



## Pandemic impacts, cultural conflicts and moral dilemmas among faculty at a Hispanic-serving research university

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### ABSTRACT

More research is needed on how the COVID-19 pandemic has shaped professional cultures and its implications for equity and justice. We conducted focus groups with STEM faculty at an exemplar case university, chosen because of its high expectations for research *and* teaching and its federal designation as a Hispanic Serving Institution (HSI). We use cultural schemas – which outline core content of professional culture – as analytical lenses. In addition to the schemas of scientific research excellence and devotion identified in previous literature, we find evidence of a cultural schema of radical connection and service to undergraduate students, many of whom are Latinx and in families who faced disproportionately high risks from the pandemic. We argue that work-work conflict and work-family conflict are rooted in cultural schemas of the academic profession that clashed more intensively during the pandemic. These clashes intensify moral dilemmas for faculty and reinforce inequalities and injustices. We urge the federal government to expand the expectations for HSI designation beyond achieving a certain demographic profile to require and equip campuses to fully serve their diverse student bodies and fully sustain the faculty and staff who support them.

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Research has documented profound impacts of the COVID-19 pandemic for work and family life. Research on broad populations in North America finds that these consequences include the cultural assignment to mothers of supervising children's online education and heightened work-life conflict (Craig, 2020; Dunatchik et al., 2021; Hjálmsdóttir & Bjarnadóttir, 2021). Further, employed parents who mostly work at home while simultaneously caring for children often experience role permeability across their work and caregiving responsibilities and more work-life conflict than parents whose paid employment occurs outside the home (Schieman et al., 2021).

More research is needed on how the pandemic has shaped cultures and structures in specific occupations and workplaces and its implications for equity. This paper focuses on

tenure-stream STEM faculty,<sup>1</sup> an occupation with a strong professional culture, including hegemonic beliefs about scientific merit (Blair-Loy & Cech, 2022). The professors in our study were building careers based on empirical research conducted in laboratories or out in the field. After the March 2020 campus closure, they were forced home for the next 18 months to teach their classes online and to write up their existing data from their kitchen tables. For faculty parents, this academic work occurred alongside supervising the online education of their children, who were also forced home. At the same time, professors witnessed their students suffering multiple impacts from the pandemic. Thus, this occupation illuminates impacts on a profession with newly intensive role permeability, not only between work and home responsibilities but also between their roles as researchers and their roles as teachers, mentors, and advisors.

Previous studies of faculty have discovered that work hours for research were constrained by the pandemic (Krukowski et al., 2021; Myers et al., 2020; Squazzoni et al., 2021), and that teaching and mentoring became more difficult (Bowyer et al., 2022; Smith et al., 2022). A national survey of women STEM faculty found that these professors often struggled to fulfill their identities as faculty and as mothers or other caregivers (Kossek et al., 2021). Yet more research is needed on if and how the core elements of academic professional culture were reshaped during the pandemic, and whether this culture helped exacerbate or reduce previously existing inequalities and injustices.

To better understand how academic culture helps shape inequalities, this paper analyzes an exemplar case: research-active, STEM faculty in a public doctoral university in a diverse, majority minority U. S. city. Most (97%) of our research respondents previously earned PhDs in one of the most research-intensive universities (Carnegie-classified R1, designating a doctoral university with very high research activity) or in a similarly prestigious international university. They now have tenure-stream appointments at our case university (Carnegie-classified R2), which has high expectations for research yet much heavier teaching loads.<sup>2</sup> Forty percent of the undergraduates are the first in their families to attend college. For many years, the university has been a federally designated Hispanic Serving Institution (HSI), and its students disproportionately come from lower-income, Latinx backgrounds.<sup>3</sup>

We conducted a short survey and convened focus groups in January 2021, ten months into the campus closure, when faculty were chafing under restrictions to their research activities and exhausted from redesigning courses for online delivery. They were still facing another eight months before they would be allowed back on campus regularly and resume in-person teaching. Eighty percent of our respondents are women. Women are more likely than men to be underrepresented in STEM and to already be facing bias and barriers at work (National Center for Science and Engineering Statistics, 2022). Further, women are more likely to be primary caregivers of children and therefore potentially facing more role permeability and work-family conflict in the midst of the pandemic. We added a small theoretical sample (Strauss & Corbin, 1998) of men to assess whether they were facing largely similar or different challenges as their women colleagues.

Our case underlines three culturally constructed commitments, which had previously been in tension but collided head-on in the pandemic. These include (1) a mandate from the professional culture to be devoted to the research-intensive academic profession (Blair-Loy & Cech, 2022; Cannizzo et al., 2019); (2) intensified mothering demands as women often shouldered a greater share of caregiving supervision at

home (Krukowski et al., 2021; Meraviglia & Dudka, 2020; Parlak et al., 2021); and (3) a sense of increased responsibility to their students, many of whom lived in families facing disproportionately high health and financial risks from the COVID-19 virus (Mackey et al., 2021; Miller et al., 2021; Walsh et al., 2021).

In a partnership between the basic science/social science coauthors and the case university's research affairs office, we sought to understand how the COVID-19 pandemic was affecting professors' research productivity, what university resources were helpful or needed, and how faculty were making meaning from these experiences. Broadly, our aims were to inform university policy decisions and to develop basic social scientific understandings of faculty meaning-making amid pandemic barriers to research and other competing commitments. Further, we wondered if and how these processes exacerbated or alleviated previously existing inequalities and injustices.

As an analytical lens, we examine faculty experiences as structured by *cultural schemas*, historically rooted, broadly shared, and often personally resonant frameworks that provide cognitive, moral, and emotional decision-making maps (Blair-Loy, 2003; Blair-Loy & Cech, 2022). Previous research has found conflict between the competing cultural commitments of work devotion (including ideal worker norms) and family devotion (including intensive motherhood) (Batram-Zantvoort et al., 2022; Blair-Loy, 2003; Hays, 1996). Additionally, we examine the effect of the pandemic on work-work conflict (Misra et al., 2012; Wynn et al., 2018) as faculty tried to hold fast to traditional academic mandates of individually brilliant, self-promoting research excellence (Blair-Loy & Cech, 2022) alongside their responsibility to students, even as these norms conflict more sharply under pandemic conditions.

To preview our results, alongside the cultural schemas of scientific research excellence and devotion identified in previous literature, we find evidence of a cultural schema of radical connection and service to their undergraduate students. Work-family conflict (primarily for mothers) and work-work conflict (for women and for men) are rooted in cultural structures of the academic profession that clashed more intensively during the pandemic. These clashes intensify *moral dilemmas* (Goodstein et al., 2009) among faculty and reinforce inequalities.

