Graduate student myths: interpreting the Ph.D. student experience through the lens of social media, memes, and stereotypes

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Abstract

In graduate student-oriented online spaces, students often portray themselves as miserable, depicting these negative themes through combinations of text and images called memes. Memes in this context are a symbolic language that is used to convey cultural ideas through established templates that draw from pop-culture media and various youth subcultures. Through this medium, graduate student share and process their experiences communally, using memes as a coping mechanism. Collectively, students tend to acknowledge that the culture around graduate school is bad, identifying excessive workloads, under pay, difficult advisor relationships, and an unhealthy glorification of "grind culture". However, less is known about how students navigate and respond to this culture.

In this work, we performed a mixed method study triangulating survey and structured interview data collected through an extracurricular student project. We investigated three key aspects of graduate school, particularly experiences with 1) work-life-balance, 2) imposter syndrome, and 3) burnout. To develop the survey and interview instruments, we developed a pool of memes and graduate student oriented advice columns then used thematic analysis to identify 9 thematic questions about the graduate student experience. For this work, the data set was abbreviated to consider only the 3 most salient topics. We found that students generally disagreed with the negative themes identified and that memes tended to exaggerate these features of graduate student experience. However, emergent themes of self-efficacy in our analysis demonstrated how student self-beliefs influenced their experience with mental health during graduate school. We also found that graduate students' perception of their experience is influenced by students' gender, nationality, and could influence student career trajectories. The results from our work highlight the ongoing concerns with graduate school culture, and how it can disadvantage certain groups. Further, this work can help identify student support mechanisms that can be instituted at the individual, program, and college level to promote student retention and mental health.

Introduction

Mental health has become a particularly salient talking point in institutions of higher education [1]. Graduate students are identified as a unique population in academic institutions distinct from staff and undergraduate students. They are notably subject to elevated levels of stress associated with research, teaching, and publishing responsibilities as well as high levels of uncertainty with regards to advisor expectations, financial security, and career prospects [2]. The excessive levels of stress and uncertainty around graduate school has contributed to a concerning mental health crisis, with one study identifying PhD students as nearly twice as likely to be experiencing psychological distress than highly educated peers in the general public [3]. In graduate student oriented spaces, negative aspects of academic culture are readily named and critiqued, especially through online communities and anonymous online message boards [4]. In these social media spaces, students' thoughts and experiences are often abstracted through *memes*, which are cultural artifacts that convey symbolic language through the combination of images, text, and cultural subtext [5].

As members of these online spaces, the two student authors on this paper wondered if graduate students are as miserable as they claim to be in these memes. This paper developed organically out of an extracurricular video interview project undertaken to answer that question and to debunk "myths" about the graduate student experience. While the memes inspired this study and were discussed in the interviews, the memes themselves are not the focus of the analysis. Rather, in this study we use a mixed method design to analyze the pre-interview surveys and interview recordings collected in the process of this student video project guided by these research questions-

> RQ1: How do senior PhD students and recent graduates understand their experience through the lens of common stereotypes about graduate student life?
>
> RQ2: How do these experiences differ between graduate students based on background, positionality, and career trajectory?

Despite the negative wording of the interview questions used in this study, participants overwhelmingly refuted negative stereotypes. Many of the participants identified personal contradictions to the "myths" and named support structures and proactive behaviors that help them circumvent the commonly attributed afflictions of over-work, imposter syndrome, and burnout. Furthermore, analysis of participant responses yielded self-efficacy as an emergent theme that correlated with positive language and behavior. It was found that participants who demonstrated aspects of high self-efficacy such as good self-esteem, proactive improvement of their environment, and help-seeking behaviors [6], [7] had improved experiences compared to those who did not engage in these behaviors

Literature Review

Graduate Student Mental Health

Graduate students, and especially science, technology, engineering, and mathematics (STEM) graduate students, are vulnerable to poor mental health conditions [8]. In a recent study, Evans and colleagues explored graduate student mental health through a voluntary convenience sample survey. Over 2,000 respondents from 26 countries and 234 institutions responded, revealing an overwhelming mental health crisis in the graduate student population [9], [10]. They report elevated rates of anxiety (41%) and depression (39%) in the sampled community, suggesting that graduate students are six times as likely to experience depression and anxiety compared to the general public. Likewise, students have not been passive in their dissatisfaction with the state of the academy. In recent years, student labor organizing [11], labor strikes, and general protest movements have become common reflecting the general themes of modern politics including the multiple epidemics of sexual harassment [12], [13], racism [14], [15], inflation [16], [17], and worker safety under COVID-19 [18].

The enthusiastic participation in crowdsourced mental health-related studies like Evans' and others [19]–[21] and increasingly vocal complaints among graduate student workers speaks to the need for cultural change in academic institutions. Kezar, DePaola, and Scott frame the

current academic job culture as fragmented and exploitative, identifying graduate student workers as subject to low pay, heavy workloads, uncertain job prospects, and vulnerable to racialized and gendered harassment [22]. Individuals' graduate student experiences are also impacted directly by identities including race, nationality, sexuality, and gender, which can negatively influence their reception and sense of belonging within higher education spaces that have historically been disproportionately white, masculine, and heteronormative [23], [24]. Despite these established institutional challenges, students do still survive and even thrive in graduate school, often citing social support structures, effective mentors, and national affinity groups [25], [26]. By studying students' perceptions of their experiences, we hope to better understand both the positive and negative aspects that contribute to graduate school experiences. With this knowledge, faculty and staff can work to mitigate the negative aspects and support the positive ones.

Memes and as coping mechanisms

Figure 1. Examples of graduate school memes sourced from the Facebook Group 'Gradschool Memes with Relatable Themes'. Images a, b, and c represent common meme template styles, and were respectively coded for overwork, imposter syndrome, and burnout.

Memes are a malleable language that use "templates" that hold collective cultural meaning to convey dense soundbites that can be adapted to particular cultural contexts [5]. Through adaptation of these normative templates, individuals can contextualize and convey their experiences within an established emotive framework and receive peer validation through a diverse currency of likes, hearts, retweets and shares **(Figure 1)**. In the graduate student context, both as process and artifact, the collective process of "memeing" can function as a cathartic airing of grievances that facilitates feelings of belonging, identity building, and coping for both the producer and the consumer [27], [28]. Moreover, social media and memes have been identified as an important medium through which minoritized graduate students, especially at primarily white institutions, can build social support, challenge racialized stereotyping, solicit advice, and practice self-care [28], [29].

Meme-producers often leverage techniques such as hyperbole, humor, and dark humor to exaggerate their lived-experiences in the quest for "relatability," likes, and retweets. While many individuals [27] including the present authors, have associated graduate school memes with feeling less alone in their programs and development of their identity as graduate students, these same memes may serve to perpetuate negative and unhealthy stereotypes. For example, common subject matter of graduate school memes include skipping sleep to perform school work, self-deprecating humor that features negative self-talk [27], and glorification of "grind culture," which prioritizes productivity and performative work ethic at the expense of social-life, mental and physical health, and other personal needs [30]. To this end, graduate school memes may reproduce a culture where students believe they *should* be overworked and *shouldn't* sleep enough to fulfill this mythic work ethic, regardless of direct external pressures to do so.

