

The Gendered Spaces and Experiences of Female Faculty in Colleges of Agriculture*

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ABSTRACT The “leaky pipeline” metaphor has been used to describe the dearth of women in science, technology, and leadership roles. For colleges of agriculture within land grant universities (LGUs), college leadership and tenured faculty in agricultural science disciplines have historically been disproportionately male, even though women earn nearly an equal number of doctorates. Conscious gender discrimination may account for some of these disparities; however, this is not the only cause of this imbalance. Gendered constructions of the division of labor and allocation of power within organizational cultures are also important to consider when addressing gender inequalities. Using a qualitative feminist methodology, we explored the intersection of identity, social roles, and gendered organizational cultures in colleges of agriculture and life sciences for female faculty. Findings reflect how gender norms have shifted through time as more female faculty join academic units yet, subtle bias and the institutional culture of large LGUs still influence behavioral expectations and perceived gender roles. However, the power of academic leaders to support equality indicates a type of local level influence that can push against the structural constraints of the institution. We also discuss specific recommendations for academic departments and leaders of colleges of agriculture and life sciences.

Introduction and Literature Review

Gender inequalities in academia have persisted for decades, in both representation and compensation for women (McFarland et al. 2017; Kelly 2019). The “leaky pipeline” metaphor has been used to describe the dearth of women in science and technology as well as in leadership roles and can be attributed to various factors. For female faculty in the sciences, these include family constraints, institutional rigidity, and unconscious bias (Ceci and Williams 2011; McGuire and Primack 2012). Specific to

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agricultural and related sciences, women faculty in colleges of agriculture and life sciences (CALs) are not reaching tenure and promotion (T&P) at the same rates or in the same timeframes as their male counterparts, are suffering burnout and lack of support, and at times, leaving academia in search of other opportunities (Ceci and Williams 2011; Gumpertz et al. 2017; Mason, Wolfinger, and Goulden 2013; McGuire et al. 2012). Women are also underrepresented in professor positions, with the lowest representation in agricultural engineering, and are disproportionately found at the lowest ranks even though they report spending more time working per week (Goldberger and Crowe 2010). Further, leadership in CALs has historically been and currently is disproportionately male (Cho, Chakraborty, and Rowland 2017). Research, education, and management related to agriculture, food, renewable resources, and the environment are projected to be growing fields between 2020 and 2025 (Fernandez et al. n.d.), demanding the training and development of future professionals. However, with a significant discrepancy in the number of women reaching these important career milestones, there is a dearth of women involved in the training of future leaders required to meet the ever-growing needs of our society. There is little contemporary research on women faculty or gender dynamics in the context of CALs; therefore, it is important to explore how this gender imbalance may thwart women's upward mobility and job tenure.

The mission of land grant universities and the stakeholders they serve have aimed to create different orientations for their faculty. Land grant universities (LGUs) were established through the Morrill Acts (1862 and 1890) to extend access to higher education for working class and rural populations and were designed with a particular focus on agriculture and mechanical arts [engineering] (National Research Council 1995). Other legislative acts enabled CALs to expand their mission to research and extension. Experiment stations (Hatch Act of 1887) were established as support for original research to underpin the teaching of agriculture and spur innovation. Later, the cooperative extension system (Smith-Lever Act of 1914) was implemented to disseminate research and knowledge from the college to farmers and consumers (National Research Council 1995). Although most LGUs still have a college of agriculture, some have expanded well-beyond their agricultural roots and have little agricultural identity (National Research Council 1995). CALs themselves have expanded over time to more broadly include disciplines related to agriculture and life sciences such as food science, environmental sciences, forestry, agricultural education, plant pathology, and rural sociology. Despite this expansion, the tripart mission of research, teaching, and extension is generally supported amongst them.

Due to their public orientation and service to various agricultural and food system stakeholders (e.g., farmers, consumers, and community members), CALS have a distinct context compared to other academic environments (Goldberger and Crowe 2010). However, LGUs that house CALS have been critiqued in straying from this mission of public service, focusing instead on careerism, competition, growth, and strict hierarchies (Beatty 1991). Thus, the organizational culture of CALS can be rife with competing priorities and tensions between traditional norms and calls for innovation. Within this context, the aforementioned data for both representation and promotion of women in agricultural sciences indicate that there are persistent systemic issues within CALS that may limit successful and fulfilling careers. This qualitative study gathered data through in-depth interviews with cis women faculty in different stages of their career and across a variety of disciplines in CALS in order to gain a deeper understanding of gendered culture in these spaces from their perspective. Thus, our driving research question was how gendered organizational practices and narratives influence women's identities as faculty members and their experiences in CALS.

Gender Inequality and Organizational Culture

Gender, as a primary frame shaping interactions and relationships, can influence roles and identities, including those that are institutional (Ridgeway 2014). Institutional level discrimination has been documented in lower average pay in predominantly female occupations, which has been attributed to employers seeing the worth of these jobs through biased lenses (England 2010). Although there has been a reduction in gender gaps in the labor force and in wages (England and Folbre 2005; Kleven and Landais 2019), women have faced challenges with their successes in male dominated fields wherein they may be unfairly seen as unsociable and difficult to work with (Heilman et al. 2004). Further, social pressure can externally influence role congruency, in which people are rewarded for acting in a manner consistent to their gender role (Eagly, Karau and Makhijani 1995). For example, management and leadership roles may be established in masculine understandings and practices, leading women to be evaluated more negatively than their male counterparts when they participate in these roles (Eagly 2007; Ljungholm 2016).

Although gender is not always considered binary, women continue to be disadvantaged to men at structural and interpersonal levels indicating that processes at different ecological levels reproduce gender inequality (Saguy, Tagar and Joel 2021). Gender is “done” when certain actions by women are interpreted differently than when undertaken by

men (Benschop and Brouns 2003), thus perpetuating some forms of discrimination. Perhaps some of this inequality can be attributed to the gendered nature of organizations themselves. Acker (1990) identified four processes that reproduce gender in organizations: division of labor, cultural symbols, workplace interactions, and organizational logic. These processes include maintaining primarily men in the highest positions of organizational power, creating images of the ideal manager free of familial obligations to distract from work, and dictating appropriate dress, language and presentation create and maintain gendered inequalities in the workplace (Acker 1990). Although workplace demographics and culture have changed since Acker's work, engaging in self-promotion to be successful in teamwork can still be challenging for women in male dominated fields, gender bias can play a role in the allocation of rewards, and networking culture may disadvantage women in advancing their careers (Williams, Muller, and Kilanski 2012). Women may also still perform, or be expected to perform emotional, supportive, and organizational roles that align with broader societal gender norms (Lester 2008).

