) indicated that they had engaged in at least one behavior that could qualify as sexual harassment toward someone else during the field campaign (see Supplement Table 2 for the specific behaviors reported). The most frequent behaviors were “using obscene/offensive abusive” and “putting your hands on someone’s shoulders.” Because of the small number of responses, we did not perform further statistical analyses on these results.

**Observations of Sexual Harassment on the Field Campaign**

Seventeen respondents (7 women and 10 men) indicated that they observed some type of harassment during the field campaigns (13 reported one incident, and 4 reported two incidents). See Supplement Table 2 for the specific behaviors reported. The most commonly reported behaviors were “someone using obscene/abusive language” and “someone putting their hands on someone’s shoulders.” In addition, two egregious behaviors were also reported: “someone being grabbed/pinched” and “someone being touched in a sexual way.” These reports were made by the same participant, and corresponded with open-ended feedback that corroborated these behaviors as happening during a situation of physical assault.

## Supplement C: Supplemental Discussion

The overall results suggest that many individuals in the Atmospheric Science community have experienced sexual harassment of some kind during their careers, and that sexual harassment continues to be a problem in this community. Women are more likely to report experiences of harassment compared to men, although a comparison of gender X seniority in the post-survey suggests that this is a function of women experiencing more harassment earlier in their careers than later. In addition, we find that the perpetrators of harassment are more likely to be men than women, but the seniority of the perpetrator differs based on the gender and seniority of the target. Specifically, women and trainees experience more harassment from senior individuals than those on the same level (by a margin of about 2:1), while men and senior participants experience more harassment from those at the same level than from senior participants (again, by a margin of about 2:1). In addition, relatively few harassment experiences seem to come from individuals who are more junior to the target. Taken together, these results support prior research and theory that indicates that harassment is more about power and status than it is about sexual interest (e.g., see (Wilson & Thompson, 2001).

Although a small proportion of participants (12.2%) reported experiencing sexual harassment during the field campaigns, this number is still relatively high considering that steps were taken to create a culture of zero harassment. In addition, this number may be underreported because not all field participants completed the survey. In exploring the types of harassment reported, we found that it was not always easy to distinguish between behaviors that were done in a way that constituted sexual harassment, or whether the sexual harassment behaviors that participants reported were directed at them specifically. For example, while “someone using obscene/abusive language” was a commonly-reported behavior, some participants commented that this language was not necessarily directed at another person and that it is considered relatively “acceptable” in the field. While obscene/abusive language can still create a hostile work environment for some participants who do not feel comfortable speaking up, it is unclear whether this type of language and environment was sexual in nature. Additionally, “someone putting their hands on your shoulders” could potentially be an innocuous behavior (e.g., some participants commented that working in small spaces, such as the interior of an airplane, created a situation where touching was sometimes inevitable). However, the fact that women felt significantly more negative about this experience than men suggests that women and men may experience different kinds or intentions of touching behavior.

Despite providing key leaders who volunteered to serve as “safe” reporting contacts and other reporting mechanisms, the majority of participants still did not formally or even informally report their experiences of harassment. Open-ended feedback from a few participants suggested that one reason may be the perception that the perpetrator did not intend to harm or offend the target (e.g., “I don’t believe he had any intent to offend anyone or make anyone feel uncomfortable, but it was still awkward” - senior woman). Another reason may have been that the behavior was perpetrated by individuals not associated with the field campaign, and thus the participant didn’t feel that reporting it would be worthwhile (e.g., “I did not experience any

problems from my cohort of scientists. While walking the streets in [field location], I and other females would sometimes be whistled at or honked at by locals in the context of them looking at us in a sexualized way” - senior woman). Together, these responses suggest that sexual harassment continues to be perceived as problematic only when it is intentional and that reporting only serves to “punish” the perpetrator. Instead, reporting may be improved by changing the perception that sexual harassment is an issue when it harms the target, and should be reported regardless of the intent of or ability to address the perpetrator.