Self-efficacy

Self-efficacy is defined as a "[person's] beliefs about their capabilities to exercise control over their own level of functioning and over events that affect their lives" [6]. It is considered a central mechanism of agency and directly influences the amount of effort individuals are willing to expend on an activity, the extent of perseverance in the face of adversity and challenge, and attitude towards failure and subsequent resilience [6]. Pajares adds that the production of self-efficacy exists within the sociocultural system under which individuals are both influenced by and influential to their environments [7]. Notably, an individual's self-belief has been linked to their mental health both through their perceived potential and through fostered pursuit of support [6]. The relationship between mental health and self-efficacy—especially for graduate students, who are vulnerable to equating productivity with self-worth—is particularly relevant, as these self-beliefs directly reinforce behaviors that can either help (i.e., help-seeking, proactive goal setting, skill-acquisition) or hinder (i.e., social withdrawal, engaging in avoidant behavior, lowered aspirations) personal advancement and career prospects [6]. In this capacity, self-efficacy was identified as an emergent theme and subsequently coded for in the data.

The academic pipeline and graduate student attrition

The path through graduate school is neither straightforward nor logical, with many pushes and pulls that may advantage some and disadvantage others. Despite the depoliticization culture and socialization of engineering particularly among the STEM disciplines [31], [32], there is an undeniable link between a students' personal identities, institutional culture, the global political climate, and their lived experience in graduate school [33]–[35]. For decades it has been known that there is a graduate student attrition problem [36], with 24-35% of domestic engineering PhD students prematurely leaving degree programs [37] and an even higher rate at 43% for underrepresented groups like African American doctoral engineering students [38]. At the time of writing this even, I consider the goodbye-party I will attend this evening for a student prematurely leaving my partner's research group.

Beyond the degree completion stage, attrition in academia and STEM remains an issue, with only 48.5% of all US PhD recipients employed in academia in 2015 [39] and a further exodus from the STEM field as a whole [40], [41]. While there are many factors that influence an

individual's post-PhD career path, their PhD experience, and in turn, their gendered and racialized experience in academia are significant to decision making [41]–[44]. There has been substantial research done on the post-PhD career decisions of women, people of color, and international students, particularly with respect to staying in the academic careers [43]. Women particularly have reported leaving the academic path because of experience with and expectations of having to deal with latent sexism, discrimination when it comes to advancement, and work-life balance concerns around children and care duties [41], [42], [45]. Throughout their academic experience, students of color are also subject to constant stressors related to microaggressions and overt racism as well as varying levels of support from peers and advisors [44], [46]. Female-identifying people of color in particular experience a more intense intersection of the racialized and gendered experience [19][28][47]. Finally, international students in the US represent a large and diverse group of individuals who cannot be broadly generalized about. However, looking particularly at international students from Asia, students commonly report experiencing culture shock and surprise about US race-relations, often coming from more racially homogenous home countries [48]. Besides the academia-industry divide, this demographic of international students is also faced with the question to stay or return to their home country [49], [50].

In this paper we draw on these negative graduate student stereotypes to understand how they are embodied in the lived experience of 13 senior graduate students and recent graduates.

Methodology

Positionality

The authors are located at a research-intensive, Midwestern, historically White higher education institution. The first two authors experienced all of their higher educational training in this type of environment, which impacted their perspective. Both the first and second authors were senior STEM graduate students at the time of this study, which helped us gain a better rapport with participants, and allowed us to develop deeper insights into the topic. The first author is a white cisgender woman, and a domestic PhD student at her university. Her interactions with the culture and politics of academia has led her to activism centered on graduate student peer-mentorship and student union participation. She has generally had a good experience in her graduate school career, but still commonly experiences imposter syndrome. The second author is a Sri Lankan cisgender woman, and an international PhD student at her university. Coming from a smaller country, her community is not well represented in the university student body which, especially in her undergraduate years, led to observations of having less peer-support in navigating US systems (e.g. university, taxes, visas) than students from more well represented countries. She has now been in the US for the past decade and has acclimatized well to US culture but still deals with the consequences of that early social isolation. Both authors also have the shared experience of being academically isolated as sole graduate students in their respective research groups.

After the onset of the Covid-19 pandemic, the first and second authors started a YouTube channel about graduate student peer-mentorship with the goal of filling a niche that the widespread pandemic quarantining had created. Through conversations with other graduate students for the development of videos, they identified the importance of informal student

networking and how the physical isolation induced by the Covid-19 pandemic was interrupting access to these informal networks particularly for first and second year graduate students. The video project that evolved into this study was intended to archive senior graduate students' thoughts and experiences regarding common stereotypes about graduate school.

Pre-empting data analysis, the first and second author discussed assumptions and anticipated outcomes from the study in the context of our positionality to make our biases visible and prevent them from influencing the analysis. Discussion of personal bias within data interpretation was continuous and reflexive building on our shared experience within graduate degree programs and womanhood as well as our differences in culture, upbringing, and accumulative lived experience. Through cultivation of this reflexive knowledge, we developed deeper insights into the participants lived experiences and how that knowledge emerged [51].

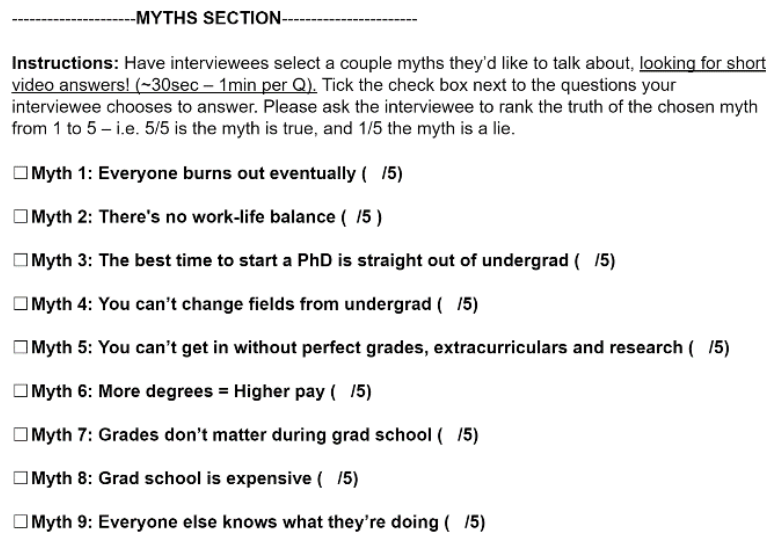
The third author is a White cisgender woman with research experience related to engineering graduate students' mental health. The fourth author is a White cisgender man with extensive undergraduate teaching experience and research experience in cognitive human factors during his Ph.D. and, since then, design-based engineering education research focused on mid-year engineering science courses. The third and four authors served as a point of triangulation, challenging the rigor of the data analysis processes and interpretation of the findings. All authors engaged in discussions about all research aspects of the study to confirm the validity of their interpretations of the articles, the findings, and potential implications. Having engineering graduate students and a faculty member in engineering as part of the study team gives invaluable insight into the culture of engineering students discussed and provided common ground to build rapport and trust with the participants.

