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Examining Privilege in Engineering Socialization Through the Stories of Newcomer Engineers

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ABSTRACT

Prior research has demonstrated that early career socialization experiences play an important role in career outcomes, including learning, performance, satisfaction, and retention. What is not yet well understood, however, is how the organizational socialization experiences of different groups of early career engineers vary and how such variation leads to different career outcomes. By examining the experiences of first year engineers, this article contributes new insights into factors affecting socialization experiences and draws attention to privilege as an important factor shaping engineering socialization experiences. The stories of negative interpersonal interactions experienced by first year women civil engineers are presented and used to glean forms of privilege that affect newcomer socialization. The primary forms of intersectional privilege identified stem from gender and race, with religion and nationality also shaping newcomer experiences. The stories are used to inform proposed additions to a model of engineering socialization.

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Introduction

Organizational socialization is

the process of moving from being an organizational outsider who is unfamiliar with the norms, procedures, and culture of a new organization to becoming an organizational insider who has working mastery of internal working norms, procedures, and culture of the organization.¹

The lens of organizational socialization focuses attention on new employees' (or newcomers') perspectives and how employees or newcomers respond and adjust to their new organizations and to organizational insiders.² Early career socialization experiences play an important role in career outcomes, including learning, performance, satisfaction, and retention.³ The other articles in this special issue evidence the importance of early career socialization as well.

Traditionally, much of the focus in organizational socialization research has been on information gathering and learning.⁴ However, in their research on engineering workplaces, Korte and Lin found that existing organizational socialization models and literature, with their focus on information gathering, did not accurately account for what they saw.⁵

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Figure 1. Korte's (2009) model of engineering organizational socialization. Source: Korte, 'How Newcomers Learn', 295.

Instead, they found that 'relationships are the dominant factor in socialization processes'.⁶ They explain:

The newcomers' need for information was obvious, but the emphasis they placed on camaraderie, solidarity, and a sense of belonging was striking... High-quality relationships with coworkers not only made the work enjoyable and fulfilling but also provided access to higher quality resources (information and learning)... [T]he quality of the relationships they were able to develop with others affected their efforts to find their place in the organization and learn about their work.⁷

Consequently, Korte created a new model of engineering socialization to account for his findings, which is depicted in Figure 1.

Even with this new emphasis on relationship-building, however, the varied socialization experiences that different groups may have in engineering workplaces have not been identified or discussed in socialization studies of engineering workplaces.⁸ Some research has focused on women's socialization into academia and other industries, but not into engineering organizations specifically.⁹ (How) do the socialization experiences of women differ from those of men? (How) do the socialization experiences of white people differ from those of people of color? What factors play a role in divergent socialization experiences for newcomer engineers? There is a pronounced gap in research that addresses such questions.

This lack of attention to the organizational socialization experiences of different groups in engineering is a problem for two reasons. The first is that we know from the broader socialization literature that gender and race shape socialization experiences. In fact, in other contexts, gender and race are key factors shaping socialization processes and two of the most influential dimensions along which newcomers and existing group members can differ.¹⁰

The second reason that gap in research is a problem is that we know from engineering workplace studies that women leave engineering careers at much higher rates than men early on in their careers. In the United States, nearly forty percent of women with engineering degrees leave engineering careers, and most who leave do so within their first five to ten years after college, which is significantly higher than the rate at which men leave.¹¹ Comparing women in STEM versus non-STEM careers highlights even further the need to explain these differences in retention rates. For example, a 2013 study revealed that STEM women leave their jobs at significantly higher rates than non-STEM women and that most STEM women who leave, leave for non-STEM jobs. In other words, they are not leaving the workforce altogether, but are switching to non-STEM careers.¹² A variety of reasons for attrition from engineering careers have been suggested; however, 'the existing body of research does not yet provide sufficient explanation regarding the departure of both men and women from engineering careers to support interventions in the workplace

to retain these individuals'.¹³ Further research is needed to understand the social forces and practices within engineering workplace socialization that lead to differential rates of attrition among early career engineers.

Therefore, the goal of this article is to bring previously unused lenses (described in the following section) to the study of engineering organizational socialization and address the questions: *What can the challenges of newcomer engineers tell us about socialization into the engineering profession, and how can those insights help us better theorize organizational socialization?* Using stories of newcomer engineers' challenges, I identify how forms of social privilege are at play in engineering socialization, and contend that those need to be accounted for in models of engineering socialization.

In the first section of the article, I review two concepts that can advance theorizing about engineering socialization. Following that, after describing the interview methods, I present stories from three women newcomer civil engineers. Primarily, the stories were responses to a question about the biggest challenge participants faced during their first year. Rather than presenting the stories as simply challenges for women, however, the goal is to highlight what can be learned about forms of privilege in newcomer socialization in engineering workplaces, which the Discussion section explores. The findings are then used to propose additions to an existing model of engineering socialization.

Concepts for advancing studies of organizational socialization in engineering practice

Interactional and intersectional gender

I begin by briefly noting three points about gender and how it is conceptualized in this article. First, gender is interactional. Interactional gender theory is one of the most important but under-explored theories in studies of gender and engineering.¹⁴ It recognizes that gender – as social structure that maintains the dominance of already dominant groups – is constructed and maintained through interaction.¹⁵ Thus, one of the ways we can examine gender as a process is by engaging interactional gender theories.¹⁶ Interactional gender theories emphasize the role that daily actions and interpersonal interactions play in gender construction and maintenance.¹⁷ Interactional theories point to everyday behaviors and interactions that are problematic and produce new explanations as to *how and why* gender operates. Regarding gender in the workplace specifically, Joan Acker's work stands out in naming and elucidating a 'gendered substructure' (re)produced through interactions on the job. The gendered substructure is (re)produced in both formal and informal interactions that 'belittle or exclude women', and can be complicated by sexuality.¹⁸ Acker explicitly connects interactional gender theory to gendered organizations by identifying a range of interactions that reinforce overt and covert sexism at work.