The paper begins by briefly outlining recent research on COVID-19 impacts for workers broadly and for academics particularly. We then present a model of moralized cultural schemas as an analytic strategy to illuminate pandemic impacts on faculty, including the competing commitments and personal anguish felt by many professors. Next, we present data and methods, findings, and discussion. Finally, we argue for action that the federal government, funders, and universities could take to provide more support to faculty and students and rectify some of the inequalities documented here. This includes a call for greater resources and higher expectations for universities holding or seeking the federal designation of being an HSI.

## **Faculty work and family lives prior to and during the pandemic**

Much research has documented broad, gendered work-family impacts of the COVID-19 pandemic, which emerged in 2020. Studies of broad populations in North America and the UK find that although fathers took on some additional caregiving during the pandemic, mothers performed more of the increased care work. Mothers did more

supervision of children's schooling and other care work, were more likely to have work tasks interrupted by children's needs, and generally faced greater work-family conflict (Andrew et al., 2020; Chung et al., 2021; Craig, 2020; Dunatchik et al., 2021; Hjálmsdóttir & Bjarnadóttir, 2021).<sup>4</sup>

The pandemic disrupted the work and family lives of faculty (Brynjolfsson et al., 2020; National Academies of Sciences, 2021). Research conducted pre-pandemic shows that faculty were *already* working long hours and struggling to balance their multiple professional responsibilities. Competing institutional expectations and misaligned incentives created '*work-work conflict*' between research, teaching, service, and other professional demands (Wynn et al., 2018) (see also Griffin, 2022).

Further, professors were already facing *work-family conflict*. Mothers generally take on the lion's share of family caregiving and are more likely to cannibalized their own research time in order to fulfill their teaching and service tasks in addition to parenting work (Misra et al., 2012). Even when maintaining the same high research productivity as non-mothers, mothers are often devalued as less serious scholars (Blair-Loy & Cech, 2022).

The pandemic exacerbated these work-work and work-family challenges. In March 2020, the closure of university laboratories and field work sites in the U.S. jeopardized research progress, threatened future funding, and interrupted the mentoring of student research assistants and postdocs. Virtual teaching made it more difficult for professors to engage with undergraduates students, whose own needs were increasing (Smith et al., 2022). At the same time, parents lost the support of schools and childcare centers (Bender et al., 2021). Women were particularly likely to report increased work-life conflict (Chronicle of Higher Education, 2020).

For many professors, particularly mothers of young children, these challenges reduced the number of hours they were able to devote to research (Myers et al., 2020). Some studies have documented declines in 2020 article submissions by women but not by men (Krukowski et al., 2021; Lerchenmüller et al., 2021; Squazzoni et al., 2021), although these patterns vary by discipline.<sup>5</sup> Some research found that this gendered decline was primarily caused by a drop in the proportion of women lead (first or last) authors, particularly for mid-career women (at the carer age most likely to have young children) (Kwon et al., 2023). Moreover, a higher proportion of women than men perceived decreases in their research productivity, and this perception was linked to their caregiving responsibilities (Peetz et al., 2023). Some academics – mostly men with low caregiving responsibilities – experienced *increased* productivity working from home (Ellinas et al., 2022), thereby further widening preexisting gender gaps in scholarly production (Aguinis et al., 2018). Constraints on research continued beyond the initial year of the pandemic. Even after disruptions were reduced somewhat in 2021, women and non-binary academics reported higher levels of stress and pressure related to publishing than men (Suart et al., 2022).

For many women professors, the transition to remote work alongside supervising their children's online schooling created not only a time crunch but also challenged their professional identities. A national survey of women STEM professors found that adapting to pandemic conditions led faculty to renegotiate their goals and standards in work and/or in caregiving arenas (Kossek et al., 2021). Some distanced themselves from these expectations, while others despaired of their personal ability to live up to them and therefore sacrificed one aspect of their identity. At their most pronounced, these sacrifices led some

women to plan exits from their academic researcher role (such as abandoning hopes for tenure) or from their involved parent role, such as the case of a divorced mother sending her child to live predominately with the other parent (Kossek et al., 2021).

Our analysis contributes empirically and theoretically to these literatures on faculty work-family conflict and work-work conflict. Empirically, much of prior work on these topics focus on faculty working in the most privileged, research-intensive R1 universities (e.g. Blair-Loy & Cech, 2022; Misra et al., 2012; Wynn et al., 2018). In contrast, our paper studies faculty at an R2 university who in addition to high research standards, face heavier teaching workloads and greater expectations of accessibility to students (Fulford, 2020). The preexisting tensions among research, teaching, mentoring, service and family caregiving responsibilities were exacerbated by the COVID-19 health emergency. Our faculty respondents taught a large, urban undergraduate population disproportionately Latinx and working-class, a group that faced particularly intense impacts from the pandemic (Bell et al., 2022; Cortes-Garcia et al., 2022; Ibarra-Mejia et al., 2022; Macias Gil et al., 2020; Serpas & Ignacio, 2023).

### ***Moralized cultural understandings: work-family and work-work conflict***

Theoretically, we extend the faculty work-family conflict literature by drawing on a previous literature on professionals, which recognizes work-family conflict as not simply a role conflict or a time management issue but fundamentally as a culturally structured and internalized moral dilemma between work and family devotion, between ideal worker and intensive motherhood (Blair-Loy, 2003; Hays, 1996; Schieman et al., 2009). This conflict is exacerbated when work tasks impinge on home life and family time, which is more likely to generate a sense of guilt (a signal of perceived moral failure) for mothers but not fathers (Glavin et al., 2011). Likewise, research on the pandemic finds that mothers often found themselves plagued by guilt for a perceived failure to live up to the competing moral visions of ideal workerhood and intensive motherhood (Batram-Zantvoort et al., 2022).

From this broad insight, we narrow our focus to elucidate the specific moral expectations within academic professional culture. We analyze these frameworks as ‘cultural schemas,’ historically rooted, broadly shared frameworks, which provide cognitive and moral judgements that ultimately mis-measure merit. A previous study conducted pre-pandemic at an R1 university discovered hegemonic schemas core to academic culture (Blair-Loy & Cech, 2022). We use these schemas to provide analytical lenses into our data while also paying attention to how the schemas may have been adapted or transformed by R2 faculty in the current study.

The *work devotion schema* devalues faculty mothers, who are seen as violating their scientific vocation by committing to a competing moralized commitment to caregiving (Blair-Loy & Cech, 2022; Cech & Blair-Loy, 2014) (see also Cannizzo et al., 2019). This cultural schema helps define and exacerbate work-family conflict for faculty.

