



Strategies of Persistence among Women of Color in STEM: A Meta-Ethnography of Qualitative Findings

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About the ARC Network

Funded by the National Science Foundation ADVANCE Program, Awards HRD-2121468 and HRD-1740860, the ADVANCE Resource and Coordination (ARC) Network seeks to achieve gender equity for faculty in higher education science, technology, engineering, and mathematics (STEM) disciplines. As the STEM equity brain trust, the ARC Network recognizes the achievements made so far while producing new perspectives, methods and interventions with an intersectional, intentional and inclusive lens. The leading champion in North America to propel the inclusion of women in the field of engineering, the Women in Engineering ProActive Network (WEPAN), serves as the backbone organization of the ARC Network.

About the Virtual Visiting Scholars

The Virtual Visiting Scholars (VVS) program provides a unique opportunity for select scholars across disciplines to pursue research meta-analysis, synthesis, and big data curation on topics crucial to STEM faculty equity. VVS analyze existing research and data, synthesizing different, sometimes competing, perspectives, frameworks, metrics, and outcomes to offer new insights and applications to the broader community.

About the Author

Dr. Rodica Lisnic is a Sociologist with over 6 years of teaching and research experience. She currently teaches at the Department of Sociology and Criminology at the University of Arkansas, Fayetteville. Originally from Moldova, Dr. Lisnic has found another home in Arkansas. She has a bachelor's in Law Studies from Romania, a master's degree in Sociology and an interdisciplinary PhD degree in Public Policy from the University of Arkansas. Her research focus is on investigating gender and race inequality, institutional policies, and practices in the context of higher education institutions.

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Executive Summary

The purpose of this project is the explorative compilation of persistence strategies women of color in STEM use to navigate the tenure and promotion processes. This study focuses on intersectional and inter-ethnic differences in persistence strategies by analyzing and interpreting findings from literature about how Black, Asian, Latina, and Indigenous women faculty persist despite systemic barriers in STEM fields. The findings are interpreted through the prisms of gendered and racialized organizations, and intersectionality frameworks. Meta-ethnography is used as a methodological tool to analyze publications collected through the Systematic Literature Review (SLR) protocol covering multiple bibliographic databases representing various disciplines. Five themes were identified as a result of the coding process. These themes include purposeful life, navigating workplace hostility, navigating the workplace culture, and redefining cultural expectations, professional support systems, and personal strengths and support systems. One conclusion drawn from the findings is that women of color faculty are very resilient and employ a variety of strategies to persist. However, the work environment and culture need to improve, so that women of color can focus their energy on their scientific pursuits, rather than spend time on navigating complex gendered and racialized academic structures. Hence, the analytical interpretation of the findings aims to inform the process of policy formulation through recommendations to assist higher education institutions in attracting and retaining women of color faculty in STEM fields.

Introduction

Research Problem and Theoretical Frameworks of Gendered and Racialized Organizations and Intersectionality

According to recent National Science Foundation data, in STEM fields, women of color¹ account for 3% of tenure-track assistant professors, 2.5% of associate professors, and 1% of full professors (National Science Foundation 2015). These numbers are low and can be explained using what we currently know about the academic environment and how women of color faculty fit within it.

Gender and race scholars tell us that higher education institutions are gendered and racialized (Acker 2006; 2012). This has repercussions for departmental culture and climate, and how faculty work is evaluated. In terms of cultural aspects of the workplace, research (Johnsrud and Sadao 1998, Bird 2011, Arnold et al. 2016) suggests that White and masculinized norms and values dominate the academic culture, especially in STEM disciplines. This means that performance standards and expectations have been set around white men's experiences. Consequently, to be successful in their careers, women of color must adapt to a culture that has historically minoritized and othered them.