Higher Education as a Gendered Institution

Differences among organizational contexts are also important to consider when addressing gender inequalities. Britton (2000) argues for investigating whether and how organizations are feminized and masculinized and how that structure influences its members as well as how individual actors might navigate it. For higher education, there are indications that the organizational logic, or underlying assumptions and practices, creates and reinforces gendered structures (Acker 1990). Reification of gender roles can be observed in who is able to take advantage of parental leave and the expectations of time committed to job responsibilities. For example, although parental leave policies exist in higher education, institutional practices and norms can impede men from taking them (Ely and Meyerson 2000; Sallee 2012). Moreover, the assumption that male academics should be productive as they have someone at home attending to domestic responsibilities can still be seen in work expectations and outputs, although the flexibility of work schedules and support from leadership varies by discipline (Sallee 2012, 2014). Further, The Committee on Maximizing the Potential of Women in Academic Science and Engineering, National Academy of Sciences, National Academy of Engineering, and Institute of Medicine argued the traditional scientific or engineering career still presumes an out-of-date male life course, based on the assumption that a faculty member will have unlimited commitment to their academic career (The National Academies 2006). Cultural symbols within the organization can also

impact women's experiences when they feel academic norms and values conflict with their own (Griffin et al. 2015; Pololi et al. 2009).

The division of both labor and power can also be examined to understand how context shapes gender relations. In higher education, the disproportionate occupation of clerical positions by women and leadership positions by men, as well as gender gaps between full and assistant professors, indicate gendered constructions of division of labor and allocation of power (Sallee 2012). Women in faculty positions may perceive that they take on more student mentoring roles, do more service work, and teach more new courses, all which impede their ability to conduct research which is the primary activity considered for promotion (Goldberger and Crowe 2010; Hart 2016). Park and Park-Ozee (2021) contend that this exemplifies the gendered division of labor in the 21st century academy, wherein the more valued task of research is considered "men's work" and the tasks of teaching and service are characterized as "women's work," hence devalued. In examining gender inequality of STEM faculty, O'Meara et al. (2017) found that women not only received more work-related requests than men, but these requests were also more reproductive in nature (e.g., teaching, student advising, professional service) rather than productive (e.g., research, publishing). Some data indicate that feminization of departments and disciplines may reduce the influence that productivity has on evaluation processes (Weisshaar 2017). Yet, at research-intensive universities, research and publications are still considered more important in the promotion and tenure process than teaching and service (Pyke 2014).

Women continue to be recruited to engage in service, especially on committees where gender diversity is needed, and tend to be the "institutional housekeepers" of the university, tasked with collecting and analyzing data on the status of women to improve their situation (Bird, Litt and Wang 2004; Pyke 2014). Service is expected to fulfil faculty obligations, but over-representation and under-valuing of committee work may thwart women's efforts to reach parity in senior faculty roles. Further, task-focused (masculinized) service can be perceived as more valued and more highly visible than relational (feminized) service by the university resulting in "invisible" service (e.g., mentoring, recruitment, social support, career guidance; Hanasono et al. 2019). CALS are often part of research-intensive LGUs, which may be incongruent with the mission of such colleges to serve the public and translate research to practice for the betterment of communities. Given this unique context, the researchers sought to identify how female faculty's experiences reflected both institutional and social norms and how this varied by discipline, career experience, and appointment

(i.e., research, teaching, and extension). Social roles within CALS and gendered organizational culture framed how we explored differences in women's faculty roles, expectations, experiences, and career outcomes.

Methodology

We took a constructivist stance for our investigation, viewing reality as socially and experimentally created in which there can be multiple realities dependent on the individual person or groups (Guba and Lincoln 1994). This form of inquiry enabled the examination of each woman faculty's experience by employing qualitative feminist methodology through a case study design. A feminist methodology was most appropriate for this research as it was conducted for women and with women (Doucet and Mauthner 2007) and aimed to interrogate structure of colleges of agriculture and life sciences to elicit change in inequitable gendered practices (Hesse-Biber 2014).

Although case study research is often oriented toward a realist perspective, it can be pursued in a constructivist manner to capture the perspectives of different participants (Yin 2018). This comparative, or collective, case study focused on the broad context of CALS but explored the intersection of identity creation, social roles, and gendered organizational cultures of women faculty across three universities and various disciplinary units. Our primary research question was how gendered organizational practices and narratives influence women's identities as faculty members and their experiences in CALS. Through investigating multiple cases we were able to compare the experiences of the participants (Saldaña 2011) and reveal the similarities and differences.

Author Positionality Statement

As the lead researchers, we are also a part of the general population of this study: cis women, tenure-track faculty at an LGU in the CALS. At the time of data collection, we were both assistant professors and have spent time studying and researching the dynamics of gender in various contexts. Both researchers are White, Latina women with varying experiences in agriculture and community and leadership development. Additionally, we are both passionate about and actively working to enhance diversity, equity, and inclusion of our department, college, and university. Further, the graduate student researcher also has a deep interest in gender equality, albeit less experience in higher education. The graduate student is also a cis woman, White, and has a background in agricultural education.

Table 1. Participant and Unit Professional Demographics.

Pseudonym	Discipline	Rank	Unit Leader Gender	Asst. Prof.		Assoc. Prof.		Full Prof.	
				M	F	M	F	M	F
Nicole Madison	Plant Pathology Environment and Natural Resources	Asst.	F	5	3	6	4	9	3
Charlotte Brianna	Agricultural Economics Aquatic and Invasive Plants	Asst.	M	12	8	10	3	11	2
Riley Gwen	Food Science and Human Nutrition Agronomy	Assoc.	M	0	3	1	4	9	1
Gwen Clara	Plant Pathology	Assoc.	F	6	1	2	1	4	1
Molly Jane	Agricultural Economics Animal Sciences	Assoc.	F	2	2	2	3	6	6
Linda Kelley	Agricultural Education, Communication, & Leadership Food, Agricultural and Biological Engineering	Full	M	9	0	5	3	9	1
			M	1	4	2	1	6	2
			M	0	3	1	4	9	1
			M	7	4	4	3	8	1
			M	2	2	6	6	7	1
			M	4	3	3	2	9	6

Note: Unit leader gender indicated is at the time of interview. Gender of tenure track faculty is reported from departmental websites; therefore, may not reflect how each individual identifies.

Data Collection

We reached out to colleagues at the two external universities to inquire about potential participants yielding several names of women faculty. In addition to these names, we also looked through department websites within their respective CALS to find other women to invite to participate seeking to acquire a representative sample across disciplines, tenure status, and social identities (as much as possible). After all potential participants accepted the invitation to participate, they were given the university approved IRB consent form to sign and return. At that time, we worked together to find a time to meet either over Zoom or in person. The interviews lasted approximately 45–60 minutes. A semi-structured interview guide was developed based on a thorough literature review to explore how organizational culture can influence how gender is constructed and performed through social phenomena such as organizational narratives incorporating concepts of leadership and mentoring. Acker's (1990) framework was also used to explore the role of gender through investigation of the of division of labor, informal social interactions, and symbols and cultural images. The semi structured approach provided a guide during data collection, however it also allowed for probing follow-up questions to be asked throughout (Corbin and Morse 2003).

Description of Participants

We conducted in-person and video interviews with participants at three 1862 LGUs located in the northern and southern regions of the U.S. These universities were purposely selected leveraging existing relationships for participant recruitment. All three LGUs are considered R1 institutions with distinct colleges of agriculture and life science. Through snowball sampling, 11 women faculty in tenure-track positions (both pre- and post-tenure) within their respective CALS were selected for this study. We contacted nearly 15 women at each institution seeking their participation, purposefully selecting some women faculty of color and other minorities. Of the faculty that responded and elected to participate, one participant was Asian American, two were from European countries, and the other 8 were White women from the United States. The women varied in rank (4 assistant professors, 4 associate professors, and 3 full professors) and number of years in academia (4 to 32 years). Women represented departments varying in areas of specialty, departmental gender make up, and unit leadership. See [Table 1](#) for a description of the participants.