Secondly, in addition to being interactional, gender is intersectional, meaning that gender constructions and experiences cannot be understood outside of other facets of people's identities, such as race or ethnicity, socioeconomic status, and sexuality, which all bestow privileges in different ways.¹⁹ Intersectionality draws attention to the ways in which power and privilege flow to and from some groups of people, but not others, because of certain combinations of identities. For example, we know that African American women experience engineering/education differently from African American men, white men, and

white women, and that LGBTQ+ White and Asian women engineers have different experiences than LGBTQ+ Black women engineers, LGBTQ+ men engineers, and heterosexual engineers.²⁰ Understanding how intersectionality manifests in engineering organizational socialization, however, has not yet been examined.

Thirdly, it is important to re-center the concept of *gender* to reflect that it is not synonymous with *women*. The concept of *privilege* is useful here because it performs that function, moving us away from equating gender and women by turning attention to dominant groups, which, in the case of engineering, is white, middle class men. By including men and women in the study, and by using the data to problematize a gendered power structure operating through privileges, this work avoids some of the pitfalls of 'studying down' and treats gender as a system of power-privilege.²¹

Privilege

The sociological conception of privilege can be most simply defined as systemic, unearned advantages that accrue to individuals because they belong to certain groups. Privileges accrue based on one's status as a member of dominant groups. This notion of social privilege has been conceptualized as an 'invisible, weightless knapsack of unearned assets; special provisions that can be cashed in'²² with or without the knowledge or consent of the privileged person.²³ Further elaborating on how privilege functions, Johnson explains:

[P]rivilege generally allows people to assume a certain level of acceptance, inclusion, and respect in the world, to operate within a relatively wide comfort zone. Privilege increases the odds of having things your own way, of being able to set the agenda in a social situation and determine the rules and standards and how they're applied. Privilege grants the cultural authority to make judgments about others and to have those judgments stick. It allows people to define reality and to have prevailing definitions of reality fit their experience. Privilege means being able to decide who gets taken seriously, who receives attention, who is accountable to whom and for what. And it grants a presumption of superiority and social permission to act on that presumption without having to worry about being challenged.²⁴

Privilege is a complex, elusive, normalized, and often invisible (to those who have it) concept.²⁵ 'In fact, "one of the functions of privilege is to structure the world so that mechanisms of privileges are invisible – in the sense that they are unexamined – to those who benefit from them" (Bailey 1998, 112) ... Because privilege does not necessarily bring happiness and fulfilment, this will sometimes also be used to deny the existence of privilege'.²⁶

The elusiveness and invisibility can make it difficult to see and study privilege *directly*. It often needs to be conceptualized through indirect means. It is often easier to recognize discrimination and barriers than it is to recognize how privilege is operating.²⁷ In other words, there is a 'tendency for conversations about privilege to break down because discrimination seems less abstract and more visible, and therefore, easier to identify than privilege'.²⁸ Therefore, the goal of this article is to take instances of discrimination, bias, or inequity and reframe them in order to glean the privileges operating behind them. By making 'visible the normative power of the practices and processes to which'²⁹ newcomer engineers must conform, we can see who is advantaged by those practices and processes, what the advantages are, and how they function in relation to power. Privilege is inherently related to power because 'dominant systems of power work to establish and sustain particular advantages'.³⁰

The most commonly discussed privileges are dominant group privilege. In the US context, that means White privilege and male privilege. Less frequently examined privileges stem from religion, gender identity, sexuality, and class.³¹ Examples of White privilege include, but are not limited to: feeling welcomed and 'normal' in most public institutional and social settings; coming home from work meetings feeling 'somewhat tied in, rather than isolated, out of place, outnumbered, un-heard, held at a distance, or feared'; being able to take a job with an affirmative action employer without having co-workers suspect you got the job because of your race; being able to find people who are willing to talk about your career and give you professional advice; being able to 'worry about racism without being seen as self-interested or self-seeking'; and having your voice heard in a group in which you are the only member of your race.³² Examples of male privilege include, but are not limited to: being taken seriously as competent and knowledgeable,³³ feeling safe from sexual harassment and sexual assault in public spaces, receiving higher pay for equal work, typically having fewer childcare and household cleaning responsibilities (in heterosexual couples), being able to work and have children and not being thought selfish, less pressure to look physically attractive, rarely being seen as 'delicate', or 'emotional', being easily able to find other men in positions of authority to serve as role models, and usually having your voice being heard in group settings.³⁴

Like gender, these forms of privileges must be conceptualized intersectionally.³⁵ For example, they do not necessarily accrue in the same ways to men and women of color as they do to white men and women. They do not necessarily accrue in the same ways to white women as they do to white men. They do not necessarily accrue to LGBTQ+ women and men as they do to straight women and men. They do not necessarily accrue to Muslims as they do to Christians in the United States. Across differing contexts, various forms of privilege interact in complex, overlapping, and reinforcing ways.³⁶

Methods

Participants were recruited through national and regional civil engineering listservs, social media postings, and emails sent out by engineering faculty members. Twelve participants self-identified as women and six participants self-identified as men. Eleven self-identified as white, three as Hispanic or Latina/o, three as a combination of white and another race or ethnicity, and one as Black. The Black participant was originally from a different country, and the rest were from the United States. They worked in six different states at seventeen different companies and attended nine different universities for their undergraduate degrees. Seventeen had undergraduate degrees in civil engineering and one in environmental engineering. Four had completed or were pursuing master's degrees at four different universities. All participants worked in civil engineering positions in civil engineering companies.³⁷ At the time of the interviews, the majority of participants had been in their jobs for approximately one year, and a smaller number (approximately 1/3) had been in their jobs for between 1.5 and 2 years.

I conducted semi-structured interviews online in 2019.³⁸ I asked participants about first impressions of their workplace, the biggest challenges they had faced in their job, the most surprising thing about their jobs, how they thought their education had prepared them to do their jobs, the biggest change they experienced since starting their jobs, how they would describe the culture or environment of their workplaces, and if they thought

there was anything unfair or unjust about their workplaces. In a prior analysis,³⁹ I analyzed responses pertaining to the biggest challenges question through open coding to determine if any themes could be identified.⁴⁰ That analysis revealed that negative interpersonal interactions were only reported as the biggest challenge by women. While conducting that analysis, I found some of the stories particularly striking for what they revealed about gender and concluded they should be presented in their entirety. Methodologically, this article therefore draws on long-standing traditions of storytelling as a social science method.⁴¹ I selected three stories that each speak to a different form of privilege to reveal a range of factors influencing newcomer socialization. The names used in this article are pseudonyms, and the quotations were edited for readability by removing false starts and crutches of speech.