Data and sampling

To answer the RQs, we analyzed data previously collected for use in an extracurricular YouTube video project pursued by the first two authors that was subsequently reconsented and approved by the University of Michigan Institutional Review Board. Data included structured interviews and a companion Likert-scale survey based around a set of "common graduate student myths". The myths assessed in the interview were developed through an analysis of memes and advice columns performed in November 2021. The intent of the original video project was to assess the validity of these identified "myths" with the target audience being individuals interested in graduate school and early career graduate students. This sentiment was conveyed to the interview participants, and therefore the interview responses took the form of both personal experience, anecdote, and advice.

The original combined survey instrument and interview questionnaire are presented in **(Figure 2)**. Interviews were conducted by the second author over Zoom between January and March of 2022. Participants were presented with 9 statements that they could opt to discuss within their 30-40 minute interview and the Likert scale survey was collected orally preceding each question they chose to answer. A 5-point Likert scale was used, with a score of 5 meaning that the statement was perceived as true and a score of 1 meaning that they perceived the statement as false. Due to the casual nature of the preliminary data collection, fractional responses were permitted (e.g. a score of 3.5), scores of 0 were also commonly provided, representing a

statement as *very* false and tended to be associated with charged emotions. Of the questions presented in **Figure 2**, only questions 1, 2, and 9 are analyzed in this study as they yielded the most interesting discussion in the interviews.



----------**MYTHS SECTION**----------

Instructions: Have interviewees select a couple myths they'd like to talk about, looking for short video answers! (~30sec – 1min per Q). Tick the check box next to the questions your interviewee chooses to answer. Please ask the interviewee to rank the truth of the chosen myth from 1 to 5 – i.e. 5/5 is the myth is true, and 1/5 the myth is a lie.

☐ **Myth 1: Everyone burns out eventually (/5)**

☐ **Myth 2: There's no work-life balance (/5)**

☐ **Myth 3: The best time to start a PhD is straight out of undergrad (/5)**

☐ **Myth 4: You can't change fields from undergrad (/5)**

☐ **Myth 5: You can't get in without perfect grades, extracurriculars and research (/5)**

☐ **Myth 6: More degrees = Higher pay (/5)**

☐ **Myth 7: Grades don't matter during grad school (/5)**

☐ **Myth 8: Grad school is expensive (/5)**

☐ **Myth 9: Everyone else knows what they're doing (/5)**

Figure 2. The interview and survey protocol, including all investigated statements used in the student video project. Questions 1, 2, and 9 are investigated in this study.

The study participants included 13 current senior graduate students and recent graduates (within 5 years of exiting graduate school) who pursued PhDs at 3 US universities in engineering (10), science (2), and social science (1) degree programs **(Table 1)**. Subjects were identified and invited to participate through convenience sampling that built on the first two authors' personal networks. As this was intended originally for a video project, participants were invited to present a diversity of experiences spanning academic disciplines, career paths, genders, ethnicities, nationalities, and the amorphous quality of having had a good or bad time in their graduate school experience. The participants included 5 current students, 4 graduated individuals working in academia, 4 graduated individuals working in industry, 6 female-identifying students, and 7 male-identifying students. Of the participants, 7 were US domestic students and 5 identified as international students from Asia (5) and Europe (1). Two of the participants reported terminating their PhD programs early.

Table 1. Participant table

Participant	Gender	Nationality	Career Position
Amy	Female	Domestic	Academia
Rohan	Male	International	Industry
Oscar	Male	Domestic	Academia
Faridi	Female	International	Current Student
Zahir	Male	International	Industry
Emily	Female	Domestic	Industry
Matthew	Male	Domestic	Industry
Paul	Male	Domestic	Current Student
Jay	Male	International	Current Student
James	Male	Domestic	Academia
Juliette	Female	International	Academia
Viridian	Female	International	Current Student
Cindy	Female	Domestic	Current Student

Analytical Procedure

The interview questions and survey instruments were developed through a two-pronged approach of analyzing memes and online media articles across a variety of platforms in November 2021. First, common social media platforms such as Reddit, Twitter, and Facebook were searched using keywords *graduate student* and *PhD* to yield content generated in the last several years. The first two authors analyzed the memes and message boards through the lens of their own PhD experiences, identifying recurring themes that expressed exaggerated negative emotions and appeared to resonate strongly through peer-engagement (e.g. likes, shares, retweets). Three emotionally-charged themes were consistently reoccurring including imposter syndrome, being overworked, and dealing with burnout. While these themes were in-line with the limited popular media portrayal of graduate students and also resonated with the authors' own experiences, the themes were acknowledged to be applied in a performative suffering for comedic effect and were thus reframed as myths for assessment.

Secondly, a google search of media articles using keyword phrase *graduate student myths* was carried out to identify more stereotypes as defined by broader society i.e. those not "in the trenches" of graduate school. The myths emerging from these searches focused more on practical problems such as the costs, benefits, and the ideal timeline of graduate school **(Figure 2)** while lacking a more in depth concern for the day-to-day experiences of graduate school itself [52]–[54]. This highlights the more practical concerns of prospective students and the 'transactional' way graduate school is viewed from outside of the academy. Six "myths" were sourced from analysis of these media articles and were included in the original surveys and interviews (**Figure 2)**. While these statements and the following interview discussions contained practical and relevant advice for prospective and early graduate students, these questions were excluded from analysis in the present study for a more concise focus on graduate student mental health.

Interviews

The interviews were conducted between January and March 2022 using the built in Zoom recording feature, and participants were provided the choice to turn off their web camera and choose a pseudonym. Two participants opted to not share video during their interviews. The second author conducted all 13 interviews to maintain consistency. The interviews were later transcribed in January 2023 using voice-to-text software, and the first author of the paper reviewed the transcripts for accuracy. Oral responses to the embedded survey were also tabulated. The survey data was processed in Microsoft Excel and broken down across categories of gender (female, male), nationality (international students, domestic students), and career (current student, academia, industry). For each of the three chosen interview questions and each demographic group, the average and standard deviation of the perceived truth scores were calculated. Within each of the 3 interview questions, a one-way ANOVA analysis was performed to identify any statistically significant differences between the demographic groups. No statistical differences were found between any of the groups for any of the questions, however, general trends are discussed. Throughout this work, data is presented using box-and-whisker plots, which visibly depicts the spread of data marking the 1^{st}, 2^{nd}, 3^{rd}, and 4^{th} quartiles, as well as the mean (as seen in **Figure 3**). In the box and whisker plots, the lines extending from the box are the "whiskers" marking the position of the 1^{st} (lower) and 4^{th} (upper) quartiles. The boundaries of the box are the 2^{nd} (lower) and 3^{rd} (upper) quartiles, the bisecting line is the median, and the "X" marks the mean. Data points not located within the extent of the whiskers are considered outliers to the data set. The absence of whiskers or a truncated box without a median line indicates a data set with low spread.

Data analysis was performed using thematic analysis and open-coding as outlined by Braun and Clarke (2006). The first two authors individually acquainted themselves with the transcripts and performed open coding before coming together to discuss findings. A codebook was constructed and further discussion was had to reduce and come to consensus on themes within each interview question. At this stage, self-efficacy [6], [55] was identified as an emergent theme. A second round of coding was conducted using Bandura's self-efficacy framework to synthesize the data of all the interview questions together to yield high level themes. After the second round of coding, the third and fourth authors of the paper reviewed the themes and provided further insights.