Data Analysis

Interviews were recorded, transcribed, then analyzed using the constant comparative method to explore the similarities and differences amongst participants' experiences (Harding 2013). The constant comparative method allows for generating multiple properties for a general phenomenon which can include hypotheses (Glaser 1965). Creating comparisons of the interview data can be done alongside coding (Harding 2013). Thus, interview transcripts were summarized and compared one-by-one resulting in similarities and differences related to the participants' work and social experiences. Data were coded openly for the various aspects of the participants' experiences and then categorized into broader thematic memberships (Corbin and Strauss 2012). Although the theory of gendered organizations was used as a theoretical proposition to guide our research questions and review of the literature (Yin 2018), we took an inductive approach to data analysis allowing themes to emerge. Acker's (1990) theoretical framework was then used to help interpret the resulting themes and subthemes. Specifically, we used the four processes by which organizations are gendered to help explain our findings: (1) the division of labor, allowed behaviors, locations of physical space, and of power; (2) constructions of symbols and images that explain, express, reinforce or sometimes oppose those divisions; (3) interactions amongst women and men that enact dominance and submission; and (4) gender being understood as a constitutive element in organizational logic.

Rigor and Trustworthiness

We maintained credibility, transferability, dependability, and confirmability throughout the data collection and analysis utilizing various approaches outlined by Guba and Lincoln (1994). Member checks were conducted and a thorough, thick description is provided allowing the reader to determine the transferability of the study to their context. Additionally, we kept a comprehensive audit trail detailing all steps taken throughout the research and data analysis. The research team met several times during the data analysis to discuss emerging categories and themes, compare interview notes, and confirm that we were not extrapolating beyond the data gathered. The subsequent research findings use pseudonyms to protect the identity of all participants according to our institutionally reviewed and accepted protocol.

Limitations

Our study has several limitations. We acknowledge that our sample, while hoping to capture perspectives from diverse faculty women,

is limited in its scope with only 1 non-White participant. The lived experiences of women of color, LGBTQIA+, and other identities are certainly different and should be investigated further. Faculty within colleges of agriculture are also called to serve in the role of extension. However, this study did not focus on faculty in primarily extension roles, nor did participants provide much information pertaining to this role even if a part of their formal appointment split. Furthermore, this study focused on 1862 LGUs and does not intend to discredit the experiences of women faculty at 1890 colleges and universities, Hispanic serving institutions, and 1994 tribal colleges. Finally, as a qualitative study the data is not generalizable to all CALS but rather serves to provide an in-depth view into the perspective of these 11 participants.

Findings

Findings are presented in two overarching themes: professional priorities and gendered expectations and gendered environments. The themes are then described through sub-themes with supporting narrative. Acker's (1990) framework is integrated into the discussion of the findings.

Professional Priorities and Gendered Expectations

Participants spoke about the many expectations placed upon them in their faculty roles. However, conversations with the participants suggest that these expectations are gendered. Service roles, mentorship and support, research, receiving recognition, and their expected behaviors reflected how gender was performed within their work context.

Service. Academic service is considered an integral part of a faculty member's role, constituting three overarching areas: (a) service to the institution; (b) service to the profession; and (c) community engagement or outreach (Pfeifer 2016). In relation to how service manifests in gendered division of labor (Acker 1990), several women interviewed, Madison, Clara, and Charlotte, perceived that they engaged in more service as female faculty members than their male counterparts. When asked about service, Clara remarked, "My service load is ungodly." As a junior faculty member in a hard science department, Clara believes higher service loads are currently unfairly assumed by women because she perceives women are more productive than men after reaching tenure. The push to perform more service was also balanced with her personal enjoyment in such opportunities. When asked whether she felt she was able to say no to

service opportunities Clara said: “I do not feel like I can just say no. And in many cases, I don’t want to. I really enjoy the service aspect of my job.”

As a junior faculty member, Madison spoke about some of the service activities in which she was involved. As a member of an ad hoc awards committee she said, “... I personally had something I really, really enjoy. I’m not necessarily good at being my own microphone, but I really love doing it for others.” Madison valued her participation on this committee and recognized the need to support others. She believed that other women in her unit “gravitate towards doing it because I think we enjoy and get some element of support... from doing it.” She recognized that engaging in service fulfilled her even though it may not be valued as much as other reproductive activities would be. Overall, most of the women in this study indicated spending a sizeable portion of their time on service. However, the degree to which it was recognized by their units, colleges, or in the T&P process differed amongst the participants.

Mentorship/Support. All participants shared various experiences and challenges with mentorship throughout their careers, yet mentorship surfaced as having a significant impact on their faculty identities. Knowing how to navigate academia as junior faculty is an essential component of the mentor-mentee relationship. Acker (1990) speaks about rules and evaluations as part of organizations and the role that gender plays in constituting norms within those spaces. Mentorship is essential for women to learn to navigate those norms. As a new faculty member, Linda, now in a senior leadership role, leaned into informal networks, finding support from her other new faculty members in her department. However, receiving this type of support did not provide everything she needed during those crucial pre-tenure years on topics like time and stress management. Similarly, although Brianna, a tenured professor, had a formal mentoring committee pre-tenure, she felt the committee engaged more as a “packet prep committee” rather than focusing on helping her succeed in the profession. She wished she had received mentorship on networking and making introductions to others in the profession; having more “real” mentorship. Likewise, Nicole also mentioned issues with her mentorship committee: “I was having a really hard time with one of my mentors... and I needed to know who to talk to about it. I thought that there was some very inappropriate behavior that I needed to talk to somebody about what to do about it”. Since her mentors were other more senior faculty, she struggled to find the best person to help guide her through this situation.

Early career mentorship by other female professionals was scarce for many participants. Several remarked that a lack of female mentorship

significantly affected them as faculty. Linda believed that the lack of female role models to demonstrate work-life balance contributes to the decision of women to leave the profession. Work-life balance being especially important for women engaging in significant reproductive roles (e.g., service) in addition to their productive responsibilities (e.g., research). Molly, now tenured, mentioned wanting a female mentor to support her through specific female faculty related challenges. Even when there were senior women in the department, they were often overburdened or unavailable. Charlotte said: "...there are some very ambitious women [in academia], which I think is great. But at the same time, that takes them away from that mentoring space of junior faculty." She also noted: "there's not enough women at that senior level to both kind of do the other awesome leadership things that they want to be doing and to be the mentors for the next generation." Not only were there a limited number of women to serve as mentors, but their current roles and expectations did not allow time for mentoring others, driving faculty like Charlotte, a junior faculty, to find mentorship outside of her department.

Despite the type of mentorship they received, all participants felt the desire and need to be good mentors to others. Jane lacked good mentorship at the beginning of her career, but now as a senior faculty values her role as a mentor describing herself as "motherly" and "holistic" in her approach. Similarly, Linda reflects on her lack of mentorship and its importance: "I went back to the faculty and said, 'I'm going to be intentional about mentorship for graduate students and for junior faculty and also building community,' because I know what a difference that makes in the overall success." Kelley recognizes the importance of specifically mentoring other women students and faculty. She noted that young women in her department purposefully seek mentorship from a woman and come to her as the most senior woman faculty for her guidance.