Such a workplace culture inadvertently affects the work environment, with members of marginalized groups experiencing a chilly climate. Numerous studies note that women of color experience challenges in adapting to the environment in STEM departments where colleagues often assume that the hiring of faculty of color is not based as much on merit as it is to comply with affirmative action (e.g. Mena and Vaccaro 2017; Hardcastle et al. 2019). Furthermore, women of color in STEM departments do not receive equitable institutional support within their departments, experience isolation, and work under unclear evaluation criteria (Zambrana et al. 2015, Mena and Vaccaro 2017, Lisnic, Zajicek and Morimoto 2019). Research (Hardcastle et al. 2019; Acker 2012) also explains that workplace support practices, such as daily interactions and informal mentoring, are often guided by the distinction between the "norm" and the "other." This distinction excludes women of color

¹ This study will focus on the following women of color faculty: Black women, Latinas, Indigenous women, and Asian women.

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from the majority social/professional networks, limiting their access to the information and knowledge critical to academic success, including promotion and tenure.

Regarding evaluation criteria, research (Ridgeway and Correll 2004) suggests that evaluators, most likely senior white men faculty, tend to scrutinize more and view less positively the work performed by employees who are defined as “the other” (white women and people of color). Agathangelou and Ling (2002) found that hidden standards that are not formally written nor applied to any other faculty are applied to women of color. Women of color are also frequently asked to engage in a disproportionate amount of service activities as representatives of their social category. These service activities meet departmental and university diversity needs (Hirshfield and Joseph 2012) but are not valued as much as research or service in national or international professional organizations (Baker 2012).

Notably, while the dominant racialized and gendered academic culture has othered women of color, white women, and men of color, women of color experience institutional barriers and exclusions that are different from those experienced either by men of color or by white women (Acker 2012; Ong, Smith, and Ko 2018). For women of color gender and race/ethnicity intersect to create unique experiences in the workplace (Collins 1986, Crenshaw 1993). Consequently, women of color pay a higher price and work harder than everyone else (Griffin 2016; Ong 2005) to achieve the same career thresholds. Given this and the research mentioned above, it is no surprise that the women of color who pursue academic careers are likely to be driven out of academia before reaching tenure (Zambrana et al., 2015), resulting in their severe underrepresentation in STEM fields.

Literature Gap and Existing Studies about Persistence

Recent meta-syntheses focus on the experiences of women of color faculty in STEM and non-STEM fields. For example, Mickey (2018) focuses on their experiences with professional networks, while Margherio (2018) focuses on their experiences with mentoring. Other meta-analyses examine the barriers women of color faculty in STEM encounter on their path towards promotion (Corneille et al. 2019), the cultural biases faced by Asian women engineering faculty (Sambamurthy et al. 2016), the unique challenges African American women faculty experience due to the intersection of gender and race (Ross et al. 2015), and the factors that affect the persistence of Latina faculty in engineering and non-STEM fields (Sanchez-Peña et al. 2016).

The proposed study differs from the earlier studies because it focuses on persistence strategies themselves rather than factors that affect persistence. Specifically, building on Sanchez-Pena et al.’ (2016) argument that there is a need for studies that look at inter-ethnic intersectional differences in persistence strategies, the proposed meta-ethnography employs a more agentic approach towards the study of persistence. Moreover, the current proposal is comprehensive in its focus on Black, Asian, Latina, and Indigenous women and their persistence strategies in STEM fields. Given the differences among women of color and the strengths they bring with them, my investigation of Black, Asian, Latina, and Indigenous women’s persistence and how their cultural identities influence their persistence strategies reveals unique comparisons and differences in these strategies. Furthermore, this study asks whether the work persistence strategies are supporting women of color well-being and work-life balance.

