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Framing the Faculty Gender Gap: A View from STEM Doctoral Students

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Drawing on 48 interviews with science, technology, engineering and mathematics (STEM) doctoral students at a private research university in the United States (US), we examine how students make sense of the preponderance of men at the faculty level despite increasing gender parity among students. Students' primary explanatory frame, *historical bias*, suggests that the gender gap will disappear when enough women attain their doctorates (PhDs). Competing frames include *innate* and *constructed gender difference* and the perceived incompatibility between a woman's *body clock* and an academic *tenure clock*. We argue that the frames that students use to explain the gender gap shed light on the cultural context of STEM, which is characterized by a tension between the belief in a meritocratic system and the acknowledgement of structural inequality. We suggest that men and women's preference for explanations that preclude bias, in light of women students' own experiences with sexism in graduate school, contributes to the reproduction of inequality by rendering invisible structural barriers to gender equality.

Keywords: gender, higher education, inequality, culture, STEM

The persistence of a gender gap in the fields of science, technology, engineering and mathematics (STEM) has received much scholarly and public attention. Research has focused primarily on what *causes* the gap and on women's *experiences* as minorities in male-dominated fields. Scholars interested in causes offer both supply-side and demand-side explanations (Ecklund *et al.*, 2012). Supply-side perspectives explain the disparate career trajectories of men and women in STEM as a result of gender differences in motivation, self-confidence and perceptions of competence. High school girls' biased self-assessment of mathematical ability, for example, can lead them away from quantitative careers (Correll, 2001). Undergraduate women's lack of professional role confidence (Cech *et al.*, 2011) and perceptions regarding the challenges of balancing family responsibilities with a scientific career (Ceci and Williams, 2011; Mason *et al.*, 2013) can be a further deterrent from academic careers in STEM. Most interventions to increase the representation of women in STEM derive from such a supply-side orientation and, as a result, promote individual-based policy solutions. With names like 'Girls Who Code', 'Girl Develop It' and 'Girlstart', programmatic interventions seek to improve girls' self-esteem and self-efficacy in mathematics and related technical fields (Fox *et al.*, 2011) — underscoring the idea that the agents of change for the STEM gender gap are individual girls themselves. The goal is to increase the supply of women in STEM at all levels of education and career development, one girl at a time.

Demand-side perspectives focus on the larger institutional context in which STEM students are educated, such as the constellation of organizational features in academic departments that can create a 'chilly climate' for women (Blackwell *et al.*, 2009; Riffle *et al.*, 2013; Xie and Shaumann, 2003). The exclusion of women faculty from social networks that are important for professional advancement is

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one mechanism through which the demand context may disadvantage women (Xu and Martin, 2011), as are gender-biased institutional processes such as hiring, promotion, peer-reviewed publishing and the allocation of resources (Budden *et al.*, 2008; Moss-Racusin *et al.*, 2012; Scheltzer and Smith, 2014). The dearth of women faculty role models (Sonnert *et al.*, 2007) can also reproduce the gender gap, as women students are more likely to pursue a major in STEM subjects if these classes are taught by a woman (Rask and Bailey, 2002). Yet while much empirical evidence supports this perspective, interventions designed to address the demand context remain hard to implement because they require faculty and administrators to acknowledge and be invested in addressing structural inequality in STEM academia (Fox *et al.,* 2011).

Research on women's experiences in STEM (Bystydzienski and Bird, 2006; Etzkowitz *et al.*, 2000) documents the strategies they use to navigate, manage and resist a chilly departmental climate. Some women distance themselves from other women in science, particularly those perceived as 'too feminine' (which is conflated with being unprofessional) (Rhoton, 2011), or emphasize stereotypically masculine traits, such as aggression and objectivity, in an effort to fit into the male-dominated environment (Ong, 2005; Powell *et al.,* 2009). While these studies shed light on how women faculty actively respond to the climate of STEM, they reveal less about whether and how they think about the gender gap at the faculty level *as a social problem*. This focus on faculty who have made it through the job market process also misses the critical stage of graduate school in which students decide whether or not to seek academic positions, in part based on how they make sense of their own experiences in their departments and broader disciplines. Finally, this body of work focuses almost exclusively on the experiences of women, leaving the perceptions and practices of men — the majority gender in STEM — invisible (for an exception, see Damaske *et al.*, 2014).

We contribute to this body of research by exploring how men and women doctoral students make sense of the low proportion of women faculty in their fields. Students who entered STEM PhD programs in the late 2000s are a useful empirical case, as they face a historically unique demographic context. In many STEM graduate programs in the US, the gender distribution among students is nearly equal, and in some fields, such as veterinary science, women students outnumber men (Ceci and Williams, 2010; Snyder and Dillow, 2012). Yet, despite a record number of women attaining doctoral degrees in STEM fields in this time period (Bell, 2011), there has not been a proportional increase in women faculty (Shaw and Stanton, 2012). Drawing on 48 in-depth interviews with men and women who enrolled in STEM doctoral programs in 2007 at an elite, private university in the southwestern US, we ask: how do graduate students in STEM make sense of the disjuncture between the increasing representation of women at the graduate level and the continued preponderance of men at the faculty level? We draw on Erving Goffman's notion of frames as the mechanism through which individuals determine 'What is it that's going on here?' in an interactional context (1974, p. 8) to examine how both men and women understand the faculty gender gap in their departments and in their broader disciplines.

Little research has been done on the interpretative frames of doctoral students. Yet, we see several reasons why it is important to examine this group's interpretations of the sources of the gender gap in STEM. First, many PhD students enter faculty positions within academia where they have the opportunity and power to shape institutional policies (Fox *et al.*, 2011). As the 'next generation' of STEM faculty members and researchers they may be tasked with crafting policies to address the STEM faculty gender gap. Depending on their understanding of the gender gap they may lend support towards either supply-side (individualistic) or demand-side (structural) interventions to address it (Nentwich 2006; van den Brink and Stobb, 2014). For example, framing the STEM gender gap as a function of the 'chilly climate' of academic departments locates the environment—the culture, organizational structure and institutional practices—as the source of the problem. Given this structural emphasis, approaches that seek to change the culture of STEM may seem reasonable. Framing the gender gap as a product of women's disinterest in mathematics, in contrast, indicts individual women as the problem. If people frame this disinterest as a function of an innate gender difference, they may not view the gender gap as a problem, or at least not one that can be solved. But if they frame women's lesser participation in STEM *vis-à-vis* men as socially produced, they may work to

develop programs to expose women to mathematics and science early in their educational experiences.