### **Limitations**

A major limitation of the study is that field team members were not required to participate in the survey and thus it is difficult to judge whether those who did respond are representative of the field teams as a whole. It is possible that those who are more concerned about the issue of sexual harassment and the potential to address it were more likely to have completed one or both surveys. On one hand, this may have led to an underestimation of results regarding experiences and reporting of or engagement in sexual harassment. On the other hand, it could have led us to overestimate some results, such as positive perceptions of the training or the degree of negative feelings participants associated with various behaviors. Future research would benefit from employing data collection strategies such as random, in-person interview questions or handing out surveys on-site in order to increase responses from those who might otherwise be reluctant to participate.

Another limitation is that we did not ask participants to specify whether they personally were the target of the sexual harassment behaviors they reported. In particular, we were surprised to find that men reported more instances of certain behaviors such as “reading sexual messages or graffiti (e.g., on bathroom walls, in emails)” and “having coworkers display sexualized images or materials (e.g., swimsuit calendars).” We consider it more possible, as well as consistent with the sexual harassment literature, that messages, images, and materials that are sexualized in nature were likely of women and not of men, and thus assume that men may be more likely to experience sexual harassment toward women by other men, rather than to have felt personally sexually harassed by this behavior. However, we cannot conclude this from the present data, and allow for the possibility that men may have been exposed to more sexualized messages and images of men that created a hostile work environment for them in particular.

Similarly, we did not ask participants to specify whether the perpetrator of harassment behavior was a member of the field team, and some open-ended comments indicated that participants experienced harassment by non-team individuals (e.g., those living in the community where the research took place). We see this limitation as twofold. For one, knowing the types of harassment that team members vs. non-team members tend to engage in can help future campaigns focus on the problematic nature of those behaviors in their safety trainings. However, it also indicates that field campaign leaders need to ensure the safety of team members from outside the team as well as from within. Team members should be protected from experiencing harassment in their workplace, including in the field, and the safety of field site locations and the context of the local community are additional elements that should be considered in the planning

of field research projects. This may also be one area that sexual harassment trainings for field campaigns can specifically focus on, and any policy should have plans for addressing whether the source of the harassment came from within the team or from outside, including contractors.

Last, we were unable to perform some statistical analyses that would have been expected because the tests were underpowered (i.e., did not have enough responses to allow for traditional hypothesis testing). However, the fact that many tests were statistically significant points to the importance of attending to discrepancies in experiences and engagement in sexual harassment, even within this small and familiar community.

## Supplement D: Example Codes of Conduct

### RELAMPAGO Code of Conduct and Harassment Policies

Reproduced from NSF Important Notice 144: <https://www.nsf.gov/pubs/issuances/in144.pdf>

The National Science Foundation (NSF) does not tolerate sexual harassment, or any kind of harassment, within the agency, at grantee organizations, field sites, or anywhere NSF-funded science and education are conducted. The 2,000 American colleges, universities and other institutions that receive NSF funds are responsible for fully investigating complaints and for complying with federal non-discrimination law.

As the primary funding agency of fundamental science and engineering research in the United States, NSF is committed to promoting safe, productive research and education environments for current and future scientists and engineers. We consider the Principal investigator (PI) and any co-PI(s) identified on an NSF award to be in positions of trust. The PI and co-PI and all grant personnel must comport themselves in a responsible and accountable manner, including during the performance of award activities conducted outside the organization, such as at field sites or facilities, or during conferences and workshops.

To bolster our commitment to a safe research environment, NSF is taking the following steps:

1. **New Award Requirements:** NSF has developed a new award term and condition that will require grantee organizations to report findings of sexual harassment, or any other kind of harassment regarding a PI or co-PI or any other grant personnel. The award term and condition also will require the grantee to report the placement of the PI or co-PI on administrative leave relating to a harassment finding or investigation. **This term and condition will make it clear that NSF may take unilateral action as necessary to protect the safety of all grant personnel, to include suspending or terminating an award or requiring the grantee to replace or remove personnel.** NSF will solicit feedback on this new award term and condition through its Proposal and Award Policies and Procedures Guide Federal Register process within the next several weeks.
2. **Harassment-Free Research Workplaces:** **NSF expects all awardee organizations to establish and maintain clear and unambiguous standards of behavior to ensure harassment-free workplaces wherever science is conducted, including notification pathways for all personnel, including students, on the primary and supplemental awards.** This expectation includes activities at all research facilities and field sites and during conferences and workshops. All such settings should have accessible and evident means for reporting violations and awardee organizations should exercise due diligence with timely investigations of allegations and corrective actions.
3. **Enhanced Web Resources:** The NSF Office of Diversity and Inclusion (ODI) is tasked with seeking to ensure that NSF-funded programs and projects are free of discrimination. ODI recently launched a dedicated web portal to consolidate policies and procedures, promising practices, and frequently asked questions relating to sexual and other forms of harassment with the intent of making it easier for the research community and the public to access information. This portal is where NSF will continue to add content related to ending harassment. To access