Purpose of Research

In this project I conducted a synthesis of qualitative studies to identify, compile, and analyze the strategies that women of color in STEM fields use to persist and succeed in their jobs. Of interest is how women of color navigate the workplace environment and culture, and what strategies they use to navigate the tenure and

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promotion process successfully. Of particular interest are the intersectional racial/ethnic differences in how Black, Asian, Latina, and Indigenous women faculty navigate the institutional culture and develop strategies of persistence within that culture. Audre Lorde (1984) explains that to survive, people who are confronted with systematic oppression learn to be “watchers, to become familiar with the language and manners of the oppressor.” Some literature suggests that biculturalism enables faculty of color to maintain their own culture while navigating the dominant values and norms. This process, though, “places subtle pressure on ethnic and racial minority faculty who attempt to gauge appropriate responses and to shift between value structures” (Johnsrud and Sadao 1998:9). There is a “constant drain of energy” in the process of adapting to the dominant culture, energy which could be better used for more fruitful pursuits (Lorde 1984; Hodari et al. 2016; Ong 2005).

Research (Dade et al. 2015, Lisnic, Zajicek, and Morimoto 2018) suggests that unclear tenure and promotion policies make it especially difficult for women of color to navigate the tenure process. To navigate an opaque tenure process, junior faculty need to rely on informal sources of information and interact with senior faculty for guidance and mentoring, which women of color in STEM lack or have limited access to (Zambrana et al., 2015, Mena and Vaccaro 2017). As a result of the exclusionary departmental culture and practices (e.g., limited access to mentoring, unclear tenure and promotion policies) and extra service activities, women of color in STEM might feel a constant pressure to perform and prove that they deserve the academic position (Johnsrud and Sadao 1998, Ford 2011, Dade et al. 2015). This pressure to overwork and outperform can have consequences for faculty ability to dedicate time to other crucial aspects of life, like self-care and family time (Ford 2011, Hall et al. 2012). Hence, my next goal in this study is to determine whether and how the strategies employed by women of color in STEM are conducive to their work-life balance and general well-being.

Research Questions

1. What strategies do women of color in STEM employ to navigate the tenure/promotion processes in the context of exclusionary departmental culture and practices?
2. Are these strategies successful in supporting women’s work-life balance and well-being?
3. Are there intersectional ethnic differences in the types of strategies Black, Asian, Indigenous, and Latina women faculty employ?

Project Significance

This study offers insights about personal struggles of persistence and the strategies women of color use to navigate work requirements in an academic environment that was designed to exclude them (Griffin 2016). This study provides an in-depth, rich, and clearer view of the strategies of persistence and the hidden sacrifices the women of color make (Armstrong and Jovanovic 2015) as they face and experience the systemic drivers of inequality and exclusionary departmental practices.

This meta-ethnography of women’s strategies is essential not only because it is a first of this kind in the extant literature but also because it reveals important assets women of color possess to persist despite the systemic barriers to their success (Corneille et al. 2019). Systematic and comprehensive analysis of the strategies that women of color use to achieve tenure and promotion provide higher education institutions and programs such as NSF ADVANCE with a guide to create more targeted initiatives for supporting women of color and for institutional change. Specifically, this study provides recommendations for institutional change that would eventually make the work environment more welcoming for women of color. Furthermore, knowledge of the institutional resources that women of color successfully use would assist the new generations of women of color

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STEM faculty and inform higher education institutions in how to develop and render more widespread those resources. Hence, the findings from this study can contribute to making the academy more attractive to women of color and assist in their retention in STEM.

Methods

Summary of meta-synthesis techniques

Qualitative meta-synthesis (QMS) helps the researcher compile and interpret findings on a specific theme/topic from multiple qualitative studies, the sum of which has greater implications for higher-level abstraction than the individual study findings (Finlayson and Dixon 2008). Synthesizing results from multiple qualitative studies can enhance generalizability and, hence, facilitate policy recommendations (Sandelowski, Docherty and Emden 1997, Finlayson, and Dixon 2008). A form of QMS, meta-ethnography, allows the researcher to develop new interpretations and theoretical models based on synthesizing qualitative findings from multiple studies while considering the contexts in the original studies (France et al., 2019). In this study, I employ meta-ethnography with steps and techniques, as outlined by Noblit and Hare (1988) and France et al. (2019), to synthesize qualitative findings of the strategies women of color in STEM use to navigate the academic workplace.