Limitations

There are some limitations in this study that must be acknowledged. The primary limitations stem from the organic development of the research study from a student passion project. Due to the casual nature of the project development, there was less control in the development of the survey instruments and participant selection process than would be present in an equivalent study developed for research. The data pool is also limited by low response rates for certain demographics in the survey due to the option to skip questions. All demographic categories had at least four individuals, but with response omission, some categories had response rates as low as two and three individuals which is not conducive to statistics. This study presents a surface level exploration of PhD student experience as it relates to individual self-reflection and hindsight.

Findings

Myth 1: There's no work-life balance

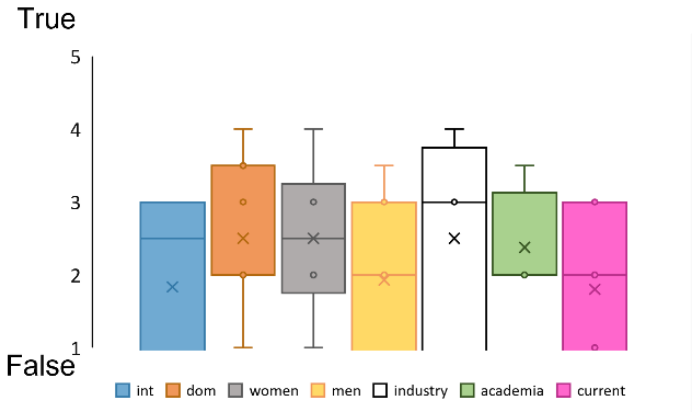


Figure 3. Visualization of survey responses to myth 1 'There's no work-life balance' broken down by demographic

An incredibly common theme in graduate student online discourse is work-life balance (WLB) and its lack thereof. In this study WLB is interpreted as a fair and reasonable allocation of time towards work and personal life as perceived by the individual. In memes, WLB typically arises in the form of overwork or guilt about not working. Meme creators often frame themselves as facing the difficult choice between sleeping, having a social life, and taking care of themself in the notoriously little free time that overworked graduate students have. Our findings suggest that students generally found this myth to be false **(Figure 3)**. Several participants noted a temporal aspect to their experience of WLB, particularly among international students, expressing the sentiment that "in the beginning, a lot of people take things very seriously, and they, they might want to put in a lot of effort and take a hit on your personal life" but eventually come to the conclusion that some kind of balance is required to be sustainable. Graduated individuals in industry also tended to report higher agreement with the statement suggesting that students who had negative experience with WLB in graduate school may be less likely to persist in the academy.

Every participant expressed the importance of having WLB regardless of if they felt they had achieved it or not. However, the way WLB was conceptualized, and the perception of who had control over a students' WLB differed considerably. Some spoke of WLB as something you have or don't have, especially framing their own experience with boundaries that dictated 'work time' and 'personal time'. For example, Jay, a father of two said "even if I [am] fully focused on my research, like after 6pm, I go back to my home . . . to play with my daughters." Amy also spoke about her strong work boundaries stating "I set out certain nights of the week that I was not going to work" to make space for religious practice and physical activity. Both Jay and Amy expressed confidence in their ability to be successful and productive graduate students despite setting hard boundaries on when the workday stops. Others still spoke of WLB as a long term equilibrium. For example, Juliette said "okay, you work crazy hours for an experiment . . . and then you say, yeah, now I need a break." Juliette also expressed WLB as a skill that has to be

learned - “for me, it was the case, [I had] to learn how to stop”, which was also commonly repeated by the other participants who noted that “it takes effort on your part to set those boundaries”, and that it is overall difficult to achieve.

However, some spoke about WLB as a more passive and luck-based thing that could be achieved under the right circumstances. While many spoke about the need for boundaries, highlighting the involvement of advisors in the process of carving out WLB, the acknowledgement of power dynamics in the relationship between student and advisor tended to differ especially between domestic and international students. Although this was not exclusive to international students, international participants were more likely to put the onus of WLB on external structures, with Viridian saying “I think it really depends on labs” referring to the lab culture and socialized work expectations, and Jay acknowledging that “it totally depends on you and also your PI as well . . . if your PI is like a micromanaging type . . . they never let you be in your home.” One participant, Emily, had a particularly bad experience in her PhD program, she stated that:

> I always felt like I had to earn the privilege of spending my time on things that didn’t directly advance my research project when I was in grad school. So if my research wasn’t going well, which it wasn’t at the time I ended up leaving, you [had] to cut out other stuff. And ultimately, that’s what hastened my decision to leave the program that I was in.

Emily shares her experience of being in a high-output lab group with a student-advisor relationship that made her feel powerless to institute the WLB she needed to succeed. She continued by saying:

> I came to this point where I realized that recovering from the burnout that I was experiencing - getting my mental health back on track - meant not returning to the same environment that had created the burnout in the first place.

Emily’s experience highlights the need for students to not only be comfortable and able to negotiate reasonable WLB, but also the need for advisors to have reasonable expectations and respect students to know what they need to succeed.

Myth 2: Everyone burns out eventually

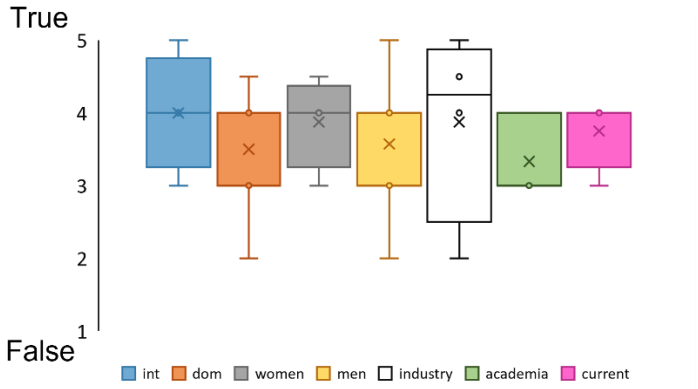


Figure 4. Visualization of survey responses to myth 2 'Everyone burns out eventually' broken down by demographic

The second myth deals with burnout, which is defined as "a prolonged response to chronic emotional and interpersonal stressors on the job" [56]. In the meme space, burnout is normalized both through direct textual reference to burnout and through pictorial representation and self-identification with visibly distressed characters linked with text describing graduate school experiences. Our findings suggest that most students perceived the myth that "everyone burns out eventually" to generally be true, with international students, women, and current students most likely to feel this way **(Figure 4)**. Rohan expressed his belief in the universality of burnout among graduate students and shared his definition of burnout when he said, "so there's going to be a point where each and every person feels as though they're not getting enough output for how much input they're putting in". Notably, two working definitions of burnout emerged in the interviews, with four participants identifying burnout as a cyclical *and recoverable* condition, and another four identifying burnout as terminal and something to prevent at all costs. These definitions were not necessarily mutually exclusive, with Matthew stating:

> I think the idea that everyone burns out eventually is untrue, because obviously people finish their degrees and succeed and go on to productive careers in academia . . . But at the same time, burnout is not necessarily something terminal, it is something you can experience and recover from perhaps if you're given the space to recover from it.