Students' frames may also shape how they evaluate their success and the successes of others in a competitive field — as well as how they may mentor new generations of students as academic faculty. For example, those who frame the gender gap as a function of natural differences in ability may unwittingly steer their men students towards careers in academia (for which they would seem better suited) and discourage women from pursuing academic careers, as these seem like 'natural' outcomes. At the same time, students' frames can impact the way they envision their own career trajectories. Women students who perceive that the gender gap is caused by systemic unfriendliness to family life in STEM fields may be discouraged from pursuing an academic career. Conversely, if their prevailing perception is that the gender gap exists only because the 'pipeline' has yet to fill, they may be more motivated to persist in academia, assuming that by the time they become faculty the proverbial playing field will have leveled. Finally, our analysis of students' frames brings attention to the ways in which women doctoral students resolve the complex tensions that arise when their experiences with sexism in graduate school contradict their—and other students'—dominant explanations for the gender gap. In what follows, we contribute to the literature on the persistence of the gender gap among STEM faculty, and to the cultural reproduction of inequality more broadly, through our assessment of how men and women graduate students in STEM fields make sense of the lack of women faculty in STEM in light of the closer gender parity at the student level.

Theoretical framework

Frame analysis adds an important dimension to understanding the gender gap among STEM faculty as a social problem. Erving Goffman pioneered the sociological approach to frame analysis, theorizing frames as the interpretive lenses we use to 'locate, perceive, identify, and label' occurrences in our social world (1974, p. 21). As social products, frames offer a mechanism through which individuals develop a *shared* understanding of social reality. More than just 'stories we tell', frames help people collectively make complex social events and phenomena meaningful. Social movement scholars, building upon Goffman, argue that frames serve not only to negotiate a shared understanding about a particular problematic social situation, but also to diagnose its causes (Benford and Snow, 2000; Polletta and Jasper, 2001). Applied to social problems, frames contain an 'attributional component', whereby individuals attribute blame or responsibility for the problem (Benford and Snow, 2000, p. 616).

Frames also shed light on the specific cultural context in which they are produced, as individuals do not frame their experiences in a vacuum. Instead, they must find a place for them within the existing culture and moral order in which they are embedded (Garfinkel, 1967; Harre *et al*., 1985). Frames are constrained to accounts that are 'intelligible and legitimate' in their current social and cultural context (Orbuch, 1997, p. 460; Shotter, 1984); therefore, students' frames give us insight into the types of accounts that have currency in the contemporary culture of academic STEM.

On an individual level, these frames help students situate themselves in relation to a social problem that is often quite salient in their lives. For many men, thinking about the persistence of the gender gap in the workplace has the potential to implicate themselves as people who may benefit professionally on the basis of gender rather than merit. Such an uncomfortable implication can lead men to discount gender bias by attributing men's greater success over women as a result of innate gender differences (Schilt, 2010). Lewis (2006) finds that women entrepreneurs favour a gender-blind perspective, not because they do not experience disadvantage, but rather because they see this frame as more progressive in that it allows them to emphasize their similarities to men rather than their differences. Eduardo Bonilla-Silva, in his work on 'color-blind racism,' describes a similar logic whereby white people adopt frames that allow them to 'explain away racial phenomena by suggesting they are natural occurrences' (2003, p. 28). These examples demonstrate that it can be psychologically functional for a person to frame problematic outcomes as normal, natural or desirable when the alternative is to acknowledge one's own contributions to a systematic injustice. But in doing so, structural

inequality is effectively denied, which, in our case of STEM faculty, can serve to reproduce unequal outcomes for men and women by legitimating the notion that the gender gap is natural.

An analysis of frames can shed light on the cultural context that makes certain explanatory frameworks acceptable or unacceptable to particular groups of people, and can provide insight into how individuals locate themselves in relation to others in a context where inequality is salient. Further, such an analysis can demonstrate what forms of social change and intervention people are open to (or not open to) in regard to alleviating social inequality. Cech and Blair-Loy's (2010) study of how women professionals in STEM industries account for inequality in labour market outcomes illustrates this interpretative value of frames. Finding that women use both structural and meritocratic explanations for gender inequality, depending in part on career and family circumstances, they suggest that these frames may inform social action, as the way that 'individuals and organizations interpret the causes of inequality helps determine the efforts they might support to alleviate such inequality' (2010, p. 392). Similarly, van den Brink and Stobbe (2014) find that interventions designed to address gender bias in academia were viewed as more or less favourable by faculty depending in part on how the interventions—and implicitly the problems they aimed to address—were framed. Ecklund *et al.* (2012) also focus on scientists' perceptions of gender segregation within STEM, finding that men and women differed in their views of the source of segregation. They note that career stage and gender were more important than scientists' subfields in shaping those perceptions, suggesting that exposure to academia over time can change scientists' perceptions.

In line with previous research (Ecklund *et al.*, 2012), we find that students sometimes used multiple, and at times seemingly contradictory, frames to explain the faculty gender gap. In our interviews, the most common frame among both men and women was the *historical bias* frame, which positions the scarcity of STEM women faculty as a consequence of an unfair but now outdated exclusion of women in these fields that is now being resolved with the increasing numbers of women PhDs entering the 'pipeline'. Central to the historical bias perspective is the idea that conscious gender bias on the part of men no longer drives the gender gap — though it did at some point. We identified three additional frames in our student interviews that competed with, and sometimes challenged, the historical bias frame: *innate* and *constructed gender differences* and the perceived tension between a woman's *body clock* and an academic *tenure clock*. As we show, the perception of *innate gender differences*, such as the idea that men are inherently better at mathematics than women, challenges the *historical bias* frame; the higher representation of men among STEM faculty becomes a result of gendered differences in ability unrelated to the legacy of gender bias in STEM. Twice as many men as women used the *innate gender difference* frame. In contrast, women were more likely to invoke the *socially constructed gender differences* frame, which emphasizes cultural stereotyping that discourages girls from pursuing mathematics and science while simultaneously encouraging boys. This frame challenges the *historical* bias frame by raising the idea of present-day systemic bias. Similarly, we find that the *body clock versus tenure clock frame* articulated an institutionalized double standard regarding work/family balance that continues to uniquely disadvantage women — a sharp contrast to the dominant *historical bias* frame. Women students also referenced this frame more often than men. Finally, we find that some women students described experiences of sexism in graduate school that seemed to contradict the frames they use to account for the gender gap — namely the *historical bias* frame. In response to this contradiction between frames and what women actually experienced in graduate school, women recast their experiences to fit within frames that minimized gender bias as an ongoing problem.