In line with a call to study the effects of professional culture on work-work conflict (Griffin, 2022), we also extend the work-work literature. Previous research on R1 faculty found that some faculty (particularly mothers) sacrifice research time in order to fulfil teaching and service duties (Misra et al., 2012). In addition to time management problems, research has found that structural factors, such as misaligned incentive structures and

failure to recognize and reward non-research activities, contribute to work-work conflict among professional role identities (Kossek et al., 2021; Wynn et al., 2018). This research argues that workers experience a ‘splitting’ of their professional identities as a consequence of work-work conflict (Wynn et al., 2018). We extend these ideas. We apply the cultural schemas to our case in order to illuminate the moral dimensions (Goodstein et al., 2009) of this tension rooted in professional and organizational culture.

An analytical focus on cultural schemas extends the understanding of work-work conflict beyond time management, misaligned campus incentives, and professional role identity conflicts. The *schema of scientific excellence* elevates creative brilliance and pioneering research, while it minimizes the importance of mentoring and teaching. Moreover, the scientific excellence schema actively devalues diversity work, which is seen as polluting the purity of academic research (Blair-Loy & Cech, 2022). This schema illuminates the culturally structured moral dimension of work-work conflict.

This schema creates challenges for the professors in our study, most of whom have earned PhDs in R1s imbued with these cultural expectations yet now hold a teacher-scholar vocation in an institution committed to serving a large number of Latinx and other underrepresented minority students. R2 professors had become accustomed to handling the tension between the professionally valorized devotion to research and the teaching and mentoring roles so important on their campus. Yet during the pandemic, the balancing of these responsibilities became near impossible for many.

Consistent with other studies, we find that academic STEM culture creates not only time crunches, professional role conflicts, and the elevation of pathbreaking, self-promoting research over other activities. As a new contribution, we find that the professional culture as lived out among faculty at an R2 Hispanic-serving university creates a sense of sacrifice of morally and emotionally valued research identities in the service of moralized commitment to students. These tensions bring to the fore an awareness of injustices for the students and the faculty who serve them.

## Data and methods

In a partnership between the basic science/social science coauthors and the case university’s research affairs office, we sought to understand how the COVID-19 pandemic was affecting professors’ research productivity, how they were coping with and making meaning from these experiences, and what resources were helpful (or were needed). Broadly, our aims were to inform university policy decisions and to develop basic social scientific understandings of faculty meaning-making amid competing commitments. Our initial focus was on women faculty; we then added a smaller sample of men to check whether the women’s experiences seemed similar to or distinct from men’s. Much research on work-family and work-work conflict is conducted in the most privileged setting of very research-intensive R1 universities. Our public R2 case university adds insight because of its high expectations for research *and* for significant teaching and service to a diverse student body.

We administered a short survey followed by focus groups. We chose focus groups for several reasons. Our research questions on coping and meaning-making would be best addressed with qualitative data. Due to social distancing requirements, the data had to be collected virtually. We thought that professors, already overworked and suffering

from Zoom fatigue, would be unlikely to sign up for an individual Zoom interview. Given their isolation over the past 10 months we expected them to be more willing to participate in a focus group discussion with colleagues going through similar experiences.

Further, focus groups allow respondents to share and compare, which can stimulate the recognition of processes that may otherwise be so taken-for-granted and not articulated. The inclusion of several perspectives stimulates respondents to consider details and glean insights that may have otherwise remained hidden (Acocella, 2012). These dynamics allow more in-depth and contextualized exploration of research topics, relative to structured individual interviews (O.Nyumba et al., 2018).

We collected data in January 2021, 10 months into the county's stay-at-home order.<sup>6</sup> The research affairs office provided a population list of 90 women,<sup>7</sup> who met the following criteria: tenure-stream STEM and social and behavioral science (SBS) faculty with active empirical research projects, which depended (at least in part) on data collection and/or analysis in laboratories and field sites likely made inaccessible by closures during the previous 10 months. To keep our focus on the challenges, coping strategies and meaning-making for professors confronting expectations for research, teaching, and service during this challenging period, we excluded other groups, including semi-retired faculty, non-tenure-stream lecturers for whom research was not part of their job description, and theoretical scientists (whose research would be less affected by the closure of laboratories and field sites).

We invited these 90 women to participate in a short individual survey that would be followed by a Zoom focus group. Forty-five (50%) completed the survey. Following that, 37 participated in one of eight focus groups with women colleagues. (Eight women survey respondents did not join a focus group due to scheduling difficulties.) Given the fairly strong response rate, we are hopeful that this is a fairly representative slide of the women faculty.

Next, we recruited a small, supplemental sample of men, to provide more context and to shed light on whether the women's experiences were largely distinct from or similar to those of men colleagues. After asking the research affairs office to identify a similar population of men, they said they randomly generated a list of 33 men professors to invite to participate in the study. Eleven men (33% of those invited) responded positively and completed the survey. Following that, ten men participated in one of two men's focus groups. Given the small numbers, we cannot state how representative these eleven men are. All but one is a father, and perhaps fathers were more motivated than other men to participate.

The survey collected information on department, rank, family status, pandemic disruptions to research, and new teaching and service demands. The research affairs office, which cited confidentiality concerns and a wish to encourage candor and robust participation to quickly inform policy discussions, requested that we not collect data on participants' race/ethnicity nor video-record the Zoom focus group discussions.

Most focus group respondents come from the two largest STEM-oriented colleges, which are composed of STEM and SBS departments. In these two colleges, the proportion of Latinx faculty is almost 10%. These Latinx faculty are part of the underrepresented minority share of the faculty, which is just over 12%. These figures are higher than the proportions of Latinx (5%) and underrepresented minorities (8.9%) in the national STEM doctoral academic workforce (NCSES, 2021, Fig. 42 and Table 9-25).<sup>8</sup> As informally

observed by focus group leaders, the racial/ethnic diversity of focus group participants seemed roughly in line with the overall diversity of the STEM faculty at our case university.

46 of the 56 survey respondents participated in one of 10 single-gender groups, which were otherwise organized according to scheduling availability. Each group discussion lasted between 60 and 90 min. Focus groups often include two facilitators, one leading the discussion and the other observing and taking notes (Liamputtong, 2011). Our groups were facilitated by two coauthors, who were not campus peers of participants. BM, a highly experienced focus group interviewer from another university, posed questions and follow-ups and took notes. AB observed and took extensive notes. In the absence of a recording, she recorded as many verbatim quotes as possible and noted ethnographic details such as body language.