Participants on both side of this divide tended to focus on proactive behaviors aimed at preventing, reducing, and recovering from burnout. Several pointed to WLB and the need to pace oneself, noting that "they're in for a marathon and not a sprint" as well as the need for community support such as "friends and other PhD students, your advisor" and the courage to ask for help. Almost every participant directly expressed having experienced or approached a state of burnout at some point in their academic career. Speaking about the culture of burnout in academia, Emily said "in my experience, being burnt out or skirting dangerously close to burnout is sadly almost normalized." Cindy also added "so I think the truth of this is that it's really easy to burn out and a lot of people do, and I think the myth part is that it's like necessary- that it's a necessary part of grad school."

Myth 3: Everyone else knows what they're doing (but I don't)

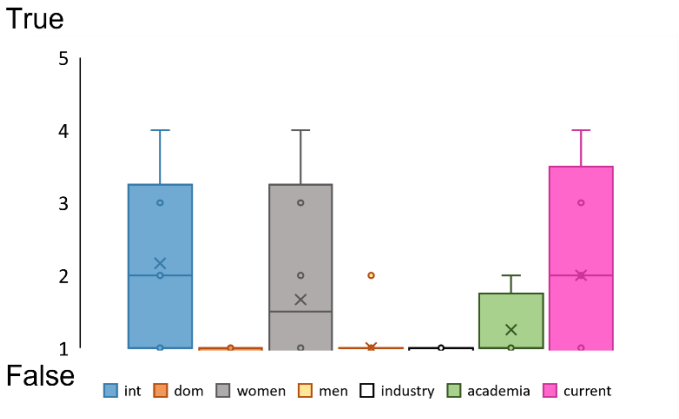


Figure 5. Visualization of survey responses to myth 3 'Everyone else knows what they're doing' broken down by demographic

Imposter syndrome for this study refers to a condition of self-deception where an individual feels inadequate to a task regardless of their proven qualifications [57]. Imposter syndrome provides a wellspring of memes and source material for anonymous graduate student anxieties online. In memes, like with burnout, imposter syndrome is expressed both directly and indirectly through a combination of words and pictures. In these memes, meme-creators and sharers commonly present negative self-talk expressing doubt in one's own accomplishments, belonging in academia, and quality of work, often under a lens of dark humor. To assess participants' experience with imposter syndrome, the combined survey and interview question was framed indirectly to probe this definition of imposter syndrome. We found that the statement that 'everyone else knows what they're doing' was overwhelmingly viewed as false, with several participants opting to break the survey system to give this a zero out of five truth value **(Figure 5)**. As with the other two myths investigated, both women and international students on average reported a more negative experience with the stereotype of imposter syndrome. Current students also reported an elevated level of self-reported imposter syndrome compared to graduated individuals' retrospective perceptions. In future work it would be interesting to investigate the influence of imposter feelings on student career ambition and trajectory. Interestingly, graduated individuals in academia reported higher levels of agreement with the statement than their industry peers, highlighting the persistent issue of imposter syndrome in the academy [58].

A prevalent theme in the interviews was the concept of facades and self-comparison, with three participants directly pointing to this idea that "in general, there's a lot of posturing in graduate school, everyone pretending that they know what they're doing, when they're all just equally confused." Viridian also pointed out that you don't necessarily know what is going on with other students - "for my own experience, the time when I feel like . . . everyone else is doing their things great . . . is because I don't know the topic very much." Regardless of if these facades are an intentional construct presented by other students, or a self-projected assessment of how another student is performing, several participants directly warned against self-. Many expressed the need to humanize their fellow graduate students through community building to break down these perceived walls of infallibility. However, it became clear that this professed awareness of

academic facades and the potential harms of self-comparison did not completely prevent self-comparison and protect the participants from experiencing imposter syndrome. In fact, the act of resisting self-comparison and dealing with the general uncertainties of life was identified as a constant even past graduation, particularly among those still in academia.

A fairly common experience that was shared in anecdotes from several participants was the idea of an inciting incident where an interaction with another student, often a more senior student, resulted in them realizing that "*nobody knows what they're doing.*" More broadly, most participants experienced a transition where they started from a position of seeing other students, particularly those more senior, as knowing everything, and ended at a position of acknowledging the acceptability of their own uncertainty. Interestingly, four participants in STEM disciplines linked the inherent uncertainty of research and the aspect of having to continually learn new skills to this aspect of general uncertainty, making visible the influence of research progression on self-esteem and mental health. However, while research progress, particularly lack of progress can negatively impact the mental health of graduate students, several of the students who made this connection expressed it positively as a form of permission to be uncertain since their work was inherently uncertain. Others also pointed to common sources of anxiety and uncertainty in graduate school including having to change research projects, balancing course work, and not knowing where funding is coming from.

The interviews with two of the current female students highlight how these themes occur under different circumstances. In Faridi's interview, she reported that:

> Like right now I'm in my fifth year in the program, but when I used to look at other fifth years, when I was in my first year, I would be like, oh, yeah, this person knows everything that they're doing. Like they must be like, so good at it. But yeah, that's like, that's not what I feel. As of right now, I still look at everybody else and I still feel that they know what they're doing, but not me.

Although Faridi immediately acknowledged that this feeling might just be in her head, it was still clearly a difficult topic to discuss. In contrast, Cindy's experience starts very similarly to Faridi's, but it ends substantially differently:

> Every time I think someone who's a more senior student than me knows what they're doing. I get to that year, and then I'm like, oh my God, what is happening?? [laughs] One of my like, distinct memories about this is, in my first year here, there was a fifth year in my lab who I really looked up to, and she, you know, I learned a lot from her, and she was kind of like a mentor to me, and we worked on the same type of research, researching like something called a hall thruster. And I remember I asked her at some point, some, you know, offhand question, and she turns to me, and like dead serious she said 'I don't know anything about hall thrusters'

In this comical anecdote, Cindy outlines an inciting event where she was able to humanize a senior student and learn that the aspect of 'not knowing anything' was okay and moreover, something that could be normalized and shared humorously.

Discussion

While all PhD students are subject to numerous expectations and obligations, the process of managing and reacting to those demands presents many chances for one to gain control over their condition. To better understand the cognitive processes at work, the framework of self-efficacy was applied to observe the participants' self-beliefs and perceived locus of control. Bandura proposed that "efficacy beliefs influence how people feel, think, motivate themselves, and behave", and that efficacy beliefs are enacted through four main processes including cognitive, motivational, affective, and selection processes [6]. By linking together the responses to the three interview questions to view perceptions of WLB and individuals' relationship with impostor syndrome as directly contributing to their experience and relationship with burnout, connections could be drawn between activities, beliefs, and outcomes. Overall, students who appeared to have higher levels of self-efficacy –as marked by positive self-talk, proactive behaviors, and perceived possession over locus of control in their experience– seemed to be more resilient to setbacks, more likely to impose reasonable WLB, had a higher self-esteem in the face of self-comparison with others, and were more likely to offer proactive advice around preventing *and recovering* from burnout.