the portal, please visit [NSF.gov/harassment](https://www.nsf.gov/harassment). **NSF promising practices on effective codes of conduct and standards of behavior are coming soon.**

**NSF expects all research organizations to establish and maintain clear and unambiguous standards of behavior to ensure harassment-free workplaces wherever science is conducted.**

**RELAMPAGO expectations:**

In accordance with NSF and individual laboratory and university policies, **RELAMPAGO meetings, workshops, communications, and field operations should be characterized by mutual trust and the absence of intimidation, oppression, and exploitation by all participants.** *This includes all project participants*, regardless of affiliation. Specific requirements for NSF-supported participants include, but are not limited to, the following:

- All RELAMPAGO participants agree to follow the UCAR Participant Code of Conduct, regardless of affiliation. Draft: [https://drive.google.com/file/d/1d0hJig\\_O8NwHOSN4hdg0q5tTOF8YmBYA/view?usp=sharing](https://drive.google.com/file/d/1d0hJig_O8NwHOSN4hdg0q5tTOF8YmBYA/view?usp=sharing)
- PIs and Co-PIs are responsible for making their employees aware of the following:
  - UCAR Harassment Reporting Procedure: <https://drive.google.com/file/d/1cogSWSsqjLli5dbmPjIf5gBPOTxBwD0R/view?usp=sharing>
  - UCAR Harassment Reporting and Complaint Procedure Flowchart: <https://drive.google.com/file/d/1cr47-u5PZOB96yO9AnXymMa15OgPsWY/view?usp=sharing>
  - UCAR Reporting FAQ: <https://drive.google.com/file/d/1dIIP0tEYSjpdqX34rkP3zZkD8zQIXF8d/view?usp=sharing>
- Each NSF PI and Co-PI is responsible for establishing clear and unambiguous standards of behavior in accordance with the policies of UCAR and of their respective university or research institution.

A list of codes of conduct for each RELAMPAGO-funded NSF Funded Institution is listed below:

University of Illinois	<a href="https://www.ethics.uillinois.edu/compliance/university_code_of_conduct">https://www.ethics.uillinois.edu/compliance/university_code_of_conduc</a> <a href="https://www2.illinois.gov/sites/TeamIllinois/documents/code-of-personal-conduct.pdf">t https://www2.illinois.gov/sites/TeamIllinois/documents/code-of-personal-conduct.pdf</a>
University of Washington	<a href="https://www.washington.edu/safecampus/resources/policies/">https://www.washington.edu/safecampus/resources/policies/</a>
Colorado State University	<a href="https://facultycouncil.colostate.edu/faculty-manual-section-d/#D.9">https://facultycouncil.colostate.edu/faculty-manual-section-d/#D.9</a> <a href="https://resolutioncenter.colostate.edu/wp-content/uploads/sites/32/2018/08/Student-Conduct-Code-v2018.pdf">https://resolutioncenter.colostate.edu/wp-content/uploads/sites/32/2018/08/Student-Conduct-Code-v2018.pdf</a>