Participants were asked open-ended questions on the following themes related to the pandemic: impacts on participants' research activities; redistributions of work effort; coping strategies; work-life issues; and experience with university or departmental assistance. (The semi-structured interview question guide is in the Appendix.)

After each focus group, the two facilitators compared and integrated their notes. We regarded these detailed, integrated notes as paraphrased transcripts, peppered with researchers' ethnographic details about body language and emotional tone. This paper uses single quotation marks to present quotes that are as close to verbatim as the notetakers could accomplish.

We analyzed these notes inductively (Corley et al., 2021). We initially noted first-order concrete topics and then, in subsequent passes through the data, identified more abstract or aggregate themes. As noted above, after initially recruiting and analyzing the first set of focus groups composed of women, we decided to recruit a smaller number of men. This theoretical sample (Strauss & Corbin, 1998) allowed us to check whether responses seemed distinctively gendered or largely similar across these faculty conversations.

## Findings

### *Descriptives*

Most respondents had earned PhDs in very research-intensive universities that socialize graduates into professional expectations of single-minded allegiance to pathbreaking research (Blair-Loy & Cech, 2022). Seventy-five percent earned doctorates in R1s, another 18% got their degrees in prestigious international universities, and only 7% in R2s. As a selection criterion, all have maintained active research trajectories while also taking up a teacher-scholar vocation serving their R2 campus's large ethnically- and class-diverse student body.

The Appendix provides additional descriptive statistics. Among the 56 survey respondents, 71% of the women (32) and all 11 men work in STEM departments, while the remaining 13 women work in SBS units. In each gender group, roughly a third are assistant professors and two-thirds are tenured (Associate and Full Professors) (Appendix Tables 1A, 1B).<sup>9</sup>

34 professors (61%) are parents, including ten of 11 men and half the women. Twenty-four professors (43%), comprised of 17 women (38% of women) and 7 men (64%) had young or school aged children. Although men in the sample were more likely than

women to be parents, most mothers took on more than half of the childcare labor while none of the men were the primary caregivers. Most parents had one child, and none had greater than two (Appendix Tables 1A, 1B). In addition, 10 professors (nine women and one man) shouldered significant elder-care responsibilities.

Compared to the 56 survey respondents, the focus group sample ( $N = 46$ ) had roughly similar distributions across the categories of gender (80% women), broad field (83% STEM, 17% SBS), rank (38% assistant professors), and family status (59% parents; 39% young or school-aged children) (Appendix Tables 2A and 2B).

Importantly, most of the 56 survey respondents reported significant disruptions to their work due to the pandemic. Eighty-two percent reported that they had to alter their research or data collection methods due to disruptions to their laboratories or other research sites. Ninety-two percent learned new teaching technologies as courses shifted online. Seventy-three percent were burdened with new types of service, including additional service to students. Two-thirds reported they had faced disruptions in all three. These findings were present across women and men survey respondents. These survey reports of work disruptions came vividly to life in the focus group conversations, to which we now turn.

## ***Focus group results***

### ***Work-family and work-life conflict***

We began focus group conversations with broad questions about how Covid-19 has changed faculty life. Many participants discussed the challenges of work-family and work-life conflict. Our results are consistent with previous research on academics, particularly mothers, in the pandemic (Bender et al., 2021; Kossek et al., 2021).

Many professors struggled with what they called a 'lack of boundaries' when required to work fully from home. The closure of children's school campuses created additional obstacles. One woman professor said, 'I have two kids. The distance learning is very challenging'. Another mother said, 'We are socially disconnected. People with young kids are really struggling with that, and it is gendered, with a lot of the work falling on women faculty with young kids'. Another parent complained about 'the lack of financial support to set up a home office' and the lack of space, separate from her family, for her Zoom meetings.

Some mothers described that their needs fell through the cracks amid broader adjustments to remote work. One mother of a child in kindergarten explained the situation in her predominantly male research team: 'everything went normal as if nothing had happened, because only two people had kids'. Another woman in the same focus group strongly agreed, stating that 'nobody cared' about all the needs of each member on her research team. She went on to describe the tensions of being present in the household but not available due to work, sharing that 'my kid will leave notes on my door asking when I am free and to let them know when I am free,' but she lamented that there was often 'no time'.

Others also reported that their colleagues with young children, particularly mothers, faced the greatest challenges. One professor described that 'The most junior faculty are the least likely to articulate their needs, especially those with little kids or doing elder care'. Similarly, another professor, referring to women assistant professors with children,

said, 'Those who are most overwhelmed are the least likely to speak up because of vulnerability'.

In the discussion of work-life issues, there were some differences between the eight focus groups composed of women and the two men's groups. Although most of the men were fathers, they were not primary caregivers of their children. Only one of the ten professors with significant elder care responsibilities was a man. Although men spoke to similar changes, their comments generally lacked the aching work-family conflict expressed by many mothers in our study. The men acknowledged that, 'it's the women faculty with kids that are having real problems'.

Consistent with that sentiment, a woman professor complained bitterly that she was so overwhelmed with family and teaching obligations, she 'could not do more research than attend research meetings'. Yet, she noted, referring to her men collaborators, 'for my research group, it was business as usual'.

Some men stated that their work had not been impacted by the home environment or family responsibilities. For instance, one professor said, 'I have a good home work environment'. Another stated, 'I really have not been impacted'. Finally, some men seemed to be flourishing in the first year of the pandemic. For example, one man received a course off as a reward for accomplishing more research than others in his unit. These findings are consistent with other research findings of disparate professional impacts for men and women faculty during the pandemic (Ellinas et al., 2022; Chronicle of Higher Education, 2020).

### ***Disrupted research yet sustained sense of research vocation***

The survey had documented that 82% of faculty faced pandemic disruptions in their empirical research. Since a primary aim of the project was to understand these impacts, most of the questions on our focus group interview guide pertained to those topics (Appendix). These included: What happened to your research agenda? Let's talk about some of your coping strategies. What resources did you find helpful, or would you have found helpful, to address the impact of Covid-19 disruptions on your research trajectory?

Men and women professors were similarly likely to talk about how pandemic restrictions posed severe challenges to their research activities. Several professors saw their laboratories shut down. Others were running at 20% capacity. Others reported that human subjects research has 'ground to a halt'.

For many faculty, the inability to collect and analyze data threatened their ongoing funding. One professor said, 'Since I can't collect human subject data, I terminated one of my grants early and laid off my staff'. Another stated, 'I have a grant for my ongoing field work, which cannot be done'. This lack of research progress will have ripple effects on future productivity. As one professor put it, 'The research pipeline has been negatively impacted, and nothing's in the hopper'.