Research. Most participants had appointment splits between research and teaching. However, they felt that no matter the percentage of each split, they did not feel it accurately represented their workload. Workload expectations were often unclear, research was perceived to be valued above all other activities, and participants expressed feeling expectations were different for them as women than for their male counterparts. This lack of clarity, misalignment in expectations, and effort evaluation are essentially factors in perpetuating the gendering of organizations such as higher education (Acker 1990). For example, Linda believes that activities like mentoring are not rewarded in the same way as engagement in research and grant seeking, speaking about the effects of unclear expectations on faculty members: "When

you don't know what the bar is, you just go as fast as you can... We were racehorses. And racehorses can only go for so long without getting burned out, right?"

The "elusive" bar that Linda mentioned was noted amongst several of the participants, amongst senior and junior faculty. Madison said she has a high research load that is not reflected in her appointment breakdown, feeling that her teaching load is too heavy for the amount of research expected of her. She remarks that this emphasis on research is reflective of the rewards structure of academia as a whole:

So there's this what I would consider a somewhat archaic view of what our merits are, so obviously, peer-reviewed publications. Even grants, we're supposed to show evidence of applying for grants... But service, we talk a lot about it and I think it's important to our members of our community, but it's not necessarily formalized in our documents...

As a senior faculty member, Gwen had similar thoughts: "I think, by and large, the research arena is the place where you gain the most respect." She explained that in addition to her teaching, she engages in more research than is required because she feels she must be fully respected by her colleagues in her department and overall field.

Molly, who has 50 percent research appointment believes her work is unfairly evaluated the same as her full-time research counterparts. She said that her research expectations recently increased after a shift in appointment structure, and she is unable to fulfil these expectations in conjunction with her high teaching load. She remarked: "...then after the shift, it felt much more like everybody had to build a portfolio on research and essentially research alone..." In various cases, despite no formal appointment structure, participants expressed they were expected to perform all three duties: research, teaching, and extension. In Charlotte's case, there are no distinct appointment splits, everyone is asked to do a bit of everything. Although she has been informally praised for her commitment to service, which she personally values, she has also been discouraged to continue engaging in it, saying: "...they wanted to kind of encourage me to spend a large amount of my time on research because that's what's valued in my department." Despite being encouraged to refocus her efforts, as a junior faculty member, she is constantly being asked to engage in activities that can only be classified as service. It seems that women perceive research is valued above all other activities, despite that success in research may not be the biggest strength that all women bring to their unit. Rather, teaching, mentoring, advising and service, though

not recognized as formally as research, may be greater strengths. Lack of recognition for these activities and unclear expectations regarding workloads and appointment splits contribute to feelings of frustration and stress impacting their attitudes and behaviors.

Recognition. Recognition goes beyond personal edification; it is used as a metric for success during the T&P process. This component of evaluation is an essential element in organizational logic. These processes can lead to gendering organizations when women are not being recognized comparatively to their male colleagues. Molly does not believe faculty members who are involved in a lot of service are recognized. She shared:

I do perceive some challenges in the sense that I think the men, on average, in the college are much better aligned with what the college's mission has...or how the deans have defined the college mission. And so, I feel like that makes their work much more valued in a lot of dimensions than what women are doing.

Molly's highlights how men's productive activities (e.g., research, grantsmanship) are more in line with how the institution values the work of faculty. The inherent higher value on those outputs and how women and men engage in those activities can further gender organizations.

Madison, Jane, and Gwen also felt their work was undervalued and went largely unrecognized. When recognition is given, it sometimes comes in the form of informal praise. Charlotte has been informally praised for service and thinks it is valued within her unit, despite being told that too much service is detrimental to her research. Similarly, Linda perceives that mentoring activities are not rewarded in the same way as publishing articles and receiving grants. Clara said her service has been praised informally by her chair but expressed displeasure with the fact that this does not "count for anything." As senior, tenured faculty, both Linda and Clara believe the reward structure in academia is misaligned with what women do and deem important.

A few women spoke about receiving criticism rather than praise. Charlotte said she has received negative feedback for her research; she feels she has to reach outside of her unit for research encouragement. Kelley thinks that saying "no" when she doesn't have the capacity to do something sometimes comes across negatively on her evaluations. She also perceives differences in criticism based on discipline, with hard sciences receiving less criticism. Charlotte and Riley both said they perceived criticisms are equal between male and female faculty

members, although Riley, coming from a department with both hard and social scientists, has heard more disciplinary criticisms towards the social sciences.

Service was nearly always praised informally and yet is not valued in performance evaluations as much as research and teaching. Likewise, participants received more criticism than praise for their research and publication efforts.

Behavior. Interactions influence an individual's identity, how they see themselves, and how they present themselves to others. Some participants named differences in behavioral expectations between themselves and their male counterparts which affect their attitudes and behaviors. Charlotte thinks she acts in gendered ways in some spaces, and admitted, "I think even I have that kind of implicit bias under gender expectations and leadership." She recognizes that she sometimes praises men for having more traditionally feminine qualities while judging women when they do not exhibit them.

Several participants expressed how women were judged based behavior in their work environment. Riley thinks her male colleagues can get away with being aloof and unkind, whereas females are judged harshly when they are unfriendly. She said perceives that, "being a little aloof is somehow equated with excellent. And inaccessible means you're an excellent scientist because you're so busy doing your science." Gwen also said she thinks there are biases that arise when a woman behaves in an aloof or straightforward manner:

I suffer a little bit because I am extremely upfront. So I don't mean to be confrontational. But I do like to be transparent, and say, "Hey, I don't think this is working." And that is pretty much a no-no. And the immediate response is, "Well, she's just really emotional, or whatever"...

Women in leadership were also criticized. Brianna discussed the negative views of male colleagues in her unit toward their female unit leader, though she pointed out that they did not express their views directly:

And they did not want [current unit leader] to be chair just because she's a woman. They didn't frame it that way, of course, because, well, that would be political suicide, but they made it clear that they did not want [her] to be the chair.

Instead, they expressed that the leader was not strong enough to battle administration, presumably because she is too emotional and reactive. As a senior faculty member, Brianna expressed that she feels

she must act differently around her colleagues. She thinks she has to be more stoic than normal to not appear overly emotional. She said, "...outside of the conference room, I have to dial it way back or I get the sideways eyes. 'She's clearly unhinged, or imbalanced, or whatever'". Similarly, Clara mentioned that colleagues are not the only ones to hold expectations of women; students also hold different expectations for male and female instructors in the classroom. These expectations were demonstrated through low teaching evaluations and comments left by students about their female instructors. These interactions are significant in perpetuating the gendering of organizations (Acker 1990).

Gendered Environments from Academic Unit to Professional Society

Another finding among participants was the work environment and how it influences their professional identity creation and performance. For many, the importance of one's unit culture and climate, gendered ranks and specialties, and the greater professional culture were cited as aspects influencing their work-livelihoods.