Stories of negative interpersonal interactions

Negative interpersonal interactions on the job were reported by four participants when discussing the biggest challenge they had encountered since beginning their job. Two of these interactions were with co-workers, one was with a supervisor, one was with clients. All of the participants who identified negative interpersonal interactions as their biggest challenge were women. None of the men participants discussed negative interpersonal interactions anywhere in the interviews. This is an important finding that would not have been possible without a comparative study that included men and women. The other types of challenges discussed varied widely and are presented in greater detail elsewhere.⁴² In this section, I present stories from three participants that highlight three different forms of privilege, which will be further discussed in the following section.

Before presenting the stories, it is worth reflecting on the implications of participants' status as newcomers. These are not stories accrued over the course of a long career; they occurred during early career engineers' first year on the job. On one hand, the very short time span in which they occurred suggests a certain level of prevalence. In other words, if these problematic interactions occurred so early on, how many more are likely to accrue over the course of a career? On the other hand, it may also be the case that newcomer status increases the ease with which dominant-group privileges can be exercised over them (i.e. non-dominant group newcomers may be more vulnerable). If the latter is true, then it adds another dimension that should be considered in intersectional studies of engineering workplaces – that of organizational insider versus newcomer. Moreover, it would suggest that newcomer vulnerability warrants further exploration as a cause of attrition.

Lisa

Lisa identifies as a white woman. She works at a large, international civil engineering firm in the southeastern United States. Lisa recounted challenges she faced regularly when working with clients, namely that they would not talk to her and/or not look at her. Even if she was the primary person working on their project, if a male engineer was at the meeting, even if it was his first day on the project, the client would only talk to the man. She summed it up as: The challenge is when the client doesn't respect women as thinkers, engineers, or decision-makers.

[Me:] What is the biggest challenge you've encountered since you began your job?

[Lisa:] This is cliché, but dealing with diversity is difficult because there is a severe lack of diversity in engineering. It's a male-dominant field ... So that does become a challenge when we have a client that doesn't necessarily respect women as thinkers and engineers and decision-makers. So that can be a challenge I face regularly depending on what we are doing.

[Me:] Are there specific examples you can share?

[Lisa:] Let's see. We were in a meeting and we happened to have a guy with us that day but he didn't really know what we were doing. He had just been brought on, and it was good for him to come to the meeting to catch up on what we had been working on. And there were a couple of guys [clients] that were on the other side that kept directing questions to the guy that we brought. And he just kind of looked around like 'I have no idea. Why are you asking me? Why don't you ask the project manager?' And at the same time, the same situation, some of the clients won't look at me in the face. They will talk to me, but not at me, like towards me, in my face, which is very strange for me. It's just like stuff like that.

Amy

Amy identifies as a White and Arab woman. She works at a relatively small, regional civil engineering firm in the southeast. Amy reported an instance of harassment, although she did not name it that. Another early career engineer 'hounded' her about going out with him and 'constantly' asked for her phone number. She turned down all of his requests, but he did not stop, and the harassment went on for several months, until a colleague intervened.

[Me:] What is the biggest challenge you've encountered since you began your job?

[Amy:] There was a ... um ... [pause], I don't know what to call it exactly. I mean it wasn't like a sexual assault or anything, but there was a time where I did kind of feel that someone was making some sexual comments at me. He was a new person, he was in his internship.⁴³ And so you know, he would always constantly try to invite me out to lunch, invite me out on the weekends you know. I told him I had a boyfriend, and then I had even gotten engaged when he was there and even that didn't stop him. So then he would comment a little on – because we were both Muslim, however I think he was a lot more conservative than I was, so he would make comments here and there like, 'Oh I saw you drinking water. You're supposed to be fasting right now'. Like, 'How dare you, that's awful, you're going to hell'. Ya, it was bad. You know, constantly ask me for my number, I wouldn't give it to him. Just kind of hounding me on a lot of stuff. But luckily, I think someone overheard it because I wasn't I guess strong enough at the time to go to my company and tell them 'hey, this is what's going on' because of course I didn't want to get anybody fired ... So they ended up firing him and then having a talk with me about how it's important to come and tell them what is going on because if no one says anything they will never know. So I'd say that was the hardest part even though that wasn't really engineering related, it was just a workplace issue.

[Me:] And so it only stopped because someone happened to overhear?

[Amy:] Ya ...

[Me:] And how long had it been going on for?

[Amy:] I want to say two months, but within those two months it got worse and worse, you know? Like at first I just thought he was being friendly, he wasn't really too pushy, but then it got to the point where every day he was at my cubicle like 'When are we going out? When are we going out?' So, ya ...

[Me:] It's interesting that women are sometimes more concerned about not getting someone fired than our own well-being.

[Amy:] Ya, I remember talking to the business manager and when I said it out loud I was like 'Was that really my thinking?' Like, ugh. Just looking back, I was like 'What?' So ya, it is sad sometimes how we rationalize it in our head.

After finding out about the harassment, no one in Human Resources or a position of leadership at the firm ever asked Amy any questions about what had happened. They simply told her he had been fired and said she should report such incidents in the future, but they never asked her for further details.

Helen

Helen identifies as a Black woman. She is not from the United States originally, and came to the US for college. She works at a large, international consulting firm in the northeast. Helen was confused and bothered by several interactions with coworkers. In one case, a man who sat near her would never speak to her, even though he spoke to other newcomer engineers who were white. In another case, a white woman co-worker made racist comments. Additionally, Helen spent her first morning of the job locked out of the building.

[Me:] Thinking back to when you first started, what were some of your first impressions of that company or workplace?

[Helen:] On my very first day when I came in my supervisor was out and I didn't get an answer on the phone when I called him to get into the building. And I had another number for a gentleman I'd been speaking with, but he was in a different office, and so it took like 30 minutes of waiting outside. So that was a little discouraging. I felt like no one expected me. And then I got in and an admin staff person, I think, took me around, and showed me my desk, and so for a while I didn't interact with anyone ... It was, I don't know ... ya, so my first day was not great.