University of Colorado	<a href="https://www.cu.edu/ope/aps/2027">https://www.cu.edu/ope/aps/2027</a>
University of Alabama at Huntsville	<a href="https://www.uah.edu/title-ix">https://www.uah.edu/title-ix</a> <a href="https://www.uah.edu/policies#misconduct">https://www.uah.edu/policies#misconduct</a> <a href="https://www.uah.edu/dos/student-conduct/handbook">https://www.uah.edu/dos/student-conduct/handbook</a> <a href="https://www.uah.edu/faculty-senate/resources/2212-faculty-handbook">https://www.uah.edu/faculty-senate/resources/2212-faculty-handbook</a>
Penn State University	<a href="https://studentaffairs.psu.edu/support-safety-conduct">https://studentaffairs.psu.edu/support-safety-conduct</a>
University of Utah	<a href="https://regulations.utah.edu/academics/6-316.php">https://regulations.utah.edu/academics/6-316.php</a>
University of Buenos Aires	<a href="https://exactas.uba.ar/wp-content/uploads/2016/04/pautas_eticas_de_la_facultad_final.pdf">https://exactas.uba.ar/wp-content/uploads/2016/04/pautas_eticas_de_la_facultad_final.pdf</a>
CSWR	

- Each NSF PI and Co-PI must establish accessible and evident means for reporting harassment violations in accordance with their university or research institution’s policies. PIs, Co-PIs, staff, and students must act as “responsible employees” under their respective institution’s guidelines. Staff and students need to be made aware of actions they need to take if a PI or Co-PI has violated established policies.

A list of harassment reporting policies for each NSF funded institution is listed below:

University of Illinois	<a href="http://wecare.illinois.edu/policies/campus/">http://wecare.illinois.edu/policies/campus/</a>
University of Washington	<a href="https://www.washington.edu/dsl/title-ix-policies-against-sexual-harassment/">https://www.washington.edu/dsl/title-ix-policies-against-sexual-harassment/</a> <a href="https://depts.washington.edu/safecamp/resources/uw-resources/">https://depts.washington.edu/safecamp/resources/uw-resources/</a>
Colorado State University	<a href="http://policylibrary.colostate.edu/policy.aspx?id=710">http://policylibrary.colostate.edu/policy.aspx?id=710</a>
University of Colorado	<a href="https://www.colorado.edu/policies/discrimination-and-harassment-policy-and-procedures">https://www.colorado.edu/policies/discrimination-and-harassment-policy-and-procedures</a>
University of Alabama at Huntsville	<a href="https://www.uah.edu/title-ix">https://www.uah.edu/title-ix</a> <a href="https://www.uah.edu/policies#grievance">https://www.uah.edu/policies#grievance</a> <a href="https://www.uah.edu/faculty-senate/resources/2212-faculty-handbook">https://www.uah.edu/faculty-senate/resources/2212-faculty-handbook</a> <a href="https://www.uah.edu/images/administrative/dos/student-support-programs/codeofconduct.pdf">https://www.uah.edu/images/administrative/dos/student-support-programs/codeofconduct.pdf</a>
Penn State University	<a href="https://studentaffairs.psu.edu/report">https://studentaffairs.psu.edu/report</a>
University of Utah	

NCAR	
CSWR	

- PIs and Co-PIs are responsible for making their employees aware of the promising practices from the NSF Office of Diversity and Inclusion (ODI) when they become available. See <https://www.nsf.gov/od/odi/index.jsp> for more details.

NSF has established that violations of these policies (either via code of conduct violations, illegal actions, or failure to report violations) may lead to individual grants or the entire campaign being terminated.

**Violations of these policies will not be tolerated, as they harm project participants as well as impact the successful execution of the field campaign.** RELAMPAGO PIs agree to vigilantly work within the UCAR policy, the frameworks of their institutions alongside and the NSF ODI to deal with violations, with consequences according to policies determined by UCAR and NSF.

### **WE-CAN Harassment Procedures**

It is not the intent, but rather the perception and impact which determines if an action is harassment. WE-CAN PIs acknowledge that when employees know about the procedures for reporting harassment, have resources to assist targets of harassment, and are certain of sanctions for harassment behavior, the occurrence of harassment can be reduced [McDonald et al., 2016]. Thus, WE-CAN will have a formal sexual harassment training for all participants, multiple channels for reporting harassment, and pre-determined sanctions for engaging in harassment.

A recent proposed policy change at NSF (Important Notice No. 144: Harassment) states that the “***NSF does not tolerate sexual harassment, or any kind of harassment***, within the agency, at grantee organizations, field sites, or anywhere NSF-funded science and education are conducted” and they “expect all awardee organizations to establish and maintain ***clear and unambiguous standards of behavior*** to ensure ***harassment-free workplaces wherever science is conducted.***” These requirements are consistent with the independent expectations of the WE-CAN PIs. The WE-CAN PIs are united in their commitment to a diverse, inclusive and respectful environment.