Methods

We draw on data from in-depth interviews with doctoral students enrolled in an elite, private research university in the southwestern US, that we term 'Southern U'. Data were collected as part of a larger longitudinal study of graduate school experiences, which included an investigation of gender differences in STEM fields. We considered Southern U a 'best case scenario' of graduate school as all students were funded for at least four years, students had few to no teaching obligations and cohorts

were typically small (10–15 in the STEM fields). Students also entered with high average Graduate Record Examination (GRE) scores (1350 and above), were young (median age 24), and most (88 per cent) did not have children. We hypothesized that the relative absence of many of the factors known to deter success in graduate school (e.g. working outside jobs, heavy teaching loads, large cohorts) would allow us to more clearly identify other aspects of the graduate school experience that may contribute to gender differences in PhD attainment and post-graduate career decisions.

The first wave of data was collected in February 2008. All first year PhD students in the 2007-2008 cohort were asked to participate in an online survey about their graduate school experiences. Terminal Master of Arts programs and professional schools were excluded. We then selected a random group of survey respondents (three men and three women from the two major schools with STEM departments: Natural Sciences and Engineering) to complete an interview (~45 minutes). This process was repeated annually from 2009-2012 (five total waves). As we randomly sampled three men and three women from the same survey cohort each year, this meant that we drew seven women twice, resulting in 55 total interviews with 48 STEM students.[1] Women faculty and graduate student research assistants in the social sciences department conducted all of the interviews.

We developed the interview guide based on two focus groups that each contained a total of five to six men and women doctoral students from STEM departments in all stages of graduate school. These focus group data oriented us to the range of concerns from students at different stages of progress in their programs. The interview guide included open-ended questions about students' experiences during graduate school, including mentor satisfaction, relationships among graduate students, professional development and career intentions. Students were also asked a series of questions to elicit their perspectives on gender in the academy. We asked students to give their best estimate of the gender breakdown of graduate students in their cohort, faculty in their department as well as in the discipline as a whole. We also asked them to reflect on the cause(s) of the gender distribution they reported. We used the same interview schedule each year because we were interested in identifying when certain issues (e.g. job market anxiety or locating a faculty mentor) were most salient and when they were of less concern for students over time. We describe the demographics in Table 1 below.

We used inductive and theoretical coding to analyze the interview transcripts after data collection was complete, guided by the research aim of identifying how students frame the faculty gender gap. We inductively generated a list of codes during the initial wave of analysis, including 'gender

Table 1: Demographic characteristics of sample (N = 48)[1]

	Men (*n* = 27)	Women (*n* = 21)
	n (per cent)	n (per cent)
Age (average)	25	24
Race/Ethnicity		
Non-Hispanic White	13 (49)	12 (57)
Asian	10 (37)	4 (19)
Hispanic	2 (7)	3 (14)
Mixed Race	2 (7)	1 (5)
Non-Hispanic Black	0 (0)	1 (5)
Marital status		
Not married	19 (70)	16 (76)
Married	7 (26)	5 (24)
Divorced	1 (4)	0 (0)
Has children		
Yes	3 (11)	3 (14)
No	24 (89)	18 (86)

[1] The proportion of women is higher in our sample than the proportion of women students in STEM departments at Southern U.

differences of faculty' and 'perceptions of department climate'. We then generated a more refined set of codes during a second wave of analysis, as we identified patterns in the data. At this stage, some initial codes were broken into multiple sub-codes and others were combined if redundancy became apparent. For example, in the second wave of analysis the code 'gender differences of faculty' was divided into 'faculty differences by gender: mentoring', 'faculty differences by gender: work/life balance', 'faculty differences by gender: ability'. We then used analytic memos to draw connections among codes and identify emergent themes. For example, we began to see that students' characterization of the gender differences among students and faculty seemed to cluster into differences that they saw as immutable (e.g. brain structure) versus those that are shaped by the environment (e.g. educational opportunities). We thus recoded the data to explicitly look for evidence of this emergent theme as an explanatory frame for the gender gap and used memos to tie related themes together. Through iterative rounds of coding and analysis, these emergent themes were distilled into the four frames we describe below: *historical bias*, *innate gender differences*, *socially constructed gender differences* and *body clock versus tenure clock*. To maintain anonymity, and in accordance with the institutional review board that granted permission for us to conduct the study, we assigned all students pseudonyms and do not identify them by their specific departments or by their race or ethnicity.

Findings

Framing the faculty gender gap

Only 20 per cent of all STEM faculty at Southern U are women. Of tenured STEM faculty, 9 per cent are women.[2] In some departments, students only encountered one or two women on the faculty at any rank. Rather than an abstract notion, then, the STEM faculty gender gap was a daily presence in graduate students' lives at Southern U. Students offered four main frames to explain the scarcity of women faculty. In the *historical bias* frame, students stressed that the gender gap was a historical artifact that will inevitably improve over time. Students also raised the idea of *gender differences* — either *innate* or *constructed* — as possible explanations, as well as the issue of the *body clock versus tenure clock* — that for women who want to bear children, having a family and being a successful academic scientist are not always compatible ideals.

Men and women students sometimes used the four frames we highlight above in combination with one another; however, it was more common for women to offer more than one frame to account for the gender gap. Fifty-four per cent of women students used more than one frame, compared to 20 per cent of men. These multiple frames were not always concordant. For example, the suggestion that innate differences of ability produce the gender gap contradicts the idea that the gap is a product of historical bias as opposed to gender differences in aptitude. We address possible explanations for these findings in the Discussion section.

Although we looked specifically for changes in respondents' frames over time (as a cohort and also using the seven respondents who were interviewed more than once), we did not find that students in later cohorts used different frames. Further, we did not identify patterns among respondents

Table 2: Students' frames by gender[1]

	Historical bias	Innate gender differences	Socially constructed gender differences	Body clock versus tenure clock	Don't know
Men	52 per cent	44 per cent	19 per cent	4 per cent	11 per cent
Women	76 per cent	24 per cent	67 per cent	53 per cent	10 per cent

[1] Most students used more than one frame to explain the faculty gender gap. The percentages displayed here reflect the proportion of students that nominated a particular frame, even if they also nominated other frames. Therefore, the percentages do not add to 100.

interviewed more than once whose frames did change over time. Below, we note some important differences by gender, particularly in how men and women characterized the source of perceived gender differences thought to be responsible for the gender gap (e.g. biological differences versus socially created differences) and in the use of the body clock versus tenure clock frame.