Later in the interview, in response to the question about the biggest challenge she had encountered since beginning her job, Helen shared that:

I'm the only Black person in the organization [well there is another Black woman from a different organization temporarily in the office for a specific project] ... but just the social aspect of that has been difficult. It's a very diverse group, there are people from everywhere, but there is a loneliness with being the only black person. So that has been difficult. But I think that would have been true in a lot of places.

[Me:] Have there been times you think you have been treated differently for being the only Black women there?

[Helen:] Oh ya. Certainly. I wanted to mention this too as a challenge, but it is just a small situation, not an overarching thing. We sit in rows of cubicles, and in my row there is a particular gentleman who has to pass by my seat to get to his, but I worked there for many months and he never said 'Hello'. And then a few months in, there is another new hire and she is American ... and she sits right across from me, and then suddenly, he starts talking to her. He completely continues to ignore me; he never says 'hello', he never says 'bye'. I don't know ... I don't know. Well a few times I would say 'hello' but he would just divert his eyes. He just would never talk to me ... But this is just interesting, you know, I don't know why he won't talk to me. And the first time he ever talked to me, I was with her. And he was coming to talk to her, and he had to acknowledge my presence there, so I thought you know this is interesting. So him, and a few other people, but with him it stood out because we sit so close together he has to pass by my seat, and he never said 'hello' to me since I joined. And I still wonder why, you know? But there are small things like that and they happen repeatedly. And ya, you just kind of wonder, you know?

[Me:] Thank you for sharing that. Are there any other examples you'd like to share?

[Helen:] Oh man. [laughs] So many. Actually to be honest I think part of it is in my head because I'm also international, so I can't jump into the same conversations about sports and baseball and whatever. There's just no interest from me. So some of those conversations I avoid myself. And those conversations are crucial because otherwise you are talking about work, but when people are talking about more American things, I can't jump in, so that doesn't help.

But one other experience I had that felt isolating was one of my co-workers is kind of similar to me – she joined a year before I did, she is also international and has a Master's degree. And so she was similar to me, we were good friends, we were both new hires. And I found out after we interacted with each other that she had applied to some of the same [degree] programs I had applied to and hadn't gotten in. And we also both want to transition into another field later, so part of why we're close is talking about our future plans, and you know kind of sharing tips with one another, and she makes a comment and says, 'Oh, you'll get into that company and that school because you are Black. I will not get in'. And you know, it's funny, this was right after I met her. It wasn't too long into me being at the company, and she didn't know anything about me, about what activities I was in at school, what my GPA was, she had no idea about any of those things, but she felt comfortable making that comment. And that kind of surprised me ... She said it within the first months of knowing her. And that took me aback. I decided to ignore it, and we've continued to be friends, but little things like that will come up again and again. And we are not as close now because of these repeated comments. So ya, that's another one. Those two people and those two situations have been bigger stressors for me at work, among other things, but as far as interpersonal things go, those two relationships have caused me stress at the office.

Later on in the interview, when I asked if there was anything else that she thought was unjust or unfair about her workplace, Helen said:

The American girl that I mentioned earlier, she is very nice, her father is a leader in our industry, he has his own company, it's very well respected, and our industry is very small, so people know each other, so some of the older more tenured people have worked with him, they know who he is, so that also didn't help with that gentleman that I mentioned. So sitting next to her, or near her, it does not feel good when the managers are all coming in and saying good morning to her and asking her how her weekend was and just kind of walking by my desk. I can understand though that they know her and the family and everything, but that has not been a great experience for me ... So that has kind of felt unfair.

Toward expanded understandings of engineering socialization

Gleaning forms of privilege from the stories

Including both men and women in the study from which these stories came allows for comparative findings. As reported elsewhere, in their first year, both men and women newcomer engineers encountered many different challenges – from having to learn new technical content, materials, and industry norms, to adapting to high levels of interdependence, to more general adjustments associated with commuting and having to work forty hours per week year round.⁴⁴ However, for some of the women, there were additional layers of challenges to deal with because they were women, and/or Black, and/or not from the US, and/or Muslim. These layers need to be explicitly identified as part of the socialization process. They call attention to forms of privilege shaping socialization experiences, and they provide new insight into aspects of relationships that must be accounted for when developing understandings of socialization that are not gender-blind. The most notable forms of privilege that can be gleaned from these stories are: (1) presumption of competence,

(2) freedom from sexual harassment, and (3) sense of belonging and/or feeling welcomed. These are primarily instantiations of intersectional male privilege and white privilege.

First, presumption of competence as an instantiation of both a male and white privilege can be seen in Lisa and Helen's stories. In Lisa's case, clients spoke to her men colleagues rather than to her. They received the presumption of competence rather than Lisa. In Helen's case, her abilities were explicitly doubted by a colleague who was a white woman because Helen is Black, possibly combined with the fact that she is a foreign national.

Presumption of competence as an instantiation of white and male privilege is not limited to engineering contexts; rather it is a reflection of broader societal stereotypes. Gender roles, often also called *gender stereotypes*, are 'consensual beliefs about the attributes of women and men' that inform collective 'expectations associated with women and men'.⁴⁵ Research from social psychology and sociology shows that because of these collective beliefs, women's behavior and work are evaluated differently and judged on different criteria than men's. Certain traits and behaviors are widely associated with women and others (often opposing ones) with men. Men are perceived and expected to be more competent, agentic, dominant, and influential than women, and women are perceived and expected to be nicer, more communal, and more service-oriented than men.⁴⁶ The different competency perceptions and expectations associated with men and women mean both that women are expected and perceived to be less competent and that they have to prove and reprove their competency in different ways than men and meet higher standards.⁴⁷ Furthermore, because women are perceived to be less competent, they are expected to perform more poorly, and their performance and work products are evaluated more negatively.⁴⁸ One significant effect is that women must meet higher standards than men to get promoted.⁴⁹