Unit culture and climate. All women described aspects of their unit's culture and how it has influenced their identities and behavior as faculty members. Several women who perceive a positive unit culture attribute it to supportive faculty. Nicole specifically spoke to the positive environment in her unit: "It's always been very outspoken, and everybody's always been so supportive and so cheerful about other people's achievements. That was really a positive thing coming in". Linda, a senior faculty member, and Charlotte, a junior faculty member, each said they appreciated the cohort of new faculty with whom they were hired. They both felt their cohort supported them in being successful. Charlotte also discussed the struggle of finding a community in academia:

So just getting to know the community, finding that space, has been so hard, and I don't find it in the department. I have to find it somewhere else. I do not get that from my department except that I would say there's a good junior faculty cohort. Without that [sic] I would be lost.

Multiple participants shared examples of overt comments and experiences of bias and discrimination still occurring in their profession and immediate work communities. Gwen shared a story about how a male colleague commented on her receiving a grant that no one in her lab had previously received: "There had been nobody else in the lab that had gotten it, and I was the first woman in the lab. And

he said, ‘You just got that grant because you’re good looking.’” This type of interaction devalued the accomplishment and gendered the interaction.

Conferences and professional settings are also not without gender bias. Brianna spoke about the behavior of a group of colleagues she referred to as the “good old boys club” during professional conferences. She said:

And, yeah, I mean, lots of what they say, especially when they’re drunk, it’s sexist, it’s racist, it’s discriminatory, it’s obnoxious, but that gives me insight into what’s really going on in their heads and, of course, that influences how I act with them when they’re sober, too...

Despite differences in the recency of events, age, and rank of the women who shared them, it became clear through the interviews that instances of overt gender bias and discrimination in operating units influence the identities, experiences, and behaviors of women.

Some aspects of unit culture and climate were not as clearly biased towards women and men, rather they presented the dynamic of family/married and no children/single. This dynamic is complicated creating divisions between faculty with familial obligations and those without. Becoming more family centered does not necessarily equate to feminizing the unit. Madison feels her unit promotes a family-centered environment, though she notes that most male faculty are married with kids while most females in her unit were unmarried without kids. This family-centered culture was good for faculty with families but alienating to faculty without them. Nicole, for example, felt that her unit greatly respected her time off during maternity leave; she felt her parental identity was supported. However, the perceived value for faculty with/without children differed amongst some of the junior and senior participants. For example, senior faculty member Linda perceived the family-centered culture in her unit increased the value of family in the department: “...as we did get more women, I think we did become more family-centered.” On the contrary, other senior faculty, Linda and Molly, each commented that unit cultures sensitive to family obligations meant expecting less from faculty members with children. They both also said that they feel people ask more of them because they perceive they have “nothing else going on”. Charlotte concurred saying: “It’s almost like I have less license to have things happening in my life if I’m not a parent.” The work tasks do not lessen; they are just redistributed to those who are assumed to have more time perpetuating the concept of the “ideal manager.”

It was clear from the interviews that the unit's culture plays a significant role in shaping the experiences, attitudes, beliefs, identities, and behaviors of our participants. Unit leaders were also seen to directly impact the participants' perceptions of work culture. Clara and Riley both spoke positively about their female unit leaders. Clara believes her unit leader creates a positive culture through recognizing and valuing people in the department. Riley said having a female unit leader makes her more comfortable as a woman in her department and feels her department chair values service supporting her engagement in those efforts.

On the other hand, more participants described negative experiences with unit leaders. Molly believes her unit leader contributes to a negative culture for women through actions such as brushing off comments from other faculty about the burden of completing mandatory sexual misconduct training. Further, she expressed she would feel uncomfortable going to her unit chair with any issues, believing it could affect her tenure process.

Kelley said her current unit chair has had a negative influence on the culture of the department, stating he is not as open as previous chairs and does not recognize the importance of mentorship and support. Kelley felt her chair ignored her complaints about harassment from a male colleague "...when he did that, then I really shut down." Yet another woman, Brianna, said she is afraid to bring issues of discriminatory behaviors of other faculty members to her current unit leader because she does not want to damage any relationships or her own reputation. She also spoke of a former unit leader who directly caused her to consider walking away from her tenure track position. She said the atmosphere of the unit changed for the better after the leader left the position, observing, "...it's just incredible that one person can be that oppressive." These stories illustrated how interactions amongst the women faculty and their chairs were laden with aspects of power.

Gendered ranks and specialties. Not surprisingly, several participants discussed having small numbers of females in their unit as compared to males, especially at higher ranks and in certain specialties. Some expressed that a lack of female faculty in higher ranks, meant less women were eligible for leadership positions. Rank played a significant role in opportunities given to faculty. Other senior faculty described their experiences of being the first female hired in their department. However, recently more women are beginning to populate historically male dominated subdisciplines. For example, Madison sees gender splits between subdisciplines in her unit, with more men employed in [terrestrial landscapes] and more women in [water science and social sciences]. Riley said her unit is split by [dietitians] and [non-dietitians], which is also split by gender. She described the

[dietetics] profession as 90–95 percent female. Social scientists and [dietitians] in her unit were mostly female, while basic scientists were mostly male. When considering leadership roles in her unit, Riley considered two of the main leadership positions in her department: “Both of those are male basic scientists, and those two positions have switched between three different basic science males back and forth...since I’ve been here.” She shared second-hand accounts of comments made by basic scientists discrediting social scientists, intertwining gender and discipline, confounding the root of bias.

Culture of professional societies. Outside of the operating unit, the culture within the profession had a profound impact on the women. Participants discussed instances of gender bias, off-color comments, and discrimination present in their professional culture. Kelley, a senior faculty member, shared an experience of gender bias with the registration paperwork for a professional conference in her field. She once decided to invite her husband to the conference and described an embarrassing moment for them both: “So I register my husband, and then we’re there, and there’s a printout by the registration area. And here’s my name, and you go across, and there’s a column, wife. There’s his name.” Being one of very few women in the profession, she also described being elected to a committee leadership position when a male committee member commented: “You’re the first time we’ve had a division officer whose fingernails matched their outfit.” After she was promoted to full professor, she stopped going to these professional meetings due to the uncomfortable culture saying, “they just don’t get it.”

Throughout her professional career, Brianna has experienced bias from colleagues and others at professional conferences. While some organizations promote a positive culture for women, others do not. She said, “My biggest professional group, as a matter of fact, has not been very open door. This is very much the boys’ club, too.” She noted that at some conferences, clientele will gravitate towards her male colleagues for information, though she has more experience with the topics they are asking about. Brianna also mentioned that during the conferences, she is often introduced by her first name, while her male colleagues are introduced with the “Dr.” honorific. She expressed frustration at having her colleagues regarded with more esteem in these spaces.

The more junior faculty members shared fewer experiences of overt gender bias and discrimination, though some admitted the effects are still present. Molly and Gwen expressed the gendering of their professional organizational cultures, leading to disappointment and an unwillingness to engage in their associations. Clara said that there has been an

ebb and flow of progress in her professional society, but that she feels they have recently run into a wall of resistance with fighting intersectional battles. She described how award ceremonies look in her professional society:

It has been a huge uphill struggle right now with the awards ceremonies being a parade of old white guys, with an occasional brown guy. And it's not the diversity that's representative of the society at large and so we're actively working on that.

Whether overt or subtle, our participants provided several examples of how the culture of professional societies can be an uncomfortable space women scholars and practitioners in some fields as interactions amongst women and men can engender dominance and submission.