A common point that every participant who demonstrated qualities of high self-efficacy brought up was the importance of community and communication. The ability to communicate with other students and advisors to set boundaries with respect to WLB, both in the context of dissertation work and group-course work, as well as the courage to ask for help were all identified as important skills that could improve the PhD experience. Friendship and camaraderie were also referenced as necessary 'resources' functioning as an external support mechanism, a source to learn from, and as an external point of reference for how to perceive oneself. While benchmarking oneself against others can certainly yield negative outcomes, in this context, many of the participants expressed instances of other students normalizing aspects of graduate school for them, which allowed them to better cope with their own negative aspects. These interactions often involved the sharing of vulnerable confessions ranging from perceptions of failing an exam, feelings of inadequacy, and being burned out, which helped to normalize the participants' own struggles and alleviate some of the negative emotions associated with failures and setbacks. Regardless of if the normalized experiences *should* be normal in graduate school, the communal sharing of vulnerability, especially when modeled by more senior students, was shown to calibrate the participants' expectations, and allow them to respond more effectively to their own experiences. Through these experiences, the participants not only demonstrate the application of high self-efficacy behaviors, but also make visible the social aspect of constructing self-efficacy [55].

Since the interview process was framed in the context of giving advice to new and prospective graduate students, the responses were often reflective in nature, leading participants to consider their experience over time. Often referring to their experience as a journey or a race, the participants consistently framed the graduate school experience as a more or less linear path, commonly delineating stages of just starting their programs versus a later point where they had learned better ways to navigate the graduate school experience. Simultaneously, the graduate school experience was also referred to as cyclical, with all of the 'mythical' struggles (i.e. work-life balance, burnout, and imposter syndrome) identified as consistent and recurring aspects of

graduate school that needed to be actively managed or maintained. While several of the participants displayed high self-efficacy behavior with regards to the investigated myths, they were not exempt from the purported cyclical nature of these common graduate school struggles, and neither were they exempt from experiencing the negative emotions associated with periods of overwork, burnout, or imposter syndrome. However, a distinguishing feature of those with high self-efficacy behaviors was an acceptance of the perceived cyclical nature of these struggles that contributed to the development of proactive work habits and help-seeking behavior to both prevent burnout and to recover from it. In this case, participants expressed developing skills through experiential and observational learning that allowed them to build resiliency and a feeling of forward momentum in their degree progress [59]. In contrast, participants who demonstrated behaviors associated with lower levels of self-efficacy such as reduced agency, self-deprecating comparison to others, and negative self-talk [6], tended to express negative feelings about their experience.

In spite of a student's best efforts to pre-empt and react to negative scenarios in graduate school, there are still a good deal of factors out of their control that impact their ability to access a positive experience [34], [60]–[62]. Several participants pointed to the advisor relationship as a source of uncertainty in their graduate school experience, naming aspects of work-expectations, funding, and stability of research projects. The student-advisor relationship has been identified as one of the most influential factors regarding graduate students' program completion and self-concept [63]. Although not all of the international students expressed these ideas, international students were more likely to use language that attributed locus of control to external entities whether it was an advisor or general lab culture. In these cases, participants spoke passively about their role in establishing WLB, ceding power and responsibility to an external agent. This loss of control seems to result from the lack of proactive behaviors such as discussing work boundaries and establishing expectations with advisors. In contrast, domestic students tended to display more confidence and comfort around setting boundaries with advisors, although it was acknowledged that discussions could be difficult, and that deadlines and work could expand into personal time. This difference likely stems from a combination of cultural differences regarding personal work expectations, cultural norms of engaging with superiors, and the vulnerable position of student visa holders [64], [65]. It is also noted that self-efficacy and self-esteem are highly valued traits in white American culture and are not necessarily valued or viewed the same way outside the US or even within affinity groups within the US [66]. Calibrating graduate school expectations and acclimating to the US academic education system are not exclusive demands of international students [67]. Based on a review of popular media treatment of graduate student concerns, the day-to-day problems that graduate students face are not readily apparent to those outside of academia or without intimate connections within. Therefore, a large proportion of in-coming graduate students are likely vulnerable to acquiring unreasonable expectations around WLB, metrics of success, and the emotional labor required [68], especially if memes and media are their primary source of information. Our study demonstrates the importance of informal graduate student networks for conveying information, calibrating expectations, and normalizing graduate school experiences.

Conclusion

Overall, this study shows that senior PhD students and recently graduated individuals generally expressed similar experiences with the stereotypical graduate student challenges of achieving WLB, managing burnout, and imposter syndrome, regardless of gender identity, international status, or career status. In the context of the interview questions regarding specific graduate student stereotypes, the general consensus was that 1) achieving work-life balance *is* possible, 2) Most graduate students will eventually experience burnout, and 3) *nobody* knows what they're doing in graduate school. There was, however, nuance to the answers collected in the companion qualitative data. While the survey data presents an aggregate response measuring the participants' experience over several years of a PhD program and reflected on from a point of hindsight, interview responses highlight individual moments and transition periods that both explain and contradict the survey responses. Participants who expressed behaviors associated with having high self-efficacy seemed to have a more positive attitude towards their graduate school experience than those who did not. High self-efficacy traits were more common among domestic students, which may be associated with more familiarity with US academic culture, the security of their citizenship status, and the valuation of self-efficacy traits in white American culture. We also observed a social component to the participants' self-efficacy, with many identifying discrete incidences where peers conveyed information both verbally and through modeling, that allowed them to learn new efficacy skills and become more resilient. As an exploratory study built on a student extracurricular project, there are many directions to develop future research. Key areas for future research include exploring support mechanisms to help early PhD students calibrate program expectations, and more research into the role of senior students in curating and conveying institutional knowledge through informal social networks. Finally, the results of this work reiterate the existence of systematic problems that many graduate students face on a daily basis. Recommendations based on the results of this work include funding and supporting student-lead affinity groups, establishing well-funded departmental peer-mentorship programs that encourage cross-cohort bonding for first year graduate students, and finally educating faculty advisors on mentoring best-practices and how to spot and support struggling students.

References

[1] S. J. Bork and J.-L. Mondisa, "Engineering graduate students ' mental health : A scoping literature review," *J. Eng. Educ.*, no. January 2020, pp. 665–702, 2022, doi: 10.1002/jee.20465.

[2] J. K. Hyun, B. C. Quinn, T. Madon, and S. Lustig, "Graduate Student Mental Health : Needs Assessment and Utilization of Counseling Services," *J. Coll. Stud. Dev.*, vol. 47, no. 3, pp. 247–266, 2022.

[3] K. Levecque, F. Anseel, A. De Beuckelaer, J. Van Der Heyden, and L. Gisle, "Work organization and mental health problems in PhD students," *Res. Policy*, vol. 46, no. 4, pp. 868–879, 2017, doi: 10.1016/j.respol.2017.02.008.

[4] "Gradschool," *Reddit*. https://www.reddit.com/r/GradSchool/.

[5] P. Davison, "The language of internet memes," in *The social media reader*, M.