Yet the findings presented in this article are a clear example of why the presumption of competence cannot simply be seen as male privilege. Helen's story reveals how it can manifest as white privilege as well. Indeed, just as research has demonstrated that presumption of competence is an instantiation of male privilege, it has also demonstrated how it is an instantiation of white privilege.⁵⁰ The same patterns of privilege that show up for men compared to women, also show up for white people vis-à-vis people of color. Clearly, then, presumption of competence can affect engineering organizational socialization in multiple, intersecting ways. These findings add to the small body of work that has discussed presumption of competence privilege in engineering contexts.⁵¹

Second, being able to go to work each day without the fear of sexual harassment is a distinct instantiation of male privilege. That is not to say that men never get harassed in the workplace, but it is far less common.⁵² Data on percentages of women who have been sexually harassed at work vary widely depending on context, demographic group, and data collection methods, but rates of between 24% and 35% appear to be common in the US, with higher rates for women in technical roles and lesbian women.⁵³ One meta-analysis found that the rate went up to 58% when 'potentially harassing' behaviors were included.⁵⁴ In Amy's case, her harassment experience marred what was otherwise a positive first year. Amy's story also reveals an intersectional facet of her experience. Her religion and her harasser's religion played a role. Because they were both Muslim, he harassed her not only to go out with him on a date, but also about being a bad Muslim for not following certain religious customs.

Recent years have seen a growing recognition of the importance and scope of sexual harassment in STEM workplaces. Women who work in fields dominated by men are more likely to be harassed than women who work in more balanced fields.⁵⁵ Perhaps most notable was the 2018 National Academies' report *Sexual Harassment of Women: Climate, Culture, and Consequences in Academic Sciences, Engineering, and Medicine*.⁵⁶ This report, which both compiled existing literature and presented new empirical data, revealed that over half of academic women in STEM had experienced sexual harassment. Furthermore, being a woman of color or an LGBTQ woman increased the likelihood of harassment and feeling unsafe at work.⁵⁷ More research has been done into academic STEM settings, but sexual harassment of practicing women engineers is also routinely documented.⁵⁸ As Wendy Faulkner explains: 'Being sexually visible brings the risk of predation. Most women engineers – unlike their male colleagues – have experienced unwanted flirting and/or sexual harassment from men colleagues or associates at some point'.⁵⁹

Sexual harassment can negatively affect career outcomes. Being harassed at work can decrease opportunities for advancement and carry financial costs for forced job changes and unemployment.⁶⁰ A meta-analysis of sexual harassment research concluded that:

Sexual harassment (SH) has been identified as one of the most damaging and ubiquitous barriers to career success and satisfaction for women... SH experiences are associated with negative outcomes such as decreased job satisfaction, lower organizational commitment, withdrawing from work, ill physical and mental health, and even symptoms of post-traumatic stress disorder.⁶¹

It is easy to see how decreased job satisfaction, lower organizational commitment, withdrawing from work, poor health, and PTSD could all affect early career socialization experiences.

Additionally, Amy's story highlights how gender norms, and possibly company policies and practices, affect responses to sexual harassment. Amy said she did not report the harassment to anyone because she wanted to protect the harasser. Essentially, she wanted to be nice and not get him fired. The cultural norm to be nice, or not difficult, was more powerful than the need to protect her own comfort and safety. Her company orientation included no discussion of sexual harassment or instruction that the company wanted incidents of harassment to be reported. Nor did any systematic instruction of this sort take place after Amy's experience. Wendy Faulkner has pointed out that 'Young women are often ill-equipped to deal with this effectively. One oilfield engineer was sexually harassed by a client early in her career; with the benefit of hindsight, she says, "I should have reported him, but I didn't have the confidence, or the support"'.⁶² Other research has found that it is common for women to not report sexual harassment in the workplace due to fear of retaliation or other negative consequences for themselves, which very often occurs.⁶³ Whatever the case, for a young, first year engineer, putting up with the harassment may be preferable to the imagined problems that would occur from reporting it. This reflects one way in which gender operates as relations of power in engineering workplaces. When sexual harassment does not reach formal decision-making processes, 'it is rendered invisible by the prevailing normative rules, or through the capacity of harassers – often male managers – to mobilize the cultural resources of the organization in their favour'.⁶⁴ The extent to which newcomers may be more vulnerable to harassment than insiders remains an open question in need of further exploration.

Third, feeling welcomed, included, and a sense of belonging at work is another form of privilege that is more likely to accrue to those in a dominant group. It can be thought of as a warm climate – the privileged side of the more commonly discussed chilly climate. In this case, Helen's stories can be seen as examples of white, American privilege, and possibly male privilege. Helen's stories highlight many examples of how those privileges shape differing socialization experiences. Helen was the only participant who reported anything like being locked out of her office on her first day, being ignored by co-workers, feeling 'lonely', and feeling out of place during informal socialization. None of the other participants reported experiencing anything like the chilly climate Helen experienced. In fact, when asked how they would describe their workplaces, most of the eighteen participants said some variation of 'friendly'.

Helen's stories are particularly revealing because of the contrast she witnessed between herself and her white, American counterpart, Ashley. According to Helen, Ashley experienced a warm climate, while Helen experienced a chilly climate.⁶⁵ They were both new, young, women engineers, but while co-workers were friendly and welcoming to Ashley, they ignored Helen. This contrast can be seen as an example of white privilege that resulted in the white woman having a different socialization experience. Specifically, the relationship-building piece of socialization was clearly quite different for these two women. Ashley also presents an opportunity to see other forms of privilege at work here. It appears that Ashley stepped easily into a sense of belonging because her family already 'belongs' in her industry. That is a significant privilege that combines elements of class privilege and social, cultural, and financial capital. It appears that Ashley takes these privileges for granted and does not recognize the roles they have played in her engineering pathway.

Intersectionality is built into Helen's stories. They contain various combinations of being a woman, being Black, and being a foreign national. In some instances, the ambiguity is built into these lived experiences, as well as how we can interpret them. For instance, we cannot know with certainty why her co-workers ignored her. Trying to make sense of why she was ignored, Helen repeatedly lamented 'I don't know'.