Data Selection

I conducted a Systematic Literature Review (SLR) within 14 bibliographic databases (e.g., Academic Search Complete, Compendex, IEEE, ProQuest, Ebsco, Jstor) covering various disciplines. The search was conducted in spring and fall 2021. The search command line consisted of keywords identified through literature (e.g., Griffin 2016; Hall et al. 2012) “women of color faculty in STEM; strategies for success; coping mechanisms; persistence; resilience.” The search strategy was first designed and refined within the Web of Science Database, after which it was adapted to other databases. An example of a command-line used within Web of Science is:

TI= ((women of color facult OR minority women facult*) AND (STEM OR SEM OR Engineer* OR Science* OR Technolog*) n3 (persisten* OR resilien* or coping mechanism* OR strateg* for success)) OR AB= ((women of color facult* OR minority women facult* OR underrepresented women facult*) AND (STEM OR SEM OR Engineer* OR Science* OR Technolog*) n5 (persisten* OR resilien* or coping mechanism* OR strateg* for success))* Multiple iterations of the command line using different key terms as replacements for “women of color” (e.g., African American*, Black*, Latina*, Hispanic*, Asian*, Pacific Islander*, Native American*, Indigenous*) were tried for searching within studies’ titles and abstracts. The literature search results (840 studies) were downloaded into Zotero bibliographic software, which I used to remove duplicates (377 duplicates). Next, 466 titles and abstracts were screened for keywords using the Rayyan systematic review software. Among the 466 titles, 29 abstracts did not provide the necessary information (e.g., the study population and/or focus) to make an inclusion/exclusion decision. From the 437 abstracts and 29 scanned full-texts, 46 studies were selected for in-depth reading. Next, I searched within the references lists of the 46 studies and identified 20 additional studies to be potentially included in analysis. I have read the 66 studies, in order to select the studies for in-depth coding/analysis and get a sense of what the qualitative categories of persistence look like. I also highlighted within the pdf documents the categories that I found. After reading all these studies, I selected 18 studies for in-depth coding. These studies fit the inclusion criteria either very closely or exactly. Each study in the purposive sample will be the unit of analysis. For a summary of the selection process, please see the PRISMA flow chart in Appendix A. For a list of coded studies, please see Appendix B.

Inclusion Criteria

Since one key outcome of the study is to make policy recommendations, I limited my timeframe to the most recent studies, i.e., studies published between 2010 and 2021. Moreover, structural inequality based on gender

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and race/ethnicity varies by national contexts. Hence, I only included studies about higher education STEM departments in the United States. I included studies written by authors from any STEM discipline for sample size purposes, and along with peer-reviewed journal articles, I included books, book chapters, and Ph.D. theses. Given the focus of this research on tenure and promotion, I selected studies about women of color faculty at the tenure-track, assistant professor, and associate professor levels.

Data Analysis Procedures

All studies identified during the SLR have been imported into Nvivo. The meta-ethnography started with reading and identifying the interpretative concepts, metaphors, and themes in each study. The listing of concepts/metaphors and the translation of studies into one another is a process that happened concurrently in Nvivo. When coding, I either used the categories established in the original study or created my own categories where I saw fit. To systematically compare the meanings of concepts across studies, I used the reciprocal translation technique developed by Noblit and Hare (1988), which entails “systematically comparing the meaning of metaphors, concepts or themes and their relations across study accounts to identify the range of metaphors, concepts, and themes” (France et al. 2019 p. 2).

My focus in this study was to document the type of persistence strategies WOC engage in response to discriminatory institutional and departmental practices. While the intersectionality, and gendered, and racialized organizations frameworks help in directing focus on persistence strategies developed in response to racialized and gendered discriminatory practices, I was also open to emerging codes/concepts. Therefore, I used an inductive approach, meaning that I let the data speak and did not use a pre-determined set of codes. I particularly paid attention to inter-ethnic differences in persistence strategies, which is something that existing theory does not talk about. When coding, I paid attention to the larger context in which WOC develop persistence strategies. Meaning, I coded the various obstacles that they encounter in the workplace and that persuade WOC faculty to engage a variety of strategies for persistence. I also paid attention to the costs of employing particular persistence strategies. In line with the meta-ethnography recommendations, I also coded the context of the qualitative studies. For example, I coded the purpose of the study, research questions, theories used, and significance of the study, and policy and practice implications.