Conclusion and Implications for Colleges of Agriculture and Life Sciences

In this study, the experiences of women in CALS illuminate the successes and challenges they encountered in professional settings. Although there has been substantial progress in higher education, sexism has morphed into subtle biases and covert discriminatory behaviors which can be difficult to identify. Both the gendered expectations of academics and their environment influenced their ability to balance their duties and feel fully validated in their roles. Previous literature has suggested more female faculty engagement in service as compared to male counterparts (Goldberger and Crowe 2010; Hart 2016). Participants in this study supported this perception and felt it was partially due to perceived gender roles and differences in behavioral expectations.

The service aspect was not necessarily viewed as a burden. Several women expressed how service was both personally meaningful and important for the institution. Rather, the conflict occurred in how service work was valued in promotion and tenure and as a professional responsibility. The institutional culture of each LGU seemed to communicate the importance of research above all else, even though appointments were split in a variety of ways, with service and outreach expected as part of the faculty role. Although a clear line cannot be drawn from the devaluation of service activities and overrepresentation of women's participation, considerations for how this is both counted for promotion and tenure and how its importance is formally recognized are cultural conversations in which colleges of agriculture should engage. Further, the tripart mission that many colleges of agriculture and life sciences

theoretically still uphold should be revisited to address discrepancies in emphasis on research as competition and careerism, rather than research to support stakeholders.

Additionally, a higher value on teaching and outreach must be negotiated; recent research on student retention in colleges of agriculture points directly to positive interactions with faculty in the classroom and as a result of mentoring (Codallo et al. 2020). Additionally, Associate Deans and Academic Leaders in CALS overwhelmingly indicated the importance to promote and provide opportunities for faculty to improve their teaching to support student learning (DiBenedetto and Whitwell 2019). How these attitudes translate into creating a culture of teaching excellence, rewarding and recognizing teaching, and stressing the importance of teaching towards reaching promotion and tenure still seems to vary by institution and even units across institutions. A census of CALS, similar to the National Research Council profile of 1995, would benefit leaders and stakeholders in understanding the makeup of faculty and students, priorities related to the tripart mission, and value placed on faculty efforts.

Participants also discussed the differences in behavioral expectations between themselves and their male counterparts, cognizant of how they may be perceived by others. The need to appear friendly, not overly emotional, and balanced was evident in participants' interactions with colleagues and students. This reflects the broader societal gender norms of how women are expected to perform in both their familial and professional roles (Lester 2008). This increased sensitivity to other's perceptions may increase women's cognitive load in the professional space and more importantly, behavioral expectations can have deleterious effects on performance evaluations and leadership opportunities. Gender stereotypes create bias of women leaders expecting them to "take care" while men are expected to "take charge" (Hoyt and Chemers 2008), misaligning feminine characteristics with those of leadership positions. Further, student evaluations of teaching in higher education have consistently reflected gender bias with women receiving lower scores (Peterson et al. 2019). Drawing from both previous research and the experiences of our participants, this study offers opportunities for discussing gender bias more broadly in CALS. In addition, effort to increase the number of leadership roles for women as well as their visibility, addressing gender bias in evaluations, and augmenting evaluation criteria to reduce bias must be taken for the advancement of women in these colleges. Further, intersectional research is needed to better understand the experiences of women faculty of color, as cumulative disadvantage can occur through processes such as lack of culturally competent mentorship, implicit

discouragement to use family leave, and questioning competence and dedication to science based on race/ethnicity, gender and/or parental status (Kachchaf et al. 2015).

The environment of the academic unit, college, and professional societies all included gendered dynamics. The participants' rank ranged from assistant to full professor and time in the profession did seem to influence their perceptions of gender dynamics. Senior faculty noted more experiences of explicit gender bias and discrimination which occurred earlier in their career. However, despite not having experienced the same explicit bias, junior faculty still spoke to the enduring effects of male dominated disciplines. Professional societies in particular were slow to change in both their makeup and who was recognized for their research and contributions to the profession. Gender roles and expectations were visible and present in the different subdisciplines within units, often between hard and social sciences. They manifested in division within units and in professional organizations, resulting in negative attitudes and altered behaviors. Could it be that CALS are still inherently masculine spaces? A deeper look at the gender "make-up" of the units represented in this study shed a bit of light onto this hypothesis. Of the 11 units, all but one had more than 55 percent males on their faculty. Similarly, the number of male senior faculty was greater than the number of tenured women in 10 of 11 units. This dynamic was still present in the hard science units (pure, natural, or physical sciences) which make up approximately two thirds of all units in CALS. Five of the 6 hard science units had more male than women faculty; the other unit demonstrated an upward trend of female junior faculty.

Feminist scholars have argued that science has inherently masculine qualities that are considered superior such as objectivity, rationalism, and individualism (Brickhouse 2001) contrasting with social sciences that operates within a broader array of paradigms. CALS, being predominantly comprised of units conducting natural and physical science, are also male dominated. Thus, perhaps it is both the disciplines and the gender makeup of the faculty that uphold masculine structures.

Of particular interest to CALS, however, might be the influence of the unit leader and culture on everything from leadership opportunities for women to the division of labor. Participants discussed how rank and gender influence leadership opportunities in general, and how the departmental leader played a key role in this by either overlooking or promoting junior faculty and women. Further, unit leaders also set the tone in how seriously gender bias and inclusivity was communicated to the department. Although many departments were described as being family-centered, this seemed to present a paradox for some women.

Whereas women with familial obligations may be able to decline activities that take place after work hours, those without partners or children felt inclined take on those responsibilities. Despite the shifts in how work and family are viewed within units, the gendered dynamics of the ideal employee being free of familial obligations to distract from work (Acker 1990) may maintain gendered inequalities in the workplace in different ways. Women with children could be overlooked for opportunities under the assumption they do not have the capacity to fulfil them, whereas women without children could be overburdened with obligations that are not necessarily valued for career advancement.

Overwhelmingly, the power of unit leaders to shape culture was apparent in the participant responses and is an important consideration in efforts to reduce gender bias. Unit leaders have a significant role in creating feminine spaces or perpetuating masculine environments. Very few participants had female unit heads. However, those that did made expressed feeling supported and more appreciation for their work. Women in positions of leadership are still not the norm in colleges of agriculture and life sciences and several participants mentioned more opportunities for women were available at the university rather than at the unit or college level.

The onus of addressing how gender frames influence female faculty's professional experiences and career trajectory is on the leadership in CALS. Teaching about gender in courses, discussing gender at the unit level, naming gender stereotypes and gendered expectations, all begin the process of reducing the impact on women in this space. Furthermore, practices that are embedded at the institutional level must be interrogated to understand how structure reproduces gender inequality. Policies that value certain gendered work over others is detrimental to the success of women in tenure-track faculty positions. Maintaining traditional, institutionally valued work outputs and leadership may continue to drive talented women from the profession, reducing much needed diversity of thought, experience, and expertise. Academic institutions and success therewithin were never designed for women. However, that is precisely why change must occur. Changes to policies and norms that influence organizational culture are essential to support the success of women in academia.

References

- Acker, Joan. 1990. "Hierarchies, Jobs, Bodies: A Theory of Gendered Organizations." *Gender & Society* 4(2):139–58.
- Beatty, Bruce R. 1991. "Some Almost-Ideal Remedies for Healing Land Grant Universities." *American Journal of Agricultural Economics* 73(5):1307–21. <https://doi.org/10.2307/1242377>.