Lastly, Helen's stories highlight the importance of informal socializing at work and being able to participate in 'water cooler conversations'. Helen noted that such conversations were often about American sports. She attributed her inability to participate to the fact that she grew up in a different country. However, this could also be seen as a gendered phenomenon.⁶⁶ Being able to associate with people like oneself is a dominant group privilege.⁶⁷ It points to one possible level of differential socialization experiences and privileges that can contribute to different senses of belonging at work.

These stories counter the belief some have that women no longer face discrimination and harassment in engineering.⁶⁸ Ultimately, they reveal that for some newcomer engineers, privilege means not having to deal with the issues surfaced in these stories. Men's challenges were related to learning technical knowledge and norms of practice, and how to work interdependently.⁶⁹ Lisa, Amy and Helen faced those same challenges, but also had to navigate challenges related to not being seen as competent, being sexually harassed, being ignored by coworkers, not feeling like they belonged, and, in Helen's case, racist comments. Navigating the normative engineering workplace meant navigating these inequalities.

Accounting for interactions and clients

In addition to the need to account for privilege in any model of socialization, findings from this study also point to other modifications of Korte's model. Specifically, relationships with clients and specific interactions should be added. While clients exist outside of an organization, and therefore may not have been included in a model strictly about organizational socialization, Lisa's experiences with clients' not respecting her because she is a woman indicate that client interactions need to be accounted for in any engineering-specific model of socialization.

Additionally, while Korte added *relationship-building* within the work group to previous organizational socialization models, positing that it was key in the socialization of newcomer engineers,⁷⁰ it is important to go further and specifically include interpersonal *interactions*. While interpersonal interactions are certainly a part of relationship-building, they are not exactly the same thing, and there are several reasons for their addition to the model. First, in recognition of the fact that very specific negative interpersonal interactions were reported as some women's biggest challenges, and those interactions were actually the opposite of relationship-building (i.e. they undermined a potential relationship), it is important to name and include interactions as their own category, in addition to the (different, though related) category of relationship-building. Second, this is important for future studies. For instance, if a future study only asked participants about relationship-building within workgroups, it likely would not capture the kinds of negative experiences reported here. Third, specifically identifying negative interpersonal interactions connects the model to interactional gender theory, connecting a body of literature from gender studies with that of organizational socialization. It highlights the need to bring interactional gender theory to bear on organizational socialization because it is through interactions, in the first place, that gender is (re)produced. Lastly, Korte's work highlighted the importance of relationship-building *within* work groups specifically, but these stories highlight the significance of interactions *outside* of work groups and interactions that do not lead to relationship-building as well. In Helen, Lisa, and Amy's stories, relationship-building is not what happened, so naming only that phenomenon risks hiding the role of negative interpersonal interactions within and outside of work groups.

Connections to interactional and intersectional gender theories

Interactional gender theory focuses on how gender is an 'interactional accomplishment that requires ongoing signifying behavior'.⁷¹ When Lisa's client would only speak to the man in the group, despite his being unfamiliar with the project, it signified that the presumption of competence is a privilege given to men. When Helen's colleague told her that she would only get into the graduate program she wanted to get into because she was Black, it signified that the presumption of competence is not given to Black people, and it signified a relation of power in which white engineers can exercise a privilege to tell them so. When Helen's other co-workers would not speak to her, it signified that she did not belong in the group because she was a Black woman. When Amy's co-worker sexually harassed her, it signified her harasser's power to intrude on her 'feelings, thoughts, behaviours, space, time, energies' and body by treating her like a powerless object.⁷² Sexual harassment is 'primarily about men exercising power over women in inappropriate

ways that undermine, isolate, and degrade women'.⁷³ In Amy's case, the harassment was inflected with a religious component. The power relations in these interactions signify that women and people of color do not belong, are not real engineers, are less than and other than their white men peers, and do not have to be taken seriously as engineers.

Moreover, the fact that none of this is taken seriously as a problem for organizations to address evidences gender operating as a normative power structure. While the privileges discussed in this article are largely conferred by society in general, it is also the case that they are being reinforced in engineering firms. It could be otherwise. Engineering firms could be working to establish practices, norms, policies, and cultures that do not reinforce dominant group privileges. However, that is not what is happening in these participants' organizations.

Expanded organizational socialization model

With these stories, we can see some ways gender and race are key factors in the workplace relationships of early career engineers, and consequently in the socialization of engineers. We also see that negative interpersonal interactions at work are salient for women in their socialization experiences, and that interactions with clients can be an important factor. It is easier to build relationships when your interactions are not contentious, when your competence is not doubted, when clients and co-workers see you as an engineer, and when you are not being sexually harassed. It is easier to 'achieve social acceptance by the group'⁷⁴ when you are seen as one of the group, when the group believes in your competence, and when sexual politics do not have to be navigated. These advantages in turn affect what and how individual, informal, random, disjunctive and investiture socialization tactics must be navigated.⁷⁵ Learning and adaptation are easier when you only have to focus on the work, when you do not have to navigate sexual politics and harassment, when you do not have to do extra work to fit into norms of the dominant group in order to be welcomed, when you do not have to learn what to do when your competence is doubted, and when your identity as an engineer is reinforced. In other words, when 'clarifying and resolving role demands'⁷⁶ is simpler.

As noted, 'dominant systems of power work to establish and sustain particular advantages'.⁷⁷ In this case, the advantages listed above accrue primarily from whiteness and maleness and reinforce the dominance and legitimacy of whiteness and maleness in engineering. Newcomer engineers are socialized into relations of power wherein the subjectivities of whiteness and maleness have unearned advantages (i.e. privilege). Being white and being a man automatically positions a newcomer engineer as a member of the dominant group whose subjectivity has legitimacy and belongs as an engineer. On the other hand, these systems of power are (re)producing women's subjectivities as *less than*, as lacking legitimacy, as not belonging.⁷⁸

Therefore, socialization models need to account for these aspects of engineering socialization. Figure 1 presents Korte's model of organizational socialization for engineering. However, these processes do not occur against a blank backdrop. Instead, as depicted in Figure 2, which is my expanded model, they are colored by various forms of power-privilege and need to be understood through that lens. Specific interactions and clients also need to be accounted for. Thus, Figure 2 presents a proposed new model that builds on Korte's model of engineering socialization in these ways.⁷⁹