In the subsequent phase, I synthesized concepts/codes and themes and organized them in a findings section. In the next step, I used the interpretations, syntheses and comparisons of concepts and themes from the previous phase to create a line of argument/discussion and begin the construction of a theoretical argument (see, Noblit and Hare 1988). Lastly, informed by the identified themes and line of argument, I wrote several policy recommendations which can be used by academic institutions.

Findings

This section presents the main findings in this study.

Persistence Strategies

In this section I answer the following research questions: 1. What strategies do women of color in STEM employ to navigate the tenure/promotion processes in the context of exclusionary departmental culture and practices? 2. Are these strategies successful in supporting women’s work-life balance and well-being? I first talk about how I define persistence, followed by a description of themes related to persistence strategies identified in this meta-ethnography. There are five themes. Each theme has an introduction and consists of three to five codes.

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Definitions

There are many ways that persistence is conceptualized in the literature. While some studies do not clearly define it, other studies go in-depth into defining persistence and also talk about previously developed theories of persistence. Some authors simply talk about how women persist. These studies use a multitude of definitions for persistence, resilience, survival mechanisms. Some studies use these concepts interchangeably. For the purposes of this meta-ethnography, I am conceptualizing persistence as those activities, strategies, coping/survival mechanisms that help WOC faculty be successful in their careers. Therefore, my definition encompasses: strategies for success, coping mechanisms, resiliency strategies, survival, and resistance strategies.

Purposeful Life

Having a vision for ones' career path and constructing strong identities as scientists is important for women of color in STEM. At the same time, women of color faculty are aware of the oppression that people of color and other minorities in broader society experience (Soto 2014). Therefore, these women persistently work on discovering and leveraging their "gifts" in order to share them with the people who need them the most (Boyd 2012).

An emerging theme in this study is Purposeful Life. Choosing a meaningful career path helps women of color faculty persist in academia. They gain and express this meaning through devotion to profession, community service, and having appreciation for where they come from, all emerging codes identified in this study.

Devotion to Profession

This code is based on concepts identified in four studies. Women of color express strong passion for research, teaching, and for mentoring students (Soto 2014). These activities drive their willingness to persist in their academic careers. Williams and Walker (2021) found that devoting themselves to their profession helps Black women in STEM cope with racial injustices. This devotion takes the form of supporting their Black students overcome barriers and becoming successful. They regard their role as mentors to these students as a "noble and worthy calling" (Williams and Walker 2021). In a similar line of thought, Wilkins (2017) narrates that for women of color, their passion for science fueled their determination to persist in an academic institution laden with barriers. As Wilkins (2017) explains the enthusiasm that women of color have for their profession is a "key source of motivation, at times outweighing the obstacles ingrained within their departmental climates." In addition, women of color in technology fields are aware of how technology has been used to oppress people of color and the poor. Their awareness of this oppression motivates them to leverage their research skills in order to address exploitation (Soto 2014).

Appreciation for Where They Come From

This code becomes evident based on data from four studies. Cerecer et al. (2011) write about how Latina faculty's early life working-class identity "keeps her grounded and helps her shape her research agenda which involves the goal to counter the deficit view of Latino immigrants." One Latina faculty asserts that her working-class hardships taught her "self-sufficiency, humility, resourcefulness, and the value of education," all important skills and values for a successful academic career. Similarly, Vo (2012) talks about how "growing up in a multiracial, multicultural family," and frequent moving to different countries shaped her intellectual curiosity, scholarly identity, her ability to adapt to new environments, and ability to withstand challenges in academia. Being connected to their roots is also important for the Indigenous women faculty in Elliot et al. (2010) study. This connectedness to the Indigenous community motivates them to stay in academia.