***All WE-CAN participants are expected to:***

- 1) Be familiar with NSF Important Notice No. 144; <https://www.nsf.gov/pubs/issuances/in144.jsp>.
- 2) Participate in a training on July 10, 2018. This training will be located at RAF, and remote access will be available. The training will include information on how to identify and prevent harassment, how to provide support for targets of harassment, and how to report instances of harassment, sexual or other. Everyone will be asked to confirm that they are aware of NSF Important Notice No. 144 at this time.
- 3) Report all instances of harassment in accordance with each project participant’s institution policy, or to the WE-CAN Leads identified below.

The WE-CAN PIs agree that reporting harassment is both honorable and courageous, and the project will follow UCAR’s Code of Conduct. To encourage reporting, the WE-CAN team has established the following multiple channels for reporting harassment. The lead PI, Emily Fischer

([evf@atmos.colostate.edu](mailto:evf@atmos.colostate.edu); c: 603-986-4241) and RAF Project Managers, Pavel Romashkin / Cory Wolff ([cwolff@ucar.edu](mailto:cwolff@ucar.edu); c: 303-335-6517) will serve as primary points of contact during the field campaign. Any instances of harassment reported to either point of contact may be reported to UCAR, the NSF Office of Diversity and Inclusion (ODI) and/or the appropriate office at the institution of the alleged perpetrator. The primary points of contact will report the incident to the appropriate office at their home institution in accordance with the policies of their home institution. The contact information for each of these offices is provided below. The team agrees to the following sanctions for engaging in harassment:

- Anyone requested to stop unacceptable behavior is expected to comply immediately.
- Accusations of physical harassment will result in immediate exclusion from all WE-CAN related activities until the accusation has been investigated and resolved. UCAR will investigate all accusations during the field intensive within one week of reporting.
- Those accused of non-physical forms of harassment will immediately be separated from interactions with any trainees and/or others who have been targets of harassment during the period of any investigation of an accusation (one week). Depending on the perceived severity of the incident, perpetrators of harassment can be immediately denied access to the FBO by the WE-CAN PIs or RAF Project Managers.
- Pending the results of an investigation by UCAR or any participating university OEO/Title IX Office, the WE-CAN team reserves the right to prohibit attendance by the reported perpetrators at any future WE-CAN related meetings.

### ***Definitions***

Harassment constitutes a form of employment discrimination. It is defined as unwelcome conduct that is based on race, color, religion, sex, national origin, age, disability or genetic information. Harassment becomes unlawful where 1) enduring the offensive conduct becomes a condition of continued employment, or 2) ***the conduct is severe or pervasive enough to create a work environment that a reasonable person would consider intimidating, hostile, or abusive.***

Anti-discrimination laws ***prohibit retaliation*** against those who report harassment.

Sexual harassment is harassment that is of an implicitly or overtly sexual nature, or is based on a person's actual or perceived sex, gender, sexual orientation, gender identity, or gender expression. Sexual harassment, including sexual assault, can involve persons of the same or opposite sex, and includes any unwelcome sexual advance, request for sexual favors, or other conduct of a sexual nature when:

- Submission to such conduct is made either explicitly or implicitly a term or condition of an individual's employment, education or participation in a WE-CAN related activity;
- Submission to, or rejection of, such conduct by an individual is used as the basis for, or a factor in, decisions affecting that individual's employment, education or participation in a WE-CAN related activity; or
- ***Such conduct has the purpose or effect of unreasonably interfering with an individual's employment or academic performance or creating an intimidating, offensive or hostile environment for participation in any WE-CAN related activities.***

### ***Reporting Contact Information***

UCAR Human Resources Department

Lameece Erwin (lerwin@ucar.edu, w: 303-497-8711)

Neil Barker (nbarker@ucar.edu, w: 303-497-8721)

Carolyn Brinkworth, UCAR Chief Diversity Officer (carolyn@ucar.edu; w: 303-497-1670; c: 720-619-1459)