Historical bias

While acknowledging that sexist ideas about women historically barred them from the world of science, both men and women's primary explanation for the faculty gender gap in the late 2000s was demographic inertia. They suggested that it was only a matter of time before women made their way through the 'pipeline' to faculty positions (Table 2). Chuck explained, 'Probably [the gender gap is] just a historical sort of thing. I imagine there's more women than there used to be.' Gordon agreed that demographic trends drove the gap: 'I think that it has a lot to do with the fact that there's just already a critical mass of males and it's difficult to break into it.' Also central to this frame was the idea that gender bias in STEM was a cause of the gap *in the past*, not the present, and that with no further intervention, the pipeline will ultimately fill up with equal numbers of men and women. Seamus highlighted the previous exclusion of women in STEM, saying, 'I do know that it's an old thing about keeping women behind.' Similarly, Levi stressed that this exclusion was no longer present, saying, 'I don't feel like [STEM] is unfriendly to women.'Ryan suggested that the culture of STEM was previously coded as exclusively masculine, but that this has changed:

> I guess [my STEM field] was kind of like the science of Boy Scouts … you go out and do your fieldwork almost with a kind of military attitude about it. So it was a very masculine pursuit ... A lot of that culture has kind of gone out of a lot of universities. Now as to why it's that way currently, I can't think off the top of my head any factors that would encourage or discourage either gender.

Ryan notes here that he cannot think of any factor that 'currently' encourages or discourages men or women from pursuing a career in STEM. Similarly, Simon said, 'There's just … been a longer history of pushing men into [STEM] fields. And then because so many more men were in those fields, it just became something just like being a doctor that has always been a traditionally male dominated field.' While Ryan and Simon describe historical bias, such as the perception that men were previously seen as better suited for science, or that certain scientific fields were coded as masculine, neither felt that women faced current barriers in these fields. Women had similar responses. Efia noted, 'Maybe it's a generational thing. .. women are just more welcome in the sciences than they used to be.' Amanda discounted contemporary gender bias, saying, 'I don't think [women] are treated differently, or have any different success rates or anything like that.' Amanda and Efia emphasize that while women *used* to be unwelcome or treated differently, this is no longer the case. While some students reported that they weren't sure why the faculty gender gap persisted, the modal view was that it was a function of historical trends — remnants of the past — that had kept women out of STEM. Adherents of this frame perceived that things were rapidly changing as more women entered the STEM 'pipeline'.Students drew on anecdotal evidence to support this frame, namely their awareness that the proportion of women graduate students was more even with the proportion of men students than the proportion of women to men on the faculty. Reporting that faculty in her department were 85 per cent men, Betsy commented, 'I feel like if you spoke to graduate students in 10 to 12 years, it'd be even in terms of [the gender of] professors.' Samira offered a similar qualification after estimating that men comprised 75 per cent of the faculty in her department: 'I have seen a recent change, like the new grad students that are coming through the department are more women than guys.' Maria was confident that the gender gap would soon close:

> When you look at the age breakdown, the professoriate at Southern U. is older age-wise, so they just haven't cycled through. As they do, they're going to pick up the demographics of who is exiting grad school [with PhDs]. And that is going to turn over.

These comments highlight this cohort's unique position: the graduate student body increasingly is gender balanced yet the academic faculty gap remains significant. Given this, students unsurprisingly expect that change at the faculty level is inevitable. But absent from these comments are references to challenges currently facing women students and faculty in STEM; instead, the emphasis is on how the changing demographics reflect a newly leveled playing field. Such an emphasis minimizes the possibility of persistent inequality and instead projects the image of a problem already, or about to be, solved.

Innate gender differences

Students also framed the faculty gender gap as a result of different interests and abilities that steered men towards — and women away from — STEM fields at every level. Some respondents attributed these differences to biological characteristics, such as brain structures or genetics, rather than social or cultural factors. Typically, men emphasized these biological differences (Table 2). Pan explained, 'Interests have been wired into our brains. There are brain differences.' He added, 'Sometimes it's hard for women to grab abstract things. They need something more tangible.' For Pan, men were more interested in, and better at, the kind of abstract reasoning required to be successful in STEM fields. J.T. also emphasized inherent gender differences, saying:

> Maybe [the gap has] something to do with men or women's psychology? I think maybe women are good at chemistry and biology. They like to do things related to molecular things. And men are, I think, more into boring stuff [such as programming computers].

Sean had a similar idea: 'I think females like [biology-oriented subfields] and find it interesting as opposed to wires and circuit boards or something else.' J.T. and Sean attempt to elevate women by suggesting they are smart to avoid 'boring stuff' such as working with computers and code. Yet, in the hierarchy of STEM sub-fields, biology and chemistry are seen as lower in terms of prestige and perceived difficulty (Fox, 1999). As more women enter STEM, they are concentrated in lower status sub-fields, which are also less lucrative positions. These comments reflect the way this stratification becomes naturalized as a result of perceived innate differences in gender abilities.

In the most overt example of the innate gender difference frame, Sandip stated, 'I think that mathematical abilities differ by sex. That is the feeling we have in our department. And that's just more or less anywhere, like in any technical field, there are more men than women, you know.' His claim focuses on intrinsic differences in mathematical ability, sidestepping the issue of preferences. Andrew agreed, suggesting that his department 'is interested in picking up [women] to fill out demographic quotas and then they have trouble competing. [The women] just didn't seem like they were cut out to do it.' Both men felt able to speak on behalf of their respective departments, using language that suggested a collective sentiment—the 'feeling *we* have in *our* department'. This underscores our premise that students' frames index shared cultural schemas that vary by their social locations such as gender.

A minority of women did consider whether innate gender difference could explain the scarcity of women faculty (Table 2). Andi said, 'I wonder if there's certain hardwiring of female and male brains, the way we think or the way we reason.' Similarly, Leandra explained, 'Of course a huge part of it's cultural, but I do think it might have something to do with just differences in the male and female brain. This is a big generalization, but men tend to be better with spatial reasoning and mathematics.' When pressed to explain her own success in light of this comment, Leandra immediately acknowledged social barriers: 'I felt like some guys didn't listen to me as much as they listened to other guys.' Leandra, like other women who suggested the possibility of innate genetic or biological gender differences, qualified her comments by asserting that social or cultural factors mattered as well. While there were men who suggested that natural differences were the sole cause of the persistent gender gap, no women did.