Mandiberg, Ed. New York: New York University Press, 2012, pp. 120–136.
[6] A. Bandura, “Perceived Self-Efficacy in Cognitive Development and Functioning Perceived Self-Efficacy in Cognitive Development and Functioning,” *Educ. Psychol.*, vol. 28, no. 2, 1993, doi: 10.1207/s15326985ep2802.
[7] F. Pajares, “Self-Efficacy Beliefs in Academic Settings,” *Am. Educ. Res. Assoc.*, vol. 66, no. 4, pp. 543–578, 1996.
[8] S. Bork, N. Young, and J. M. Assistant, “Exploring the Relationship Between Culture and Science , Engineering , and Mathematics Graduate Students ’ Mental Health (Full Paper),” *ASEE*, 2022.
[9] T. M. Evans, L. Bira, J. B. Gastelum, L. T. Weiss, and N. L. Vanderford, “Evidence for a mental health crisis in graduate education,” *Nat. Publ. Gr.*, vol. 36, no. 3, pp. 282–284, 2018, doi: 10.1038/nbt.4089.
[10] T. M. Evans, L. Bira, and N. L. Vanderford, “Reply to ‘ A lack of evidence for six times more anxiety and depression in US graduate students than in the general population ,’” *Nat. Biotechnol.*, vol. 37, no. July, 2019, doi: 10.1038/s41587-019-0181-4.
[11] A. Kezar, T. DePaola, and D. Scott, “The Growth of Unions and New Broad- - Based Organizing Strategies,” in *The Gig Academy: Mapping Labor in the Neoliberal University*, Baltimore: Johns Hopkins University Press, 2019, pp. 120–143.
[12] H. Ott, “Hundreds protest campus sexual assault at universities across the U.S.,” *CBS News*, 2021.
[13] A. Thompson and R. Knott, “Students protest the continued employment of UTM professor found guilty of sexual harassment,” *The Medium*, 2022.
[14] E. Couch, “UTA community gathers to protest racism, call for social justice,” *UTA*, 2020.
[15] J. Valle, I. Ali, C. Bowen, and D. Riley, “Experiences of Engineering Students Participating in an Abolitionist Labor Strike,” *ASEE*, 2021.
[16] A. Binaykia and T. Miller, “NYU’s grad student workers will go on strike beginning Monday,” *Washington Square News*, Apr. 23, 2021.
[17] J. Salanga, “Nearly 50,000 University of California graduate student employees launch open-ended strike,” *CapRadio*, Nov. 14, 2022.
[18] C. Bowen, “Engineers on Strike : the University of Michigan Graduate Student Strike of Sept . 2020,” *Int. J. Eng. Soc. Justice, Peace*, vol. 8, no. 2, pp. 120–121, 2020.
[19] A. C. Arnold *et al.*, “Examining the Effects of STEM Climate on the Mental Health of Graduate Women from Diverse Racial / Ethnic Backgrounds,” *Am. Soc. Eng. Educ.*, 2020.
[20] D. Chakraverty, “PhD student experiences with the impostor phenomenon in STEM,” *Int. J. Dr. Stud.*, vol. 15, no. 1, 2020.
[21] C. Waldbuesser and A. M. Hosek, “Graduate Student Identity Salience and Mental Health,” *Ohio Commun. J.*, vol. 58, no. March, pp. 132–144, 2020.
[22] A. Kezar, T. DePaola, and D. Scott, “Employees in the Gig Academy,” in *The Gig Academy: Mapping Labor in the Neoliberal University*, Baltimore: Johns Hopkins University Press, 2019, pp. 36–75.
[23] L. Bowers, K. Harrington, R. Phelps-ward, T. C. Smith, C. Allen, and N. F. D’Souza, “#MyTruthMatters: Photovoice narratives of graduate students of color at a predominantly white institution,” *J. Ethnogr. Qual. Res.*, vol. 14, pp. 233–248, 2020.
[24] R. A. Miller and A. C. Smith, “Microaggressions Experienced by LGBTQ Students With Disabilities,” *J. Stud. Aff. Res. Pract.*, vol. 58, no. 5, pp. 491–506, 2021, doi: 10.1080/19496591.2020.1835669.

[25] M. Fernandez, J. Sturts, L. N. Duffy, L. R. Larson, J. Gray, and G. Powell, “Surviving and thriving in graduate school,” *A J. Leis. Stud. Recreat. Educ.*, vol. 34, no. 1, pp. 3–15, 2019.
[26] R. Phelps-ward, “Pictures of Health : Examining Well-being and Resistance of Graduate Students of Color,” *J. Stud. Aff. Res. Pract.*, vol. 59, no. 4, pp. 355–370, 2022, doi: 10.1080/19496591.2021.1943416.
[27] C. Papapicco and G. Mininni, “Impact memes : PhDs HuMor (e),” *Multimed. Tools Appl.*, vol. 79, pp. 35973–35994, 2020.
[28] S. Sharp and S. Sharp, “Conversation among black women graduate students : exploring social media self-expressions for the purpose of reclamation Conversation among black women graduate students : reclamation,” *Int. J. Qual. Stud. Educ.*, vol. 0, no. 0, pp. 1–21, 2022, doi: 10.1080/09518398.2022.2127026.
[29] O. Solmaz, “Transcultural Practices of International Students as Identity Performances in Digital Settings,” *Open Journals Educ.*, vol. 9, no. 2, pp. 276–300, 2020.
[30] P. M. Lee, “Introduction : Aspiration Burnout,” *MIT Press Direct*, no. October, pp. 3–6, 2021.
[31] E. A. Cech, *The (Mis)Framing of Social Justice: Why Ideologies of Depoliticization and Meritocracy Hinder Engineers’ Ability to Think About Social Injustices*, vol. 10. 2013.
[32] E. A. Cech, “Culture of Disengagement in Engineering Education?,” *Sci. Technol. Hum. Values*, vol. 39, no. 1, pp. 42–72, 2014, doi: 10.1177/0162243913504305.
[33] E. McGee, Y. Fang, Y. A. Ni, and T. Monroe-White, “How an Antiscience President and the COVID-19 Pandemic Altered the Career Trajectories of STEM PhD Students of Color,” *AERA Open*, vol. 7, no. 1, pp. 1–15, 2021, doi: 10.1177/23328584211039217.
[34] C. J. Mcvay, “Everything Changed : Experiences of International Students Affected by a Home Country Crisis,” University of Nebraska, 2015.
[35] L. McAlpine, I. Skakni, and K. Inouye, “Phd careers beyond the traditional: integrating individual and structural factors for a richer account,” *Eur. J. High. Educ.*, vol. 11, no. 4, pp. 365–385, 2021, doi: 10.1080/21568235.2020.1870242.
[36] C. G. P. Berdanier, C. Whitehair, A. Kirn, and D. Satterfield, “Analysis of social media forums to elicit narratives of graduate engineering student attrition,” *J. Eng. Educ.*, vol. 109, no. 1, pp. 125–147, 2020, doi: 10.1002/jee.20299.
[37] R. Sowell, “PhD completion and attrition: Analysis of baseline data,” Washington DC, 2008.
[38] R. Sowell, J. Allum, and H. Okhana, “Doctoral Initiative on Minority Attrition and Completion. Council of Graduate Schools. Washington, D.C.,” 2015. [Online]. Available: https://cgsnet.org/doctoral-initiative-minority-attrition-and-completion-0.
[39] L. Mcalpine and E. Emmioğlu, “Navigating careers: Perceptions of sciences doctoral students, post-PhD researchers and pretenure academics,” *Stud. High. Educ.*, vol. 40, no. 10, pp. 1770–1785, 2014, doi: 10.1080/03075079.2014.914908.
[40] J. J. Park, Y. K. Kim, K. Lue, and R. M. Parikh, “What’s Next? Soon-to-be STEM Graduates on Their Post-graduate Plans,” *Res. High. Educ.*, vol. 63, no. 8, pp. 1343–1367, 2022, doi: 10.1007/s11162-022-09685-9.
[41] M. Cabay, B. L. Bernstein, M. Rivers, and N. Fabert, “Chilly climates, balancing acts, and shifting pathways: What happens towomen in STEM doctoral programs,” *Soc. Sci.*, vol. 7, no. 2, 2018, doi: 10.3390/socsci7020023.
[42] A. Grönlund, “Having it all, or avoiding black holes? Career–family strategies and the