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Community Service and Advocacy

Community service is mentioned in seven studies as an enjoyable, meaning giving activity that also improves persistence for women of color in academia. For example, Boyd (2012) talks about how isolating and tokenizing her experiences as an academic were, and how her involvement with the Native American community K-12 school programs provided “the lifeblood that sustained me in my professional life.” Cerecer et al. (2011) talk about the importance of “developing a conscious identity that did not distinguish between research and service.” In Soto (2014) one participant talks describes her goal of creating positive change for education in the Latino community by addressing racial inequalities through her STEM research. This goal motivates her to become successful in getting tenure.

In another study (Wilkins 2017) found that for women of color faculty, advocacy efforts to change the institutional culture and to recruit more women of color into STEM faculty positions helps them persevere in their own work. It is evident in Wilkins (2017) study that advocating for increasing diversity among faculty in STEM fields is a rewarding service activity for women of color faculty. They see these activities as a way of giving back to the community, and a source of motivation to persist in academia even though this service is not institutionally valued.

Women of color faculty mention engaging in community service as a way of giving back. These kind of service activities provide important motivation for continuing their academic work as well. For example, (Elliott et al. 2010) and (Kosobuski 2013) found that Native American women faculty in academic medicine enjoy contributing their efforts and medical work towards the well-being of Indigenous tribes. Kosobuski (2013) explains that for Native American women faculty pursuing a career in academic medicine goes beyond a passion for teaching or intellectual curiosity, and even beyond the idea of serving the community. For them this kind of work is about expressing their Native culture, and their values of giving back to their communities. Even though Native American women faculty work in academic environments that do not focus on supporting underrepresented people, they find ways to engage in teaching, research and service activities that make visible the health care needs within Native communities, as well as increase visibility for their research (Kosobuski 2017).

Navigating Workplace Hostility

Women of color faculty work in an academic environment laden with gendered and racialized practices designed to marginalize underrepresented faculty (Griffin 2016). Studies in this meta-ethnography show that women of color are systematically subjected to microaggressions, sexual harassment, tokenism, and other forms of gendered and racialized biases. For example, participants in the Crawford (2017) study describe gendered and racialized microaggressions² that consisted of harsh criticism, questioning of decisions and actions, and being under constant scrutiny from colleagues. Similarly, other studies report participants being ignored by colleagues during meetings (Kim et al. 2014), having their faculty status dismissed by college leaders (Soto 2014), and being blamed for using “the gender and race cards” to achieve faculty status (Soto 2014).

In such a context, women of color create strategies and coping mechanisms that can help them overcome the barriers placed by gender and racial biases and help them persist in their academic role. Based on this meta-

² “Every day verbal, nonverbal, and environmental slights, snubs, or insults, whether intentional or unintentional, that communicate hostile, derogatory, or negative messages that target persons solely upon their marginalized group membership (Sue 2010).”

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ethnography, these strategies take the form of navigating the system, establishing validity for their experiences, focusing on the positives and ignoring the negatives, working harder, and creating allies.

Navigating the System

Navigating the system code was identified in two studies. Women of color faculty find themselves face to face with multiple obstacles towards promotion. These obstacles are related to unreasonable promotion criteria, and to gender, and racial/ethnic biases. Hence, they need to figure out how to navigate around these obstacles in order to be successful. For example, Walters et al. (2019) found that:

“Some AIAN faculty learn to ‘read’ the environment and make strategic decisions in order to maneuver through these systems – as one AIAN female scholar notes below: I feel like the criteria for success in this environment is incredibly high and something that is largely dependent on personal initiative, ingenuity, and the ability to maneuver. . . [in] incredibly gender and ethnically biased social institutions. . . you just have to be very culturally competent to deal with those systems. [AIAN female] (Walters et al. 2019).”