Socially constructed gender differences

Women students were more likely than men to believe that social factors such as the education system were the primary source of the gender gap in STEM. Angie explained, 'I think a gender disparity in math starts off in high school pretty much because women aren't really encouraged to go into math and science at all.' Leanna offered a similar view: 'Honestly, I think it's the way that the education system is. I think that a lot of the time you're brought up in a school that teaches you [as a girl] to not want to know science, or science is just not a cool thing, then you have a lot of problems wanting to study it.' In this frame, girls are exposed to mathematics and science either less than boys or simply not as early, contributing to later differences in math and science achievement. Tricia noted:

> I think that, growing up, boys are encouraged to be more hands-on and into electronics and building and creating things than girls are. I think to a lot of women [STEM] is just not as appealing because you never were really exposed to that sort of thing.

Some men students agreed, including Matthew, who first explained that he had not thought 'too much' about why there were fewer women, then noted, 'These things can start a long time ago … If there's any difference in gender, [women] might just not have the same exposure [to science and math].' Matthew and others thus located the source of the gender gap in students' early educational experiences.

Women also attributed the gender gap to dominant cultural beliefs that science and mathematics are masculine domains. Leanna commented, 'I do think it's a cultural thing. I definitely think like that girls — in our society, girls are kind of taught to think other things are important, like looking pretty.' Similarly, Andi suggested why women might not pursue STEM careers: 'Just our culture in general of having a certain gender role that might be a little less pointed toward math or science.' Janet remarked that being a women in a STEM PhD program challenged gender stereotypes in a way that could make others uncomfortable: '[People say] "Oh, well you're a female engineer. That's a little bit odd." It's just outside of their comfort zone I guess you could say.' These comments suggest that the increased participation of women in STEM has not yet challenged the broader cultural construction of math and science as male domains.

Body clock versus tenure clock

Just over half of women students perceived that women in academia faced gender-specific challenges related to family formation that led some women away from academic careers (Table 2). Women typically attributed these challenges to the social organization of gender, in which family concerns were thought to be the domain of women, not men. Tracey explained:

> I feel like a lot of women look at themselves at the end of the graduate school career and they're like, 'Well either I'm going to do this and probably not have a family, or try [another career.]' It's not something they [men] talk about.

Sadie agreed, adding:

> It's almost like you have to choose [an academic career] over other things, like having a family. I think people don't come out and say it but it [having a family] is sort of looked down upon. I mean, because obviously you can't be quite as productive [if you have a baby].

Men, in contrast, noted that they rarely thought about work/family issues, particularly in the first two years of the study, and only one man used the *body clock versus tenure clock* frame to account for the faculty gender gap. Of note, he was married and his wife was also in graduate school, which might make him more likely to think about these issues. When asked if he planned to have children, for example, Bao laughed and said, 'I hardly think about it.' Family concerns simply did not preoccupy men students in the way they did women — even though most students were in the same life stage. However, that did not mean that men were unaware of how these issues affected women. Joel pointed to family concerns as a major gender difference for students: 'The female graduate students I

think might spend more time thinking about their family situation and things like that.'For women, family formation and the perceived professional risks accompanying it weighed heavily. Leandra said, 'I definitely think, to most guys, having a family is not really a concern. It's not like, "How am I going to do this?" But to me, I think about that all the time.' Most incoming graduate students in our study (over 85 per cent) did not have children (Table 1). Yet, they imagined future life trajectories that involved a balance between work life and family life, drawing heavily on their observations of professors. Carmen noted:

> I do know that women faculty that have kids, maybe because they have kids — they're not that dedicated. What I've heard is that they're not around a lot, as often as other faculty.

Leandra described the perception that there is a 'double standard' in her department, saying:

> There's a male professor that brings his daughter to class with him. It's like if a woman did that, people would judge her, like 'Oh she can't bring her kids. Come on. You be professional.' But if a guy does it, it's cute.

Women also saw men faculty benefitting from the double standard around family and work. Janet noted:

> Anecdotally the professors are primarily male, so when they have to balance things it's magically done by their wife. They don't have those same stresses. It doesn't even come into their lives. That's not going to be my reality.

Men, in contrast, expressed much less interest in and knowledge of how faculty organized their family lives.

Reframing bias: when experiences challenge frames

Many women students also described graduate school *experiences* that seemed to contradict their preferred frame of *historical bias*. In other words, the explanations they offered for the faculty gender gap did not always align with their own descriptions of interactions with their peers and professors in later parts of our interviews. Instead of the gender gap being a benign function of demographic 'turnover', women's stories of everyday life in a STEM PhD program indicate the forms of gender bias that contribute to gender-based cumulative disadvantage (Bystydzienski and Bird, 2006). In our interviews, we observed women attempting to recast their experiences with gender bias in light of their adherence to a belief in the inevitable dissolution of the faculty gender gap that should come from demographic turnover. In this section, we offer examples of situations in which women reworked their experiences with what they identified as sexist treatment or gender bias to fit within frames that favoured the narrative that STEM fields now offer a level playing field for women and men. Many women recounted facing sexist attitudes from male classmates and professors. Angie recalled, 'One of the guys [a graduate student], told me that he believes firmly that men are just better at math by birth and that kind of upset me.' Valerie remembered a time during her first year when she and another woman student were working on an assignment and encountered a male classmate who 'pretty much flat out said that because we were girls, there was no way we were going to get the answer'. Dana felt that men at Southern U. kept their sexist views quiet: 'Here they've been smart about it. They haven't directly said it but you get their gist.' The 'gist' was that women were seen as less competent than men at the work required in STEM — an idea, again, that many men openly expressed in our interviews. Women also encountered such ideas from male professors. Valerie recounted:

> I have had one faculty say to me, and this is a direct quote, 'We'd really like to get some better quality female graduate students in our department.' What does that say about me?

The implication of this professor's comment was that the current women students — Valerie included — were not up to par. His statement also lumped the women together as a group, as if their collective lack of quality had something to do with their gender.