choice between leaving or staying in academia among Swedish PhDs," *Community, Work Fam.*, vol. 23, no. 5, pp. 576–592, 2020, doi: 10.1080/13668803.2020.1777090.
[43] E. McGee, "Fear, fuel, and fire!: Black STEM doctoral students' career decisions during the Trump presidency," *Int. J. Qual. Stud. Educ.*, vol. 0, no. 0, pp. 1–22, 2021, doi: 10.1080/09518398.2021.1930246.
[44] A. J. Jaeger *et al.*, "Push and pull: The influence of race/ethnicity on agency in doctoral student career advancement," *J. Divers. High. Educ.*, vol. 10, no. 3, pp. 232–252, 2017, doi: 10.1037/dhe0000018.
[45] C. Mavriplis *et al.*, "Mind the gap: Women in STEM career breaks," *J. Technol. Manag. Innov.*, vol. 5, no. 1, pp. 140–151, 2010, doi: 10.4067/S0718-27242010000100011.
[46] E. O. Mcgee, D. M. Griffith, and S. L. Houston, "'I know I have to work twice as hard and hope that makes me good enough': Exploring the stress and strain of black doctoral students in engineering and computing," *Teach. Coll. Rec.*, vol. 121, no. 4, 2019, doi: 10.1177/016146811912100407.
[47] L.-L. Chen, K. G. Claw, and S. Ramachandran, "A two-fold challenge: The experience of women of color in genomics," *Genome Biol.*, vol. 17, no. 1, pp. 1–5, 2016, doi: 10.1186/s13059-016-1075-0.
[48] Y. Huang, "Transitioning Challenges Faced by Chinese Graduate Students," *Adult Learn.*, vol. 23, no. 3, pp. 138–147, 2012, doi: 10.1177/1045159512452861.
[49] C. S. Lee, "Post-Degree Completion Plan of Chinese and Korean Graduate Students in STEM," *J. Comp. Int. High. Educ.*, vol. 11, no. Winter, pp. 131–134, 2020, doi: 10.32674/jcihe.v11iwinter.1550.
[50] M. Czaika and S. Toma, "International academic mobility across space and time: The case of Indian academics," *Popul. Space Place*, vol. 23, no. 8, pp. 1–19, 2017, doi: 10.1002/psp.2069.
[51] E. M. Banister, "Evolving Reflexivity : Negotiating Meaning of Women ' s Midlife Experience," *Qual. Inq.*, vol. 5, no. 1, pp. 3–23, 1999.
[52] P. Wannemacher, "Five Killer Myths About Preparing For Grad School," *Forbes*, 2016.
[53] A. Humphrey, "8 Common Myths About Grad School," *Scholarship Points*, 2018.
[54] D. Martin, "4 Graduate School Myths Debunked," *U.S. News*, 2012.
[55] A. Bandura, "Self-efficacy : Toward a Unifying Theory of Behavioral Change," *Psychol. Rev.*, vol. 84, no. 2, pp. 191–215, 1977.
[56] C. Maslach and M. P. Leiter, "Burnout," in *Stress: Concepts, Cognition, Emotion, and Behavior*, 2016, pp. 351–357.
[57] S. Gadsby, "Imposter Syndrome and Self-Deception Imposter Syndrome and Self-Deception," *Australas. J. Philos.*, vol. 100, no. 2, pp. 247–261, 2022, doi: 10.1080/00048402.2021.1874445.
[58] C. Morris, L. Kadiwal, K. Telling, W. Ashall, J. Kirby, and S. Mwale, "Restorying Imposter Syndrome in the Early Career Stage: Relfections, Recognitions and Resistance," in *The Palgrave Handbook of Imposter Syndrome in Higher Education*, 2022, pp. 225–240.
[59] A. Bandura, "Reflections on self-efficacy," *Adv. Behav. Theory*, vol. 1, pp. 237–269, 1978.
[60] E. Van Rooij and E. Jansen, "Factors that influence PhD candidates' success : the importance of PhD project characteristics," *Stud. Contin. Educ.*, vol. 43, no. 1, pp. 48--67, 2021, doi: 10.1080/0158037X.2019.1652158.

[61] R. E. Friedensen, G. M. Bettencourt, and M. L. Bartlett, “Power - conscious ecosystems : understanding how power dynamics in US doctoral advising shape students ’ experiences,” *High. Educ.*, no. 0123456789, 2023, doi: 10.1007/s10734-023-00998-x.
[62] C. E. Kee, “The impact of COVID-19 : Graduate students ’ emotional and psychological experiences,” *J. Hum. Behav. Soc. Environ.*, vol. 31, no. 1–4, pp. 476–488, 2021, doi: 10.1080/10911359.2020.1855285.
[63] C. M. Zhao, C. M. Golde, and A. C. Mccormick, “More than a signature : how advisor choice and advisor behaviour affect doctoral student satisfaction,” *J. Furth. High. Educ.*, vol. 31, no. 3, pp. 263–281, 2007, doi: 10.1080/03098770701424983.
[64] M. Z. Li and M. Stodolska, “Transnationalism , Leisure , and Chinese Graduate Students in the United States Transnationalism ,” *Leis. Sci.*, vol. 28, no. 1, pp. 39–55, 2006, doi: 10.1080/01490400500332686.
[65] N. Curtin, A. J. Stewart, and J. M. Ostrove, “Fostering Academic Self-Concept : Advisor Support and Sense of Belonging Among International and Domestic Graduate Students,” *Am. Educ. Res. J.*, vol. 50, no. 1, pp. 108–137, 2013, doi: 10.3102/0002831212446662.
[66] R. M. Klassen, “Optimism and realism: a review of self-efficacy from a cross-cultural perspective,” *Int. J. Psychol.*, vol. 39, no. 3, pp. 205–230, 2004, doi: 10.1080/00207590344000330.
[67] A. Holbrook, K. Shaw, J. Scevak, S. Bourke, R. Cantwell, and J. Budd, “PhD Candidate Expectations : Exploring Mismatch with Experience,” *Int. J. Dr. Stud.*, vol. 9, pp. 329–346, 2014.
[68] C. B. Kandiko and I. M. Kinchin, “What is a doctorate ? A concept-mapped analysis of process versus product in the supervision of lab- based PhDs,” *Educ. Res.*, vol. 54, pp. 3–16, 2012, doi: 10.1080/00131881.2012.658196.