Some found ways to continue to produce scholarship, such as writing up old data. For example, one professor stated: 'I can't do any new data collection; [so I] worked with different co-authors on other papers [using older data.] We write together over Zoom'. Another one explains, 'I do brain imaging and can't collect any new data. So, I am trying to think outside the box for new projects.... I am also [repurposing] old data' into publications.

Yet others, especially mothers of young and school aged children, are near despair, as they struggle to gain any traction on their research goals. One mother said, 'I have two young kids at home, which is very disruptive to my work. I am in survival mode doing my teaching and the service and not much else, but I'm still trying to run my lab'. Another stated, 'My students are suffering, my children need direction, my partner needs support, my lab has gone to zero productivity, [and] we have no access to our offices!' Another added to the conversation that, on top of all these challenges, 'the administration demands that we do additional committee work!'

For assistant professors, anxiety about research productivity was partly elicited by campus requirements for tenure and promotion. Most respondents concurred that these bureaucratic expectations were rigid and unrealistic. As one professor said, 'Everything has changed around us except the expectations'. Another complained that the university was still 'bean counting,' i.e. tallying their publications, as if there had been no pandemic. Another echoed, 'The university has an unwillingness to cut back on expectations, even though my lab is at 30% capacity and so my papers are not written.'

In contrast, some faculty stated that the university had signaled it was adjusting expectations for faculty research productivity while still demanding excellence. In email communication with a university official, we learned that all

'tenure track faculty were afforded a one year tenure clock extension due to COVID, a COVID impact statement prompt was incorporated in the PDS, and the Senate passed a policy addressing tenure and promotion reviewer considerations for candidates impacted by emergent disruptive situations'.

However, the new standards were unclear to many respondents. One assistant professor explained: 'There is room for a covid impact statement in our faculty activity report, but the policy for how they are calculating the assigned time for research is arcane and difficult'. Another said, 'I do not even know the number of publications [required for promotion], and no one has given me an answer, because tenure expectations are now so murky and ambiguous'. Yet another commented, 'The administrators add to the confusion. I am told different things from different people'. Another professor added, 'The goal posts seem to move weekly'.

The new tenure clock extension policy also seemed confusing. For example, an assistant professor worried that accepting an extension would raise the bar for tenure rather than compensate for the extenuating circumstances. He suggested that the university provide 'written assurances that tenure delays will not result in additional expectations'.

Professors' eagerness to return to their fully engaged research lives was not simply spurred by bureaucratic tenure expectations. Seventy percent of focus group participants had already earned tenure. They nonetheless discussed the emotional burden of stalled projects. For example, one professor stated, 'even with tenure, I still worry,' and described the difficulty of pivoting away from a lab-based research portfolio in order to keep the publications flowing.

Among the women and the men participants, research productivity maintained its moral legitimacy and emotional pull. Some women were holding back tears. Some men expressed frustration and anger at falling behind and anger that the university did not provide more resources of course release or staff assistance.

One professor shared ‘anxiety about not being able to work on my projects’. Another confessed: ‘I already feel awful that I’m not as productive as I want. it is painful’. A third stated: ‘My colleagues are [also] feeling extra bad about reflecting on failures and they are devastated when they are not producing’. Another professor described herself as ‘horribly overwhelmed with [my lack of] research productivity and struggles with my own identity as a scientist’. Despite all the external constraints on maintaining research momentum, the cultural schemas of work devotion and scientific excellence remain personally salient and compelling. Violating them was ‘painful’ and ‘devastating’. It felt like a personal ‘failure’ and betrayal of their professional identities.

For many, the threat to their professional identities was amplified by the sense of isolation during the long campus closure. Some professors shared that they missed informal collegial interactions within shared physical space: ‘I want to find people in the corridor again’. Travel and other restrictions prevented faculty from attending academic conferences. Another lamented the loss of contact with colleagues in the wider discipline, explaining that some professors’ ‘research identities’ [are] linked to professional associations by necessity and not the university’.

Despite these challenges, faculty remain committed to their identities as researchers. They do not question the value of the scientific calling and still desire to do their research. Instead of bracketing the pandemic era as a period in which conducting research is impossible or severely constrained, they long to get their lives back in closer alignment with their calling as academic researchers. As one professor explained, ‘We are not struggling with time management; ... we are struggling with the inability to have creative mental time to do our research’.

As noted above, consistent with project aims, the facilitators posed questions about what university resources that helped (or could have helped, if available) faculty manage COVID-19 disruptions to their research. Yet participants continually shifted the conversation back to resources the university should provide to directly support *students* and to support their teaching mission, which faculty saw as linked to their research mission.

### *Sustained sense of vocation of teaching and service to students in crisis*

In response to our questions about their research agenda, women and men respondents continued to return to the topic of teaching and student needs. Faculty noted the teaching challenges they faced, such as rapidly redesigning their courses to be taught remotely. A typical comment was, ‘Transforming a course is like [creating] a whole new course. I needed to develop all new experiments’. Yet no matter how much time they spent retooling courses, they often discovered that course expectations could not be fully enforced.

Respondents across all groups spent more time discussing the challenge facing their *students*, many of whom lived in multi-generational, lower-income, Latinx families, with members facing disproportionately high health risks (if working on the front lines) and financial risks (if doing in-person jobs that were shut down). When we asked faculty about university resources that could potentially help them address their research disruptions, faculty continued to return to the topic of *students’* needs.

They explained that many of their undergraduates were in crisis. Several focus groups expressed concerns about the particular impact of the pandemic on ‘minority’ students, most of whom, on this campus, are Latinx. One professor pointed out that some of her

'minority' and 'immigrant' students lack access to home computers with which to attend virtual classes.

Further, when one professor stated that 'online does not replace face-to-face [teaching],' three others in their focus group agreed. The professor noted that less effective online teaching betrayed their university's mission to serve disadvantaged communities. Another stated that 'minority populations need more investment, and now we worry about the investment in those students'. Two others expressed a sense of urgency, demanding that the 'university has to do more for the students' and insisting that 'I want more help for the students, need more help'.

Faculty experienced these crises as immediate, emotionally draining, and morally demanding. One professor said, 'taking care of the students is like having another family'. Another explained that the undergraduate student counseling office 'was overloaded, so faculty took on' that counseling work. Another stated:

'For me to tell a student to see someone else is betraying them. Of course, I am going to engage with them. I can't, as a human being, divorce myself from the lives of my students. How do we optimally support our students, so they do not feel abandoned, and also keep that much-needed professional distance and not cross that line?'