Though these accounts reveal instances of men students and faculty voicing sexist beliefs directly to women students, the women we interviewed did not marshal these events as evidence of pervasive sexism in STEM. In fact, all of the women quoted in the previous paragraph adhered to the *historical bias* frame, among others. Rather, in our analysis, they used strategies that allowed them to minimize these experiences as annoying but not biased — as reflective of one or two 'bad apples' rather than a systemic problem. Angie, having recounted her male classmates' views on women's aptitude in mathematics, noted that being a woman in STEM was 'still really hard'. Yet, in summing up her experience in the program, Angie said, 'I definitely have been happy. The woman thing probably I've had some issues with but it's pretty minor.' In diminishing the impact of 'the woman thing', she frames it as a 'minor' problem even as she spoke about the experience as 'really hard'. Dana also minimized the sexism she observed, saying, 'It's little, silly, minor things.' This strategy serves to rework the experience of bias, which requires a solution, to fit a frame that does not require intervention.

Women students also recast sexist treatment by emphasizing how personal resilience and merit mitigate negative consequences. Women acknowledge that while gender bias may exist, they could shield themselves from possible effects if their accomplishments and hard work 'spoke for themselves'. Angie explained:

> I think to a certain degree I haven't experienced it [bias] as much the last year or two because I feel like I've proven myself a bit more. They [men in my cohort] couldn't come up and tell me 'Girls aren't good at math' anymore because I had passed [qualifying] exams before a lot of the same men in my class.

She felt she could sidestep gender bias, in other words, because her academic achievement left no room for criticism. Dana also characterized her accomplishments as a way to stave off the harsh criticism she noted was commonly leveled at women teachers in particular, saying:

> They know that I have been very successful … So then they can't really say that, 'Well she's not qualified,' or what have you because they've been around. They were at my qualifying exam. They've seen my publications.

However, this logic implies that gender bias could be deserved if a woman's academic work doesn't keep pace at or outshine men's. At the same time, Angie's comments also suggest that the perceived imperative to prove oneself may result in women putting in extra effort, above and beyond the effort expected of men. This finding lends support for Van den Brink and Stobbe's (2009) research which found that women students in science were more seriously involved in their work, performed better, and had a shorter time to degree than men students — and yet were perceived by faculty to be less well suited to careers in science. Women students also describe how being a gender minority in their departments led them to think carefully about how they dressed and how they interacted with male students and professors because they wanted to avoid being sexualized. Leandra said:

> You kind of want to hold back with being super friendly because even with your classmates there's a bunch of guys and you don't want to give guys the wrong idea. You kind of just stay away from them. Maybe that's prevented me from being really social with people, kind of keeping to myself.

To avoid giving her men classmates the 'wrong impression', she steered clear of socializing altogether, which excluded her from informal social settings in which professional networks often develop. Dana mentioned a similar concern about navigating the job market as a woman:

> There's a lot more to worry about when you're interviewing as a woman than when you're interviewing as a man … you want to appear conservative and appropriate because there's some people with really, really strong opinions about how a woman should be and how we should appear and the persona we give off … I think going to conferences and stuff we are worried more because of that kind of boys' club mentality.

These comments reveal the imprint of heteronormativity in this setting, and the expectation that cross-gender interactions are by definition sexual in nature. They also reflect students' perception that if women students were not careful, they would be sexualized and/or perceived in a negative or 'inappropriate' light — a concern that was never voiced by the men whom we interviewed. Women's responses to these concerns typically are to change how they dress or to limit their social interactions with men, which suggests that they see a world in which individual women can change more easily than individual men or a departmental culture.

Three women report incidents they defined as sexual harassment — a notable number in a small population, as they came from the same cohort year and male-dominated area of STEM. Tricia recounted being aggressively stalked and threatened by a man in her cohort who worked in the same lab. While the university sanctioned the student, he continued to take part in daily social lunches with her advisor and lab mates. She added:

> To me that was really hard to watch, because we used to eat lunch as a research group, and I no longer participated in that because [the perpetrator] was there. And I felt like [my advisor] took sides.

Tricia described the challenge of openly acknowledge the issue, saying:

> It's one of those things, it's [gender bias] such a sensitive area that it's almost like you don't even want to admit there's a problem because then you feel like you're standing out and what you've been working for so long was to blend in.

Tricia's comments echo van den Brink and Stobbe's (2009) finding that women earth scientists often strive to be 'invisible' and downplay gender discrimination in the workplace. There is an incentive to stay quiet about gender bias, as it allows students to continue their efforts to 'blend in' and keep their focus on work.

Other students recounted forms of sexual harassment that were less aggressive, but no less upsetting. Dana, describing her undergraduate experience, remembered, 'When I would be dressed up one day for class, you'd hear in the background some comments, just boys being boys comments, just totally inappropriate comments.' Women characterized these comments as common, and many had experienced them throughout the course of their educational career. These experiences reflect a graduate school climate in which women students are routinely subjected to sexualized comments (de Welde and Laursen, 2011; Williams *et al*., 2013); yet, women did not incorporate these experiences into their ideas about the persistence of the STEM faculty gender gap, or a discussion of potential barriers to women entering male-dominated fields.

Women also recounted feeling excluded from casual social activities between faculty and students — interactions that are a key source of professional socialization and incorporation into academic fields (Austin, 2002). Some women felt that men professors were more at ease around other men. Sadie noted:

> I can definitely see that [my advisor] doesn't feel as comfortable interacting with his women students as much as his male students. So I think there is a little more preferential treatment towards them in some sense, but not like in an obvious way.

In this comment, she remarks on what she sees as an example of faculty showing preferential treatment to men, but then minimizes it by saying that it is only 'a little' and it's not 'obvious'. This adjustment downplays the experience. Janet said she saw men students socializing more with faculty than women students did: '[I notice a difference in] how they're congregating, the tone of voice, the "at-easeness" that gets displayed." When asked whether she felt like her mentor provides the help she needs and is invested in her future success, Janet said she did, but she stressed that it was a 'working relationship' and that she would not go to him for support if she had a personal or family problem. Men's accounts supported this idea, as they described routine social activities they did with male professors, like jogging or going out for drinks. When asked, men noted that their women classmates did not seem to do such activities with men professors, and participated less in student events such as

poker night. Yet, as women attributed this differential treatment to natural gender preferences — men like to be with other men — they did not seem to hold advisors accountable for a gender preference. This reticence is in part because they were invested in being seen as scientists first, in 'blending in' rather than standing out as women. As men typically were not privy to women's experiences (nor saw themselves as perpetrators of bias), they did not experience the same challenges to their framing of the faculty gender gap. Yet, for women, these personal experiences with sexism, sexual harassment and social exclusion — or knowledge of a female colleague's experiences — raised the specter of a structural issue that seemed to be deeply rooted in a cultural preference for men in STEM fields. In response, women employed rhetorical strategies to bolster the elements of their frames that emphasized progress, preference and choice.