- Benschop, Yvonne and Margo Brouns. 2003. "Crumbling Ivory Towers: Academic Organizing and its Gender Effects." *Gender, Work and Organization* 10(2):194–212. <https://doi.org/10.1111/1468-0432.t01-1-00011>.
- Bird, Sharon, Jacquelyn S. Litt, and Yong Wang. 2004. "Creating Status of Women Reports: Institutional Housekeeping as 'Women's Work'." *NWSA Journal* 16(1):194–206. <https://doi.org/10.1353/nwsa.2004.0027>.
- Brickhouse, Nancy W. 2001. "Embodying Science: A Feminist Perspective on Learning." *Journal of Research in Science Teaching* 38:282–95.
- Britton, Dana M. 2000. "The Epistemology of the Gendered Organization." *Gender & Society* 14(3):418–34. <https://doi.org/10.1177/089124300014003004>.
- Ceci, Stephen J. and Wendy M. Williams. 2011. "Understanding Current Causes of Women's Underrepresentation in Science." *Proceedings of the National Academy of Sciences* 108(8):3157–62.
- Cho, Alyssa, Debolina Chakraborty, and Diane Rowland. 2017. "Gender Representation in Faculty and Leadership at Land Grant and Research Institutions." *Agronomy Journal* 109(1):14–22. <https://doi.org/10.2134/agronj2015.0566>.
- Codallos, Megan, Jackie Bruce, Katie McKee, and Koralalage S. U. Jayaratne. 2020. "Factors that Influence University Student Retention in Colleges of Agriculture." *North American Colleges and Teachers of Agriculture Journal* 64:134–9.
- Corbin, Juliet and Anselm Strauss. 2012. *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory* (3rd ed.). Thousand Oaks, CA: Sage Publications Inc.
- . 2012. *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory* (3rd ed.). Sage Publications Inc. Thousand Oaks, CA.
- DiBenedetto, Catherine A. and Ted Whitwell. 2019. "Associate Deans and Academic Leaders' Perceptions for Promoting Teaching Excellence in United States Colleges of Agriculture." *NACTA Journal* 63(1):13–19 (<https://www.nactateachers.org/attachments/article/2824/7.%20%20DiBenedetto.pdf>).
- Doucet, Andrea and Natasha S. Mauthner. 2007. "Feminist Methodologies and Epistemology." Pp. 36–42 in *Handbook of 21st Century Sociology* (Vol. 2), edited by C. D. Bryant and D. L. Peck. Thousand Oaks, CA: Sage Publications, Inc.
- Eagly, Alice H. 2007. "Female Leadership Advantage and Disadvantage: Resolving the Contradictions." *Psychology of Women Quarterly* 31(1):1–12. <https://doi.org/10.1111/j.1471-6402.2007.00326.x>.
- Eagly, Alice Hendrickson, Linda L. Carli, and Robert Zieger Labor History Collection. 2007. *Through the Labyrinth: The Truth about How Women Become Leaders*. Boston, MA: Harvard Business School Press.
- Eagly, Alice H., Steven J. Karau, and Mona G. Makhijani. 1995. "Gender and the Effectiveness of Leaders: A Meta-analysis." *Psychological Bulletin* 117(1):125–45. <https://doi.org/10.1037/0033-2909.117.1.125>.
- Ely, Robin J. and Debra E. Meyerson. 2000. "Theories of Gender in Organizations: A New Approach to Organizational Analysis and Change." *Research in Organizational Behavior* 22:103–51. [https://doi.org/10.1016/S0191-3085\(00\)22004-2](https://doi.org/10.1016/S0191-3085(00)22004-2).
- England, Paula. 2010. "The Gender Revolution: Uneven and Stalled." *Gender & Society* 24(2):149–66.
- England, Paula and Nancy Folbre. 2005. "Gender and Economic Sociology." Pp. 627–49 in *The Handbook of Economic Sociology* (Vol. 2), edited by N. J. Smelser and R. Swedberg. New York: Russell Sage Foundation.
- Fernandez, Marcos J., Allan D. Goecker, Ella Smith, Emma R. Moran, and Christine A. Wilson. n.d. "Employment Opportunities for College Graduates in Food, Agriculture, Renewable Resources and the Environment, United States 2020–2025." USDA National Institute of Food and Agriculture. Retrieved February 10, 2021 (<https://www.purdue.edu/usda/employment/>).
- Glaser, Barney G. 1965. "The Constant Comparative Method of Qualitative Analysis." *Social Problems* 12(4):436–45.

- Goldberger, Jessica and Jessica Crowe. 2010. "Gender Inequality within the U.S. Land-Grant Agricultural Sciences Professoriate." *Journal of Gender, Science and Technology* 2(3):334–60.
- Griffin, Kimberly, Kenneth D. Gibbs, Jr., Jessica Bennett, Candice Staples, and Tykeia Robinson. 2015. "'Respect Me For My Science': A Bourdieuan Analysis of Women Scientists' Interactions with Faculty and Socialization Into Science." *Journal of Women and Minorities in Science and Engineering* 21(2):159–79. <https://doi.org/10.1615/JWomenMinorScienEng.2015011143>.
- Guba, Egon G. and Yonna S. Lincoln. 1994. "Competing Paradigms in Qualitative Research." Pp. 105–17 in *Handbook of Qualitative Research* (Vol. 2), edited by N. K. Denzin and Y. S. Lincoln. Thousand Oaks, CA: Sage Publications, Inc.
- Gumpertz, Marcia, Raifu Durodoye, Emily Griffith, and Alyson Wilson. 2017. "Retention and Promotion of Women and Underrepresented Minority Faculty in Science and Engineering at Four Large Land Grant Institutions." *PLoS One* 12(11):e0187285. <https://doi.org/10.1371/journal.pone.0187285>.
- Hanasono, Lisa K., Ellen M. Broido, Margaret M. Yacobucci, Karen V. Root, Susana Peña, and Deborah A. O'Neil. 2019. "Secret Service: Revealing Gender Biases in the Visibility and Value of Faculty Service." *Journal of Diversity in Higher Education* 12(1):85–98. <https://doi.org/10.1037/DHE0000081>.
- Harding, Jamie. 2013. *Qualitative Data Analysis: From Start to Finish* (1st ed.). London: Sage.
- Hart, Jeni. 2016. "Dissecting a Gendered Organization: Implications for Career Trajectories for Mid-Career Faculty Women in STEM." *The Journal of Higher Education* 87(5):605–34. <https://doi.org/10.1353/jhe.2016.0024>.
- Heilman, Madeline E., Aaron S. Wallen, Daniella Fuchs, and Melinda M. Tamkins. 2004. "Penalties for Success: Reactions to Women Who Succeed at Male Gender-Typed Tasks." *Journal of Applied Psychology* 89(3):416–27. <https://doi.org/10.1037/0021-9010.89.3.416>.
- Henrik, Kleven and Camille Landais. 2017. "'Gender Inequality and Economic Development: Fertility, Education and norms.'" *Economica* 84:180–209. <https://doi.org/10.1111/ecca.12230>.
- Hesse-Biber, Sharlene N. 2014. "Feminist Research: Exploring, Interrogating, and Transforming the Interconnection of Epistemology, Methodology, and Method." Pp. 2–35 in *Handbook of Feminist Research: Theory and Praxis* (Vol. 2), edited by S. N. Hesse-Biber. Thousand Oaks, CA: SAGE Publications Inc.
- Hoyt, Crystal L. and Martin M. Chemers. 2008. "Social Stigma and Leadership: A Long Climb up a Slippery Ladder." Pp. 165–80 in *Leadership at the Crossroads: Leadership and Psychology* (Vol. 1), edited by C. L. Hoyt, G. R. Goethals, and D. R. Forsyth. Westport, CT: Praeger.
- Kachchaf, Rachel R., Lily T. Ko, Aприel Hodari, and Maria Ong. 2015. "Career-life Balance for Women of Color: Experiences in Science and Engineering Academia." *Journal of Diversity in Higher Education* 8(3):175–91. <https://doi.org/10.1037/A0039068>.
- Kelly, Bridget Turner. 2019. "Though More Women Are on College Campuses, Climbing the Professor Ladder Remains a Challenge." Brown Center Chalkboard. Retrieved February 10, 2021. (<https://www.brookings.edu/blog/brown-center-chalkboard/2019/03/29/though-more-women-are-on-college-campuses-climbing-the-professor-ladder-remains-a-challenge/>).
- Kleven, Henrik, Camille Landais, and Jakob Egholt Sogaard. 2019. "Children and Gender Inequality: Evidence from Denmark." *American Economic Journal: Applied Economics* 11(4):181–209. <https://doi.org/10.1257/app.20180010>.
- Lester, Jaime. 2008. "Performing Gender in the Workplace: Gender Socialization, Power, and Identity among Women Faculty Members." *Community College Review* 35(4):277–305.
- Ljungholm, Doina. 2016. "The Role of Work Organizations in the Social Construction of Gender." *Journal of Research in Gender Studies* 6(1). Gale Academic OneFile. Accessed July 16, 2021 (link.gale.com/apps/doc/A458550035/AONE?u=colu44332&sid=bookmark-AONE&xid=fef59334).
- Mason, Mary Ann, Nicholas H. Wolfinger, and Marc Goulden. 2013. *Do Babies Matter?: Gender and Family in the Ivory Tower*. New Brunswick, NJ: Rutgers University Press.