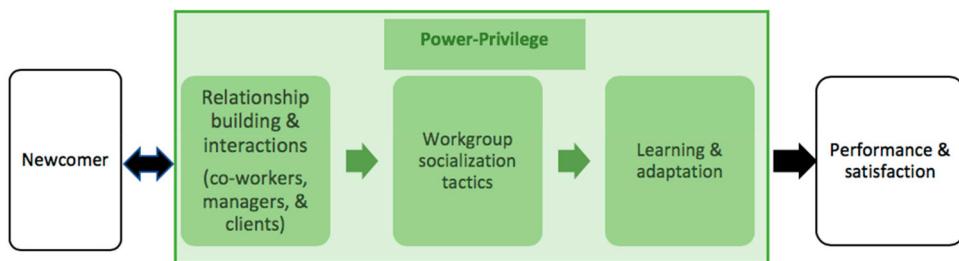


Figure 2. Expanded model of engineering organizational socialization.

The expanded model indicates that certain types of privilege accrue to make relationship-building, socialization, and learning and adaptation easier for some than others. The intersectional privileges latent in these stories (gender, race, nationality) identify reasons why some newcomer engineers may be more successfully socialized into the profession than others. The dominant forms of privilege evident in these stories (presumption of competence, freedom from sexual harassment, and sense of belonging) accrue from being a man and being white. Several other intersectional privileges are also suggested, however, namely nationality and religion. These are likely not the only forms of privilege shaping newcomer engineers' socialization, but they are the ones that emerged from this set of interviews. They are presented to begin efforts to better understand aspects of engineering socialization not previously studied.

Notes

1. Bauer and Erdogan, "Organizational Socialization Outcomes," 97.
2. *Ibid.*
3. Korte, Brunhaver, and Sheppard, "(Mis)Interpretations of Organizational Socialization," 188.
4. *Ibid.*; Korte and Lin, "Getting On Board"; Korte, "How Newcomers Learn," "First Get to Know Them."
5. A detailed review of prior organizational socialization models and features of engineering socialization that they miss can be found in Korte, "How Newcomers Learn."
6. Korte and Lin, "Getting On Board," 408.
7. *Ibid.*, 422–3.
8. E.g. Chao et al., "Organizational Socialization"; Korte, "How Newcomers Learn."
9. Clark and Corcoran, "Perspectives on the Professional Socialization"; Leggon and Barabino, "Socializing African American Female Engineers"; Sallee, "Performing Masculinity"; Tierney and Bensimon, *Promotion and Tenure*.
10. Hurst, Kammeyer-Mueller, and Livingston, "The Odd One Out"; Sacco and Schmitt, "A Dynamic Multilevel Model"; Tsui, Egan, and O'Reilly, "Being Different."
11. Fouad et al., "Stemming the Tide"; Glass et al., "What's so Special About STEM?"
12. Glass et al., "What's so Special About STEM?"
13. VanAntwerp and Wilson, "Difference Between Engineering Men and Women," 3.
14. Beddoes and Borrego, "Feminist Theory." See also Ettinger, Conroy, and Barr, "The Voices of Late-Career and Retired Women Engineers" for a recent treatment of gender as interaction.
15. Lorber, *Gender Inequality*; Minnich, *Transforming Knowledge*; Zalewski, *Feminism After Postmodernism*.
16. Beddoes and Borrego, "Feminist Theory"; Ettinger, Conroy, and Barr, "The Voices of Late-Career and Retired Women Engineers."
17. Fenstermaker, West, and Zimmerman, "Gender Inequality"; Lloyd, *Judith Butler*; Lorber, *Gender Inequality*; West and Fenstermaker, "Doing Difference."

18. Acker, "Gendered Organizations and Intersectionality," 216.
19. Beddoes and Borrego, "Feminist Theory"; Lorber, *Gender Inequality*; Slaton and Pawley, "The Power and Politics of Engineering Education Research Design." The term *intersectionality* was first coined and conceptualized by Crenshaw in 1989 to explain how Black women's experiences are marginalized compared to both Black men and white women.
20. Alfrey and Twine, "Gender Fluid Geek Girls"; Cech, "LGBTQ Professionals' Workplace Experiences"; Cech and Waidzunas, "Engineers Who Happen to Be Gay," "Navigating the Heteronormativity of Engineering"; Riley, *Engineering and Social Justice; SWE, A Compendium of the SWE Annual Literature Reviews*; Tao and Hanson, *Engineering the Future*.
21. *Studying down* refers to the tendency in some social science fields to predominantly problematize groups and individuals in positions of lower social status and power, while *studying up* means taking as a subject of inquiry those with greater social, economic, academic, or political capital, or powerful institutions more broadly. (Beddoes, "Institutional Influences that Promote Studying Down," 91.) See also: Beddoes, "Selling Policy Short?," "Agnostology, Gender and Engineering," "Men and Masculinities in Engineering"; Beddoes and Panther, "Gender and Teamwork."
22. McIntosh, *White Privilege and Male Privilege*, 1.
23. Middleton, Anderson, and Banning, "The Journey to Understanding Privilege," 295.
24. Johnson, "Privilege as Paradox," 117.
25. Ferber et al., *Examining the Dynamics of Oppression and Privilege*; Flood and Pease, "Undoing Men's Privilege"; Anderson and Banning, "The Journey to Understanding Privilege," 295; McIntosh, *White Privilege and Male Privilege*, "White Privilege."
26. Flood and Pease, "Undoing Men's Privilege," 4.
27. McIntosh, "Reflections and Future Directions," 204; Wildman, *Privilege Revealed*.
28. Case, Hensley, and Anderson, "Reflecting on Heterosexual and Male Privilege," 723.
29. Iverson, "Camouflaging Power and Privilege," 607.
30. Sefa Dei et al., *Playing the Race Card*, xii.
31. Case, Hensley, and Anderson, "Reflecting on Heterosexual and Male Privilege," 725.
32. McIntosh, *White Privilege and Male Privilege*, 4–7. A longer list of White privileges can be found here as well.
33. Franzway et al., "Engineering Ignorance"; Douglas, "Engineering as a Space of White Privilege."
34. Case, Hensley, and Anderson, "Reflecting on Heterosexual and Male Privilege," 732–3; Schacht, "Teaching about Being an Oppressor."
35. Case, Hensley, and Anderson, "Reflecting on Heterosexual and Male Privilege"; Ferber, "The Culture of Privilege"; Gutiérrez y Muhs et al., *Presumed Incompetent*.
36. Ferber, "The Culture of Privilege."
37. I chose civil engineering as the discipline of focus for this study because of my familiarity with the field, access to resources therein, and the relatively wide range of work that civil engineers perform, which allows for context comparisons (e.g. roadway design versus wastewater treatment), while also limiting the number of variables that would have come from including multiple disciplines in the study.
38. Singleton and Straits, *Approaches to Social Research*.
39. Beddoes, "First Year Practicing Civil Engineers' Challenges."
40. Charmaz, *Constructing Grounded Theory*.
41. Clandinin and Connelly, *Experience and Story in Qualitative Research*; Maynes, Pierce, and Laslett, *Telling Stories*.
42. Beddoes, "First Year Practicing Civil Engineers' Challenges."
43. The term 'intern' here is used for someone who has graduated college and is working as an 'intern engineer'.
44. Beddoes, "First Year Practicing Civil Engineers' Challenges."
45. Eagly and Karau, "Role Congruity Theory," 574.
46. Babcock and Laschever, *Women Don't Ask*; Biernat and Fuegen, "Shifting Standards"; Carli, "Gender and Social Influence"; Heilman, "Description and Prescription."
47. Biernat and Fuegen, "Shifting Standards"; Eagly et al., "Social Role Theory"; Foschi, "Double Standards in the Evaluation of Men and Women," "Double Standards for Competence"; Ridgeway, "Gender, Status and Leadership."