Discussion

In this article, we examined how men and women doctoral students in STEM frame the persistence of a faculty gender gap, and identified four primary frames: *historical bias*, *innate gender differences*, *socially constructed differences* and *body clock versus tenure clock*. We found that the *historical bias* frame was the most common frame among both men and women. However, far more men nominated natural gender differences as the source of the gender gap and more women perceived that gender differences in outcomes were socially constructed. Only one man suggested that the difficulty for women of balancing a family and career was an underlying cause of the faculty gender gap. We also found that for women students there is often a contradiction between their experiences with sexism and gender bias and their preferred frame.

Our analysis of the frames students use to explain the gender gap, and the ways they situate themselves in relation to this social problem, makes several contributions to the literature on the persistence of gender inequality in science. First, we argue that these frames shed light on the cultural context in which future STEM faculty are produced — a culture that is characterized by a tension between the belief in a meritocratic system and the acknowledgement of structural inequality. This tension is revealed in the points of contradiction between the different frames students offer as well as the conflicts between women students' frames and their lived experiences. In addition, students' frames serve as a way for men and women doctoral students to position themselves in relation to others in a highly competitive environment, and to justify their individual successes and failures. Further, the way students understand the gender gap may shape their professional behaviour during graduate school, which may have consequences for career outcomes. Finally, we argue that students' frames may portend the types of interventions they would be willing to support as this cohort moves into faculty positions. We discuss these contributions in turn.

Cultural context of STEM: meritocracy versus inequality

The way that students frame the gender gap offers a window into the cultural context of doctoral training in STEM fields, as frames index shared understandings of the social world, and are thus limited to accounts that are legible to others in the same milieu (Orbuch, 1997). These frames do not always reflect a consistent logic; in fact, they can seem discordant when closely analyzed. This finding supports previous research on STEM (Ecklund *et al.*, 2012) and bolsters the notion that people rely on 'multiple and contradictory bits of culture' to make sense of the social world (Pugh, 2013, p. 48). For example, despite there being increasing gender parity in terms of enrollment in STEM doctoral programs, the frames we identified in this study suggest that in academic STEM, stereotypes about gender differences are pervasive (*innate gender differences*) and there is a perceived institutionalized double standard for men and women related to balancing work and family life (*body clock versus tenure clock*). These frames point to the existence of gender inequality embedded in the practices and policies that structure academic science (Acker, 1990). Yet, both men and women students favour the *historical bias* frame in which bias and discrimination are viewed as ghosts from the past, not contemporary drivers of inequality. Under this frame, merit and hard work are thought to determine

who advances, not gender. Importantly, women often adhere to this frame despite describing their own experiences of sexism, sexual harassment and exclusion from social bonding opportunities with men faculty — experiences that belie this meritocratic ideal.

Scholars have shown that efforts to explain persistent gender inequality often involve contradictions that are difficult to resolve (Kelan, 2007; Kelan, 2009). We found this to be especially true for women, who were more likely to offer multiple frames than men. We argue that the critical tension in the *rhetoric* students use to explain the gender gap reflects their attempts to resolve the paradox they observe on the ground — that although there are far more women in the STEM pipeline than before, there still seems to be something keeping women from moving up the academic hierarchy at the same pace as men. In reconciling this dissonance, students fall back on the notion that academic STEM is a meritocratic endeavour, in which the most talented and hard-working individuals will succeed, regardless of gender (Krefting, 2003).

It is unsurprising that the notion of meritocracy would be salient among STEM doctoral students, as meritocracy has long been central to the idealized vision of science (Merton, 1973), and it is reinforced in STEM academic training (Traweek, 1988). What's notable in our findings is that many women students simultaneously acknowledge institutional barriers to women's success in STEM, such as what they perceive as double standards relating to work and family expectations, while still using the *historical bias* frame as their primary explanation for the gender gap. We think it is important to contextualize these findings within the recent demographic changes at the student level. Doctoral training in STEM is in a period of cultural upheaval, or what Ann Swidler terms an 'unsettled' time (1986, p. 273). She argues that during these cultural moments, as individuals grasp at various cultural straws to make sense of their world, they rely more heavily on sedimented or established ideologies, as new cultural tools and frameworks are still emerging. This framework may help explain why women students in this study turn to the ideology of meritocracy as their preferred explanation for the gender gap even as they report personal experiences with gender bias.

Locating oneself in the field

In addition to providing insight into the culture of academic STEM, students' frames also help them make sense of their own standing relative to the gender gap. Choosing to frame the gender gap using frames that emphasize the logic of meritocracy as opposed to structural inequality may yield psychological and emotional benefits for men *and* women. For men, framing the gender gap as a product of natural differences in ability or preference absolves them as a group from responsibility for alleviating inequality. At the same time, men can feel that their accomplishments are the result of talent and hard work. Similarly, framing the gender gap as simply a problem of *historical bias* negates the existence of ongoing intentional or unintentional gender bias that would need to be addressed in ways that might not serve men's interests.

For women, these frames also allow for attribution of responsibility, but with different consequences. Frames help women situate themselves in relation to a social problem that is particularly salient in their personal and professional lives. The 'women in STEM' problem has received a great deal of media attention, and it is likely that, at a minimum, women students have encountered the topic prior to entering graduate school. Some have participated in programs designed to encourage women's participation in STEM. Thus, for women, talking about the gender gap is not simply offering one's perspective on an abstract issue; rather, it means talking about one's personal career trajectory (Fox *et al.*, 2011). Women students struggled with where the blame lies with regard to the unequal gender distribution among STEM faculty. Although half of women in our study suggested that an institutionalized double standard regarding work and family was in part to blame, more than three-quarters concluded that it was a function of historical bias. Such a view may be a self-protective strategy, as women in this study have persisted, and most plan to continue moving upward, in a field that is extremely challenging and work-intensive. To hold the perception that their professional advancement could be thwarted on the basis of their gender may be too great a cognitive and emotional load for women doctoral students to bear (Jost *et al.*, 2004). It would be difficult for women students

to remain motivated if they internalized the idea that the cards were stacked against them. At the same time, hewing to the idea that meritocracy is what drives success allows women to own their accomplishments and claim them as the result of their talent and effort. If students adhere to a belief that there is now an equal playing field, and sexism and gender discrimination are relics of the past, *both men and women* are able to keep potential feelings of responsibility or discrimination at bay. Yet, by eclipsing the notion of structural inequality, men's ascendance in STEM academia is naturalized, and women's disadvantages are obscured.