- McFarland, Joel, Bill Hussar, Cristobal De Brey, Tom Snyder, Xiaolei Wang, Sidney Wilkinson-Flicker, Semhar Gebrekristos, Jijun Zhang, Amy Rathbun, and Amy Barmer. 2017. *The Condition of Education 2017*. NCES 2017144. Washington, DC: U.S. Department of Education & National Center for Education Statistics.
- McGuire, Krista L., Richard B. Primack, and Elizabeth C. Losos. 2012. "Dramatic Improvements and Persistent Challenges for Women Ecologists." *BioScience* 62(2):189–96. <https://doi.org/10.1525/bio.2012.62.2.12>.
- National Research Council. 1995. *Colleges of Agriculture at the Land Grant Universities: A Profile*. Washington, DC: National Academies Press.
- O'Meara, KerryAnn, Alexandra Kuvaeva, Gudrun Nyunt, Chelsea Waugaman, and Rose Jackson. 2017. "Asked More Often: Gender Differences in Faculty Workload in Research Universities and the Work Interactions That Shape Them." *American Educational Research Journal* 54(6):1154–86. <https://doi.org/10.3102/0002831217716767>.
- Park, Shelley and Dakota Park-Ozee. 2021. "Gendered Divisions of Labor in the 21st Century Academy: Research, Teaching and Service." Pp. 375–95 in *International Handbook of Gender Equity in Higher Education*, edited by N. S. Niemi and M. B. Weather-Hightower. Hoboken, NJ: John Wiley & Sons Inc.
- Peterson, David A. M., Lori A. Biederman, David Andersen, Tessa M. Ditonto, and Kevin Roe. 2019. "Mitigating Gender Bias in Student Evaluations of Teaching." *PLoS One* 14(5):e0216241. <https://doi.org/10.1371/journal.pone.0216241>.
- Pfeifer, Heather L. 2016. "How to Be a Good Academic Citizen: The Role and Importance of Service in Academia." *Journal of Criminal Justice Education* 27(2):238–54. <https://doi.org/10.1080/10511253.2015.1128706>.
- Pololi, Linda, David E. Kern, Phyllis Carr, Peter Conrad, and Sharon Knight. 2009. "The Culture of Academic Medicine: Faculty Perceptions of the Lack of Alignment Between Individual and Institutional Values." *Journal of General Internal Medicine* 24(12):1289–95. <https://doi.org/10.1007/s11606-009-1131-5>.
- Pyke, Karen. 2014. "Faculty Gender Inequity and the 'Just Say No to Service' Fairy Tale." Pp. 83–89 in *Disrupting the Culture of Silence: Confronting Gender Inequality and Making Change in Higher Education*, edited by K. De Welde and A. Stepnick. Sterling, VA: Stylus Publishing.
- Ridgeway, Cecilia L. 2014. "The Persistence of Gender Inequality." Pp. 973–8 in *Social Stratification: Class, Race and Gender in Sociological Perspective*, edited by D. B. Grusky, and K. R. Weishaar. Boulder, CO: Westview Press.
- Saguy, Tamar, Michal Reifen Tagar, Daphna Joel, Saguy Tamar, Reifen-Tagar Michal, and Joel Daphna. 2021. "The Gender-binary Cycle: The Perpetual Relations between a Biological-Essentialist View of Gender, Gender Ideology, and Gender-labelling and Sorting." *Philosophical Transactions of the Royal Society B: Biological Sciences* 376(1822):20200141. <https://doi.org/10.1098/rstb.2020.0141>.
- Saldaña, Johnny. 2011. *Fundamentals of Qualitative Research*. New York: Oxford University Press.
- Sallee, Margaret W. 2012. "The Ideal Worker or the Ideal Father: Organizational Structures and Culture in the Gendered University." *Research in Higher Education* 53(7):782–802.
- . 2014. *Faculty Fathers: Toward a New Ideal in the Research University*. New York: State University of New York Press.
- The National Academies. 2006. *Beyond Bias and Barriers: Fulfilling the Potential of Women in Academic Science and Engineering*. Committee on Maximizing the Potential of Women in Academic Science and Engineering, National Academy of Sciences, National Academy of Engineering, and Institute of Medicine. Retrieved January 20, 2021 (https://www.ncbi.nlm.nih.gov/books/NBK9813/pdf/Bookshelf_NBK9813.pdf).

- Weisshaar, Katherine. 2017. "Publish and Perish? An Assessment of Gender Gaps in Promotion to Tenure in Academia." *Social Forces* 96(2):529–60. <https://doi.org/10.1093/sf/sox052>.
- Williams, Christine L., Chandra Muller, and Kristine Kilanski. 2012. "Gendered Organizations in the New Economy." *Gender & Society* 26(4):549–73. <https://doi.org/10.1177/0891243212445466>.
- Yin, Robert K. 2018. *Case Study Research and Applications: Design and Methods*. Los Angeles, CA: SAGE Publications Inc.