Bob Wiley, UCAR Health, Environment and Safety (rwiley@ucar.edu; w: 303-497-8554)

NSF Office of Diversity and Inclusion (ODI)

programcomplaints@nsf.gov

(703) 292-8020

CSU Office of Equal Opportunity

oeo@colostate.edu

(970) 491-5836

University of Washington

Title IX Coordinator, Valery Richardson

titleix@uw.edu

University of Montana

EOAA/Title IX Office

(406) 243-5710

eoaa@umontana.edu

University of Wyoming

Jim Osborn, Title IX Coordinator

(307) 766-5200

report-it@uwyo.edu

University of Colorado Boulder

Office of Institutional Equity and Compliance

303-492-2127

cureport@colorado.edu

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**Table S1**  
***Demographic distributions, by survey completion***

Variable	Pre-Survey Participants	Post-Survey Participants	Participants who Completed Both Surveys
Overall Completion	58.8%	54.5%	41.2%
Gender			
Woman	34.7%	36.2%	38.2%
Man	62.6%	56.9%	60.8%
Non-binary/Other	0%	0.4%	0%
Seniority			
Senior	67.2%	55.7%	65.1%
Junior	26.8%	26.0%	32.8%
Gender X Seniority			
Senior Women	23.9%	23.7%	23.9%
Trainee Women	12.1%	14.6%	14.4%
Senior Men	47.8%	44.4%	42.8%
Trainee Men	16.2%	17.2%	18.9%
Ethnicity/Race			
Asian	25.5%	20%	25.0%
Latino/a	31.9%	20.7%	26.5%
Black/African	3.4%	3.6%	4.7%
Native American	5.6%	5.9%	7.6%
Middle Easterner	8.8%	7.1%	9.1%
White/Caucasian	89.4%	82.5%	91.5%
Pacific Islander	2.3%	2.4%	3.2%
Other	5.6%	5.9%	7.6%
Sexual Orientation			
Heterosexual/Straight	90.2%	70.3%	92.5%
Homosexual/Bisexual/Other	6.4%	4.5%	5.9%

*Note: Percentages do not necessarily add up to 100%. Participants were not required to answer all questions, and some questions, such as race/ethnicity, allowed participants to give more than one response.*

**Table S2***Specific sexual harassment behaviors/experiences measured in the survey.*

Item	Impact Type		Behavior Type				Past Experiences		Experiences during the Campaign		
	HWE	QPQ	Verb H	Vis H	PH	PA	Experienced	Engaged in	Experienced	Engaged in	Observed
Stalking/someone following you	X				X		7	0	1	0	0
Unwanted sexual looks or gestures	X			X			18	1	2	0	0
Someone putting their hands on your shoulders	X				X		58	23	10	4	5
Someone exposing themselves inappropriately to you	X					X	4	0	0	0	0
Someone calling you “babe,” “honey,” or similar words	X		X				35	1	5	0	2
Someone whistling at you	X		X				10	1	3	0	0
Being asked personal questions about your sexual life	X		X				28	2	3	0	0
Someone using obscene/abusive language	X		X				55	12	10	3	7
Unwanted sexual teasing, jokes, remarks, or comments	X		X				36	15	5	0	0
Someone making kissing sounds, howling, or smacking lips	X		X				10	0	2	0	0
Someone making sexual comments about your clothing, anatomy, or looks	X		X				28	4	2	1	1
Being asked for sexual favor(s)	X				X		2	0	0	0	0
Being bribed for sexual favor(s)		X			X		2	0	0	0	0
Unwanted, deliberate grabbing/pinching	X					X	8	2	0	0	1
Someone leaning closely or invading your personal space deliberately	X				X		32	0	4	0	0