Thus, faculty emphasized the complex moral and emotional obligation they felt toward caring for their students in crisis. Underscoring this increase in students' needs and vulnerability, as well as professors' increased sense of obligation to provide generous support, within appropriate professional boundaries.

Faculty also worried about the short- and long-term effects on their graduate students' careers. As one respondent stated, 'Our graduate students are suffering'. Another said, 'I am most concerned about the effects downstream in a few years. We cannot collect pilot data now, and this will snowball. We have a band aid over the research, and I am so worried about the students in the lab, they are not getting training'.

Professors responded to questions about university resources needed to support their research with examples of how resources were lacking for students. For instance, one professor said that 'grad affairs no longer accommodate students and are less available now [despite] students need for extra time' and that there was 'little information from the university for current graduate students'. One participant provided an example of their graduate student who proactively reported to university administrators about a missing fellowship: 'Even though she had alerted the administrators beforehand, she didn't get paid for four months. She was radio-silenced from the administrative side'.

Other participants elaborated on the connection between students' vulnerability and research productivity. One professor reported a 'drastic drop' in their lab members to just 4 students, as opposed to the typical ten to fifteen. Other professors shared that even the students who remained could not experience the training which happens in labs in normal circumstances. Hiring freezes prevented junior members from transmitting practical knowledge to incoming lab members. As one professor stated, 'teaching and research are highly connected and affected' in the COVID era. Another explained that their 'research suffered' as they expended time and energy navigating the challenges of teaching during the pandemic. Faculty asked for more teaching assistant resources, which would help their students financially, help the faculty in their teaching mission, and free up a bit more time for research.

Overall, respondents experienced a heightened sense of work-work conflict between their teaching and research. One professor questioned why annual faculty reviews did not recognize that working with students required ‘twenty-five to fifty percent more time’. One professor summarized the situation: ‘the teacher-scholar model is not realistic now’.

## Discussion

Ten months into the campus closure, faculty identified family caregiving and their responsibilities to their students in crisis barriers to accomplishing their research under the restrictive pandemic conditions. Consistent with previous research, many professors, particularly mothers of young and school aged children, faced high levels of work-family conflict when required to work fully from home (Bender et al., 2021; Chronicle of Higher Education, 2020; Kossek et al., 2021; Myers et al., 2020; Smith et al., 2022). The shut-down of laboratories and field sites created additional barriers to research. Women and men professors spoke about these challenges.

Rather than accepting that research projects would lie fallow during these unprecedented times, even tenured faculty faced a sense of devastating failure for letting their research trajectories falter. This sense was sometimes conveyed through tears for women faculty and through anger for men.

This research vocation is brought into focus by two cultural schemas discovered in previous research on R1 faculty, which we use here as analytical lenses. The schema of work devotion mandates that the scientific calling demands and deserves undivided allegiance. The schema of scientific excellence venerates individual brilliance and pathbreaking research, while it gives teaching and mentoring less value and devalues diversity work. Together, these schemas privilege research productivity as markers of scientific merit (Blair-Loy & Cech, 2022). The faculty in our study, predominately educated at very research intensive, R1 universities, were imbued with these values.

Faculty faced structural barriers to fulfilling the cultural mandate of research excellence. First, the pandemic created unprecedented obstacles. These including increased caregiving obligations (especially for mothers) and disruptions to their data collection and analysis.

In contrast to the R1 faculty in previous research, we discovered that many R2 professors embraced a competing cultural mandate of teaching and care to students as a core cultural schema defining their vocation. These professors had previously become accustomed to handling the tension between the devotion to research valorized in the broader profession with the teaching role emphasized on their campus. Yet during the pandemic, the balancing of these responsibilities became near impossible for many.

These challenges created a heightened sense of work-work conflict. This conflict was shaped by factors identified in previous research, such as time scarcity and poor employer communication and management (Misra et al., 2012; Wynn et al., 2018). In addition, faculty now felt that the moral mandate of devotion to research was in greater competition with another heightened moral mandate, caring for their students in crisis. These experiences of competing mandates reveal the *moral* dimensions (Goodstein et al., 2009) of what previous research on work-work conflict has described as a ‘splitting’ of professional identity (Wynn et al., 2018).

Despite our attempts to steer the conversation back to research productivity, focus group participants repeatedly returned to a discussion of student needs. In this university, 40% of students are the first generation in their family to attend college, and 34% are Latinx. When the campus closed, most students returned to live with their parents and other family members, many of whom were essential workers facing health risks or were holding in-person jobs that were vulnerable to shut-downs (Bell et al., 2022; Cortes-Garcia et al., 2022; Ibarra-Mejia et al., 2022; Mackey et al., 2021; Miller et al., 2021; Serpas & Ignacio, 2023; Walsh et al., 2021). These family challenges put additional pressure on undergraduates, even as they lost the structure and social support of their on-campus community. In addition, graduate students faced the loss of laboratory assignments, which provided funding, research experience, and often, their dissertation data.

Faculty felt a moral responsibility to their 'student family' and a sense of anguish and injustice regarding the inadequacy of university resources and supports. To reiterate one professor's words, 'I can't, as a human being, divorce myself from the lives of my students'. This language indicates an intense sense of connection to and responsibility for their undergraduates, which is absent in previous research on R1 faculty. Our findings point to a cultural schema of a teaching vocation, which goes beyond a technical or information-sharing model of instruction to one of relational richness and 'radical availability' (Fulford, 2020) (p. 170).

Broadly, the experience of work-work conflict was heightened for faculty committed to the HSI mandate of serving disadvantaged communities. Not only were professors aware of challenges and lack of resources faced by many students in their communities, the faculty lamented that the university was betraying its mission. The structural inability to live up to the many expectations they faced led some to feel like moral failures as scientists, as teachers, and, for some, as parents.

The STEM-SBS research faculty at our case university is majority white yet has somewhat greater racial/ethnic diversity than the national STEM doctoral academic workforce. Based on other research (Misra et al., 2012; Trejo, 2020), we expect that underrepresented minority faculty and women are more likely than majority faculty to take on the diversity work of the university, and the moral dilemma between research focus and attending to students' urgent needs is likely even more pressing for underrepresented faculty.

This dilemma may be particularly acute in institutions such as our case university, an R2 HSI, which maintains high research and teaching expectations serving a diverse student body. If our research participant is correct that the teacher-scholar model is now broken, the damage is particularly costly and unjust for Latinx, low income, and other diverse students who have worked hard to make it into a four-year college. We call for more research on the competing schemas of professional merit and their consequences across diverse faculty and diverse institutions.