Consequences for career choice/behaviour

Importantly, the ways that students frame the gender gap may shape their own career choices and professional strategies. Not only do these frames provide insight into the available cultural tools students can draw on in explaining the persistence of the gender gap, they also reflect the strategies available to them as they develop career aspirations. Our findings suggest that central to this 'toolkit' is the notion that science is a value-free exercise operating under a meritocratic system of rewards. Under such a meritocratic system, success is a function of individual merits (e.g. talent and motivation) and inequality is a function of individual deficits (e.g. lack of human capital) (Cech and Blair-Loy, 2010).

Some women students, like Angie, may respond to this system by determining to work harder than men to prove their competency. The result, as Angie noted, was that men students could no longer tell her that, 'girls aren't good at math,' as she preceded her male colleagues in finishing the qualifying exams. However, these extra efforts to prove one's academic worth can detract time and effort from other important professional activities, such as networking and informal socializing with faculty. Further, the prevalence of the *innate gender differences* frame among men suggests that women's successes may still be cast as exceptions to the rule. Another way in which framing can shape students' own career trajectories is that women students who perceive an inexorable tension between the *body clock versus tenure clock* may decide not to pursue an academic career at all. Many women students perceived that industry jobs would offer more flexibility with respect to work and family balance, and that, in contrast to the models they saw among faculty, it would be possible to have a family and a successful career in the industry setting.

At the same time, the frames we identified may also be reflective of the particular career stage doctoral students occupy. Scholars have shown that professional women in early career phases may adopt idealistic, aspirational views of their career trajectories and attribute anticipated future success to individual effort, whereas those with more exposure to the labour market (including experiencing work–family conflicts and institutional sexism) tend to emphasize the effects of structural factors on their own chances for success (O'Neil and Bilimoria, 2005). For example, Ecklund *et al.* (2012) demonstrate that more senior scholars are more likely to adopt 'demand-side' explanations for the gender gap than are junior scholars, perhaps because they have witnessed or experienced institutional barriers to women's professional advancement in STEM. Our findings support this idea, and we further suggest that at the doctoral stage, women who experience 'demand-side' problems, such as sexualization by men students, often minimize these issues or cast them in individualistic terms (e.g. one 'bad apple'), thus rendering the problem invisible.

Interventions students may support

A final implication of students' framing of the faculty gender gap is that it may foreshadow the types of policy interventions that seem reasonable, given students' ideas about why the gender gap persists. The way that people frame social problems informs their strategies of acting (or not acting) to address the problem, which is especially important in institutional settings that 'hold power to reproduce (or undermine the legitimacy of) that inequality' (Cech and Blair-Loy, 2010, p. 372; Handelsman *et al.*, 2005). We found that among men and women students, the preferred explanation for the gender gap was that its source was outdated sexist practices that had excluded women in the past. Under

that frame, now that more women have entered the pipeline, the gap should close without making further changes to the institution itself. This emphasis on adding more women to STEM without necessarily altering the environment or culture has been the primary style of intervention to address the gender gap thus far (Fox *et al*., 2011); however, the problem has not been resolved. As long as the preferred framing of the gender gap suggests that the main problem is that women haven't yet made their way through the pipeline, such interventions may continue to be the norm.

Similarly, efforts to address the issue of balancing family and work for women in science have faltered, perhaps because while policies have changed, the culture has not (Lundquist *et al*., 2012; Williams *et al*., 2013). The question of how women scientists can balance work and family life was of particular concern for women in our study. Although men were aware that women students seemed to worry more about the potential conflicts between having a family and having a successful career in science, most did not attribute the gender gap to this dynamic, whereas women did. Under the *body clock versus tenure clock* frame, women described a double standard, in which men professors with children often relied on their wives to take care of the children, whereas women professors had to manage both childcare and professional responsibilities. Further, women professors who chose to have children were seen as less serious scholars, whereas men were not.

The underlying logic of this perception is that being an academic scholar requires a time commitment that would be unmanageable in conjunction with family responsibilities. And while women students insisted that it was unfair that women did not have the equivalent of a wife at home to take care of family responsibilities while they remained at the lab, they left unchallenged this notion of academia as a 'greedy institution' that requires complete devotion (Coser, 1974). Reflecting an enduring form of gender blindness (Wilson, 1996), students took for granted the fact that a career in academic STEM science involved extremely long hours being physically present in the lab, an expectation that has its origins in the era when science was an all-male enterprise (Bailyn, 2003; Benschop and Brouns, 2003; Fox, 1999; Hochschild, 1993). Importantly, despite the fact that some universities have implemented more favourable maternal leave and childcare policies, the perceived stigma associated with needing extra time or help may dissuade many women and men from utilizing them (Lundquist *et al*., 2012; Williams *et al*., 2013). This is an example of cultural changes lagging behind demographic and policy changes (Budig *et al*., 2012; Hill *et al*., 2014). As long as the cultural expectation of total devotion remains standard (and its gendered consequences invisible to most men), and until women and men share the work of childcare and family responsibilities equally, the gender gap will remain.

Conclusion

We have shown that the primary frames doctoral students in STEM use to explain the gender gap reflect elements of the dominant academic culture of STEM, including its meritocratic ethos and the expectation of total devotion to scholarly work. Underlying these frames is the notion that systemic gender bias and discrimination no longer play a role in sustaining the faculty gender gap. Yet women students — many of whom have had negative experiences in graduate school including sexism, sexual harassment and social exclusion — must also reconcile the tension between the rhetoric of meritocracy with the lived experience of gender bias, an effort that may be taxing over time. As some members of this cohort of students become the next generation of academic faculty members in STEM, they will assume positions of relative power within universities and shape policies to address the gender gap. Our findings suggest that despite the demographic changes at the student level, as long as the dominant culture remains unchallenged — and institutional inequality remains sidelined in explanations for the gender gap — the gender gap may continue to be slow to close.

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Notes

1. We interviewed these women twice.
2. The university provided us these data from internal records.

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