	HWE	QPQ	Verb H	Vis H	PH	PA	Experienced	Engaged in	Experienced	Engaged in	Observed
Someone touching you in a sexual way	X					X	5	0	0	0	1
Being called a “fag,” “dyke,” “lezzie,” “queer,” or similar words	X		X				9	1	0	0	0
Being blocked or cornered from moving out of an uncomfortable situation	X				X		7	0	0	0	0
Reading sexual messages or graffiti (e.g., on bathroom walls, in emails)	X			X			37	0	0	0	0
Having your clothing pulled at/off/down	X					X	1	0	0	0	0
Having sexual rumors spread about you	X		X				8	2	0	0	1
Having coworkers display sexualized images or materials (e.g., swimsuit calendars)	X			X			41	0	0	0	0
Being repeatedly “asked out” or propositioned, despite prior rejections		X	X		X		12	0	0	0	1
Being given a sexual ultimatum		X	X		X		0	0	0	0	0
Being treated poorly when you rejected someone’s sexual advances		X			X		11	0	0	0	0
Experiencing career consequences for rejecting someone’s sexual advances		X			X		4	0	0	0	0

HWE: Hostile Work Environment; QPQ: Quid-Pro-Quo, VerbH: Verbal Harassment, VisH: Visual Harassment, PH: Physical Harassment, PA: Physical Assault.

Numeric values represent the number of participants who indicated this behavior happened at least once.

*Note:* participants could indicate that they experienced any of the 26 behaviors, thus, the total number of reported experiences across all 26 behaviors is not the same as the total number of participants who reported a particular type of sexual harassment.

**Table S3**

*Average agreement (overall and by participant gender) with various attitudes/beliefs about the training*

Item	Grand		95% CI		Women	Men
	Mean	SE	Lower Bound	Upper Bound	M (SD)	M (SD)
Helped me know what to do if sexual harassment happened to someone else	5.56	0.11	5.38	5.81	5.57 (0.89)	5.43 (1.31)
Gave me helpful resources to address sexual harassment	5.58	0.12	5.34	5.82	5.61 (1.02)	5.36 (1.34)
Helped me know what to do if sexual harassment happened to me	5.47	0.12	5.23	5.71	5.37 (1.07)	5.18 (1.44)
Made me think about new things	5.38	0.13	5.12	5.64	5.44 (1.12)	5.31 (1.39)
Made me feel more comfortable reporting sexual harassment	5.37	0.126	5.12	5.62	5.37 (0.97)	5.13 (1.49)
Made me feel more comfortable working on this team	5.11	0.15	4.81	5.41	5.05 (1.64)	5.11 (1.54)
Made me consider the possible impact or harm on others of off-handed comments	5.09	0.13	4.82	5.35	4.90 (0.21)	5.21 (0.17)
Made me trust those in charge*	5.05	0.13	4.79	5.31	5.10 (1.36)	4.62 (1.50)
Allowed our group to become a better team	4.96	0.15	4.67	5.26	4.95 (1.43)	4.80 (1.59)
Created good-will and understanding among the team	4.85	0.14	4.58	5.12	4.75 (1.30)	4.82 (1.41)
Made me confident that I don't need to "watch my back" S	4.52	0.14	4.24	4.81	4.61 (1.22)	4.31 (1.48)
Made me more excited to come to work	4.25	0.12	4.01	4.50	4.32 (1.25)	4.10 (1.22)
Repeated all the same information I have heard before*†	3.91	0.15	3.62	4.20	3.49 (1.49)	4.20 (1.52)
Made me worry about the legal ramifications of reporting sexual harassment	3.00	0.15	2.707	3.30	3.27 (1.50)	2.77 (1.43)

Made our group feel more fractured/separated	2.81	0.148	2.52	3.11	3.08 (1.39)	2.64 (1.53)
Made me worry that I need to “watch my back”	2.47	0.16	2.16	2.78	2.37 (1.39)	2.64 (1.73)
Created hostilities among the team	2.44	0.14	2.17	2.71	2.80 (1.27)	2.38 (1.50)
Made me nervous to interact with those in charge	2.39	0.13	2.13	2.66	2.22 (1.01)	2.69 (1.52)
Made me feel more nervous about working on this team	2.35	0.14	2.07	2.62	2.32 (1.25)	2.49 (1.49)
Increased my dislike of my work	2.06	0.12	1.82	2.30	2.17 (1.26)	2.21 (1.31)

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\*Significant differences in average agreement by gender

†This was the only item that participants “neither agreed nor disagreed” with, on average. All other items were significantly above (“agreed”) or below (“disagreed”) the mid-point of the scale (4).