## Policy implications

We argue for specific actions that the federal government, federal funders, and universities, could take to provide more support to faculty and rectify some of the inequalities documented here. There are different types of Minority Serving institutions (MSIs). We distinguish designations based on undergraduate demographics (e.g. Hispanic-Serving Institutions [HSIs] and Asian American and Native American Pacific Islander-Serving

Institutions [AANAPISIs])<sup>10</sup> from institutions with a purposive cultural mission, such as Historically Black Colleges and Universities (HBCUs) and Tribal Colleges and Universities (TCUs). The HSI designation, federally endowed based on a student undergraduate demographic profile, rather than a central mission, means that many HSIs struggle to prioritize sufficient resources to serve their diverse student populations. It's an injustice when first generation Latinx students choose campuses like our case university in part because of its HSI designation and then find themselves with insufficient university support. In turn, this process helps create a sense of distress and failure among many faculty members.

We call for the following policy intervention. Although many policies for Minority Serving Institutions are developed individually on each campus, we argue that eligibility requirements should be revised generally to include an explicit process of rewarding faculty for all their work with students, including mentoring with sensitivity to culture, diversity, and justice. Examples of such changes include the following: more teaching support, such as teaching assistants, for faculty; tracking the number of individual students and student groups guided, with commensurate teaching release; and clear tenure-clock extension options, with written instructions guiding evaluators to review extended calendar files fairly.

These changes should mitigate experiences of work-work conflicts, including those between academic culture and the service identity of the institution (Adiredja et al., 2022). Concretely, the HSI designation could designate an advanced tier in which institutions demonstrate that they have undergone institutional transformation to inclusively and equitably support faculty who serve the students at HSIs. The redesignation could be along the lines of the Seal of Excelencia<sup>11</sup> and framed explicitly to document practice, process, and policy changes (Adiredja et al., 2022).

HBCUs have been leaders in the development and training of Black scientists and researchers across many STEM fields (Owens et al. 2012). HSIs should learn from the successes of HBCUs and engage more specifically in activities related to 'servingness'. Following (Garcia, 2020), we encourage HSIs to develop outcomes such as racial/ethnic identity development and racial and gender justice for Latinx and other students, faculty and staff. We argue that, as part of their support for a scientifically trained workforce, federal funders like the National Institutes of Health and the Department of Education to require HSIs' embrace of a more robust servingness and more faculty support as a condition of receiving certain grants. For universities holding or seeking HSI or, by extension, AANAPISI designation, these shifts should also include greater resources to bolster the success of diverse students and the faculty and staff who support them.

## Limitations

Citing confidentiality concerns, we were asked by the office of research affairs not to record the focus groups. Although our two facilitators took extensive notes, they could not capture as much emergent interactional data as we may have been able to glean from video-recordings. Another limitation is that the office of research affairs asked us not to record the race/ethnicity of respondents. We expect that racialized and minoritized faculty would face particular pandemic impacts, including the expectation to do more work supporting Latinx students, but our research design precluded this kind of analysis. We have a relatively small sample in one university, so our findings cannot be generalized

more broadly. Our small comparison sample of men faculty suggests that men had similar levels of work-work conflict as women and that fathers had less work-family conflict than mothers, but more research on gender differences is needed. We encourage future studies to investigate the possibility of similar patterns at other R2 universities with high demands for research and teaching, particularly for those who are MSI (minority-serving institutions). We do not know if and how our findings would generalize beyond the R2 setting; we encourage future research on other types of colleges and universities.

## Conclusion

We studied research faculty in an R2, HSI university, with high research and teaching expectations and a disproportionately Latinx and working class student population hit hard by COVID-19. Becoming hired as a professor at an R2 entails developing a teacher-scholar vocation, in which faculty balanced heavy teaching loads with the broader cultural valorization of individually brilliant, pathbreaking research. In the pandemic, our respondents' teaching mission became more fraught, as faculty felt a sense of urgency to provide care for their 'student family' in crisis. Simultaneously, pandemic obstacles to collecting and analyzing their research data constrained their research productivity. Pulled between these competing commitments, professors experienced heightened work-work conflict at the same time that many also faced heightened work-family conflict. The cultural schemas of scientific excellence and work devotion serve as lenses that illuminate the moral and emotional dimensions of these dilemmas. In addition, we find evidence of a cultural schema of radical connection and service to their undergraduate students that has not been found in previous research on R1 faculty.

We argue that increased resources and clarified rewards for faculty serving underserved students should become a new condition of eligibility for HSI or AANAPISI designation and to receive certain federal grants. This is a matter of treating faculty fairly. This policy change would also better equip faculty and staff to provide resources and enhance the social mobility of underserved students as a step toward greater justice for the university community and the broader society.

## Notes

1. The National Science Foundation definition of STEM fields includes psychology and the social sciences, in addition to physical sciences, life sciences, and engineering (Granovskiy, Boris. 2018. 'Science, Technology, Engineering, and Mathematics (STEM) Education: An Overview.' U.S. Congressional Research Service, National Center for Science and Engineering Statistics, National Science Foundation. 2022. 'Doctorate Recipients from U.S. Universities: 2021.' Alexandria, VA.)
2. The case university is designated 'high research level' (or R2) by the Carnegie Classification of Institutions of Higher Education and also has a high teaching load and a large, diverse undergraduate enrollment. For more information, see <https://carnegieclassifications.acenet.edu/>
3. Universities and colleges with an undergraduate full-time equivalent enrollment that is at least 25% Latinx may apply to the US Department of Education for HSI designation (<https://sites.ed.gov/hispanic-initiative/hispanic-serving-institutions-hsis/>). Our case university's proportion of Latinx students exceeds 34% and has been designated as an Hispanic Serving Institution (HSI) for approximately a decade. The student body is approximately 40% first-generation college attending.