48. Babcock and Laschever, *Women Don't Ask*; Biernat and Manis, "Shifting Standards"; Heilman, "Description and Prescription"; Ridgeway, "Gender, Status and Leadership."
49. Biernat and Fuegen, "Shifting Standards"; Ridgeway, "Gender, Status and Leadership."
50. Gutiérrez y Muhs et al., *Presumed Incompetent*.
51. Prior scholarship discussing being taken seriously as a knower and the presumption of competence in engineering specifically includes Douglas, "Engineering as a Space of White Privilege," 40; and Franzway et al., "Engineering Ignorance," 101.
52. Faulkner, "Doing Gender in Engineering Workplace Cultures. II"; National Academies, *Sexual Harassment of Women*; Roberts and Ayre, "Did She Jump or Was She Pushed?"; Shaw, Hegewisch and Hess, *Sexual Harassment and Assault at Work*.
53. Ilies et al., "Reported Incidence Rates"; Shaw, Hegewisch, and Hess, *Sexual Harassment and Assault at Work*.
54. Ilies et al., "Reported Incidence Rates."
55. Wilson and Thompson, "Sexual Harassment as an Exercise of Power," 64; Shaw, Hegewisch, and Hess, *Sexual Harassment and Assault at Work*.
56. National Academies, *Sexual Harassment of Women*.
57. Clancy et al., "Double Jeopardy."
58. Faulkner, "Doing Gender in Engineering Workplace Cultures. II"; Roberts and Ayre, "Did She Jump or Was She Pushed?"; Williams et al., *Climate Control*.
59. Faulkner, "Doing Gender in Engineering Workplace Cultures. II," 177–8.
60. Shaw, Hegewisch, and Hess, *Sexual Harassment and Assault at Work*.
61. Willness, Steel, and Lee, "A Meta-Analysis," 127.
62. Faulkner, "Doing Gender in Engineering Workplace Cultures. II," 177–8.
63. Faulkner, "Doing Gender in Engineering Workplace Cultures. I and II"; National Academies, *Sexual Harassment of Women*; Wilson and Thompson, "Sexual Harassment as an Exercise of Power."
64. Wilson and Thompson, "Sexual Harassment as an Exercise of Power," 67.
65. *Warm climate* and *chilly climate* are my characterizations; Helen did not use these terms.
66. Mills, Ayre, and Gill, *Gender Inclusive Engineering Education*.
67. Douglas, "Engineering as a Space of White Privilege," 41; McIntosh, *White Privilege and Male Privilege*.
68. Ettinger, Conroy, and Barr, "The Voices of Late-Career and Retired Women Engineers."
69. Beddoes, "First Year Practicing Civil Engineers' Challenges."
70. Korte, "How Newcomers Learn."
71. Schwalbe and Shay, "Dramaturgy and Dominance," 161; West and Zimmerman, "Doing Gender."
72. Wise and Stanley, *Georgie Porgie*, 71.
73. Wilson and Thompson, "Sexual Harassment as an Exercise of Power," 61.
74. Bauer et al., "Newcomer Adjustment During Organizational Socialization."
75. As summarized in Bauer, "Newcomer Adjustment During Organizational Socialization," six dimensions along which socialization tactics vary have been proposed and studied: Collective vs. individual; formal vs. informal; sequential vs. random; fixed vs. variable progression times; serial vs. disjunctive (with or without the help of insiders and role models); investiture vs. divestiture (whether feedback affirms or disaffirms newcomers' identities). These dimensions were originally proposed by Van Maanen and Schein in "Toward a Theory of Organizational Socialization."
76. Bauer et al., "Newcomer Adjustment During Organizational Socialization."
77. Sefa Dei et al., *Playing the Race Card*, xii.
78. The notion that power is the creation of subjectivities comes from Foucault, *Discipline and Punish* and *The History of Sexuality, Volume I*. The term refers to 'a possibility for lived experience within a larger historical and political context'. It 'captures the possibility of being a certain *kind* of person, which, for the theorists who tend to use it, is typically a contingent historical possibility rather than a universal or essential truth about human nature'. (Heyes, "Subjectivity and Power," 159.)
79. This proposed model is expanded even further based on two additional sets of interviews reported in Beddoes, "Gender as Structure in the Organizational Socialization of Newcomer Civil Engineers."



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