4. In the early months of the pandemic in 2020, mothers were more likely than fathers to reduce their paid work hours in part to cope with the additional caregiving needs (Landivar et al., 2020; Lofton et al., 2021; Qian & Fuller, 2020). By 2022, women's employment rates had generally returned to prepandemic levels in the US, many mothers of young children continue to face a sense of work-family conflict and uncertainty due to ongoing disruptions in schools and daycare centers.
5. There is complexity to these patterns; gender ratios in article submission vary by discipline and other factors (Jemielniak et al., 2022; Muric et al., 2021; National Academies of Sciences, E., Medicine. (2021). *The Impact of COVID-19 on the Careers of Women in Academic Sciences, Engineering, and Medicine*. The National Academies Press. <https://doi.org/doi:10.17226/26061>) For example, a study of Earth and space science submissions to American Geophysical Union journals (2018-2021) increased during the pandemic, while the gender ratio remained constant. The authors speculate that during stay-at-home orders, scientists pivoted to writing up results from prior field work and that submission gender ratios may shift in the future (Wooden & Hanson, 2022).
6. We received Institutional Review Board approval from the last author's university.
7. None of the faculty in our study self-identified as nonbinary. About a third of the STEM and SBS faculty in the case university are women.
8. Four percent of the faculty at our case university are Black, matching the proportion of this group in the national academic STEM workforce. White and Asian professors comprise 62% and 11% of the case university faculty. These statistics match the semester in which our focus group data were collected. These proportions are lower than national levels at which Whites comprise 70% and Asians comprise 20% of the academic STEM workforce (<https://nces.nsf.gov/pubs/nsf21321/report/academic-careers>) (NCSES, 2021).
9. The Appendix tables provide row percentages by gender to show the proportion of each work or family category that is made of women and men. For example, women make up about eighty percent of both ranks in the data (83% of assistant professors and 79% of tenured professors) while men make up between 17% and 21% of each rank, roughly equal to their presence in the overall sample (Appendix Table 1A).
10. For more information on these designations see on these federal designations, see <https://www.doi.gov/pmb/eeo/doi-minority-serving-institutions-program>.
11. See: <https://www.edexcelencia.org/seal-excelencia>
12. Facilitators flexibly followed this semi-structured guide, while also allowing conversations to unfold in new directions. There was not time to ask every question in every focus group.

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## Appendices

Focus group semi-structured interview guide: Questions and follow-up (bulleted) prompts<sup>12</sup>

- Let's talk about how COVID-19 has changed faculty life. Let's start with your experiences last Spring. What kinds of changes did you experience?
  - More time, less time, same for all of you, ...
  - How did the university community help you with your transitions?
  - In what ways did you feel isolated or that you had to do it all on your own?
  - What part of faculty life was most disrupted for you? Or in what ways did your distribution of effort change?
    - Were there parts of your work life that you just could not do and, if so, why?
    - What happened to your research agenda? What were your needs?
    - What kinds of opportunities arose?
    - Were your existing challenges compounded by COVID-19?
- What happened to your research agenda? What resources did you find helpful, or would you have found helpful, to address the impact of COVID-19 disruptions on your research trajectory?
- Compare what you experienced last Spring to this past Fall semester in terms of distribution of effort.
  - More or less time in different parts of your work life? Research?
  - What was most or least disrupted? Why?
  - What were some of your needs from the Spring that were addressed by this Fall? And by whom?
    - What kinds of new opportunities and coping strategies arose because of the disruption?
- What kinds of formal assistance did you receive in your faculty work life? From whom?
  - How did you learn about the formal assistance? Did everyone have a chance to receive it?
  - Informal assistance and from whom? About research? Did others receive?
  - What would have really helped you address challenges to your work life?
- Let's talk about some of your coping strategies. What are they?
  - Solo? Collaborative? Who has helped you?
- What resources or supports did you find helpful, or would you have found helpful, to address the impact of COVID-19 disruptions on your research agenda and trajectory?

**Table 1A.** Descriptive statistics of 56 survey participants by gender (N, row %)

|                                                | Women (N = 45, 80% of<br>survey sample) | Men (N = 11, 20% of<br>survey sample) | Row Total |
|------------------------------------------------|-----------------------------------------|---------------------------------------|-----------|
| <b>Broad Field</b>                             |                                         |                                       |           |
| STEM                                           | 32 (74%)                                | 11 (25%)                              | 43 (100%) |
| SBS                                            | 13 (100%)                               | 0 (0%)                                | 13 (100%) |
| <b>Rank</b>                                    |                                         |                                       |           |
| Assistant Professors                           | 15 (83%)                                | 3 (17%)                               | 18 (100%) |
| Associate & Full Professors                    | 30 (79%)                                | 8 (21%)                               | 38 (100%) |
| <b>Parents</b>                                 | 24 (71%)                                | 10 (29%)                              | 34 (100%) |
| <b>Significant elder care responsibilities</b> | 9 (90%)                                 | 1 (10%)                               | 10 (100%) |

**Table 1B.** Among 34 parents in survey, ages and numbers of children by parent's gender (N, row %)

| Parents              | Women (N = 24) | Men (N = 10) | Row Total |
|----------------------|----------------|--------------|-----------|
| Youngest child's age |                |              |           |
| 5 and under          | 7 (58%)        | 5 (42%)      | 12 (100%) |
| 6–11                 | 5 (100%)       | 0 (0%)       | 5 (100%)  |
| 12–17                | 5 (71%)        | 2 (29%)      | 7 (100%)  |
| 18+                  | 7 (70%)        | 3 (30%)      | 10 (100%) |
| More than one child* | 7              | 5            | 12 (100%) |

\*7 mothers and 5 fathers had two children. None had greater than two. Median number of children for mothers is 1 and for fathers is 1.5

**Table 2A.** Descriptive statistics of 46 focus group participants by gender (N, row %)

|                             | Women (N = 37, 80% of focus group sample) | Men (N = 9, 20% of focus group sample) | Row Total |
|-----------------------------|-------------------------------------------|----------------------------------------|-----------|
| <b>Broad Field</b>          |                                           |                                        |           |
| STEM                        | 29 (76%)                                  | 9 (24%)                                | 38 (100%) |
| SBS                         | 8 (100%)                                  | 0 (0%)                                 | 8 (100%)  |
| <b>Rank</b>                 |                                           |                                        |           |
| Assistant Professors        | 12 (86%)                                  | 2 (14%)                                | 14 (100%) |
| Associate & Full Professors | 25 (78%)                                  | 7 (22%)                                | 32 (100%) |
| <b>Parents*</b>             | 20 (75%)                                  | 7 (25%)                                | 27 (100%) |

**Table 2B.** Among 27 parents in focus group, ages of children by parent's gender (N, row %)

| Parents*    |                |             |           |
|-------------|----------------|-------------|-----------|
|             | Women (N = 20) | Men (N = 7) | Row Total |
| 5 and under | 5 (56%)        | 4 (44%)     | 9 (100%)  |
| 6–17**      | 8 (100%)       | 1 (0%)      | 9 (100%)  |
| 18+         | 7 (78%)        | 2 (22%)     | 9 (100%)  |

\*9 parents had two children. None had greater than two. Median number of children for mothers and for fathers is 1.

\*\*Elementary school (ages 6–11) and middle/high school (ages 12–17) categories had small cell sizes by gender, so we combined these groups. Approximately half of parents in this combined cell had a youngest child aged 6–11 and about half had a youngest child aged 12–17.