One participant in the Galloway (2012) study describes her ability, as a woman of color in STEM, to exist and thrive in a majority White men environment. She talks about having to learn to work in such an environment and not view it as threatening. She got so habituated to working in such a setting that she no longer thinks about gender and race.

Establishing Validity for Experiences

Establishing validity for their experiences code is based on data from three studies. As a result of having their experiences and perspectives invalidated and questioned by their colleagues, Black women faculty in academic medicine are reluctant to directly express how they feel and what they are going through (Galloway, 2012; Williams and Walker 2021). When they do speak, they pave the way to their statements with data, and historical context. Black women physicians raise the question of how “do we safely express our truth and sidestep the trap of reinforcing the “Angry Black Woman” stereotype? How do we avoid triggering the all-too-common reactions of our colleagues “feeling threatened” by our heartfelt, passionate expression?” As an alternative to directly expressing their thoughts, they work on building research projects that establish credibility for their diversity, equity, and inclusion efforts (Williams and Walker 2021).

In another study, Moffit et al. (2012) found that in interactions with colleagues, as well as in the classroom context, women of color faculty are compelled to employ interdisciplinary perspectives in order for their work to be viewed as legitimate. As a result of systematic denial of their identities and experiences of mistreatment and marginalization in academia women of color faculty have no choice but to “habituate to the chronic stress of existing” in such environments (Williams and Walker 2021).

Focusing on the Positives and Ignoring the Negatives

To persist in academia, and to avoid the mental health repercussions that occur due to gendered and racialized microaggressions and other forms of violence in academia, women of color faculty learn to ignore them and focus on the positives. This code is based on concepts found in five studies. For example, Boyd (2012) reflects on her experiences as a Native American woman faculty and emphasizes: “If I was going to survive in my position, I needed to not simply react to those things that felt offensive or hurtful.” Fighting against workplace discrimination can hinder career progress. Vo (212) reflects on her experiences as an Asian faculty and talks about the importance of focusing on what one accomplishes despite the barriers. She goes on to explain that it is counterproductive to engage in negative feelings when confronted with incidents of racism and sexism. She

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recommends ignoring such instances and focusing on finding people willing to provide support. Participants in Galloway (2012) study talk about surviving in academia, and explain that they learned to choose their battles, and not engage in conflict unless absolutely necessary. One participant in Galloway (2012) study talks about gender being the center of most obstacles she encountered in STEM fields, and about viewing these obstacles as opportunities for career growth. For Latina faculty in Zambrana et al. (2017) study ignoring racist incidents protects them from emotional exhaustion and helps them survive in academia.

Working Harder

Working harder is another strategy women of color employ to persist in their academic careers and prove those who question and devalue their work wrong. This code emerged based on data from six studies. For example, Williams and Walker (2021) found that Black women faculty in academic medicine experience extra pressure to perform. This pressure is due to an academic environment and peer culture that question Black women's belonging in academic medicine:

“Particularly in the environment of academic medicine, we almost invariably push ourselves harder to surpass the standards and expectations set for faculty. We simply cannot afford anyone questioning our worthiness as faculty members (Williams and Walker 2021).”

In another study (Walters et al. 2019) found that Native American women also experience added stress to do extra work in order to maintain their academic position. The reason they engage in this extra work is to be treated as equals by their colleagues.

Kim et al. (2014) study reveals the stressors that foreign born Asian women faculty experience in academia, and the efforts they make to prove that they are competent academics. Their efforts are compounded by the language nativity requirement that is predominant in academia: “Four participants specifically mentioned putting in extra effort to overcome issues related to English proficiency (e.g., practicing lectures and taking more time to prepare written items for publication). One participant said, “I have to work very hard for gaining my status as a legitimate professor . . . respect not only from students but also from my peer professors.” Another participant added, “I continue to believe that my only choice to cope with challenges is to work harder and harder (Kim et al. 2014).”

Vo (2012) reflects upon the mantra that “people of color have to work twice as hard as their white, male colleagues” to be successful, and concludes that following it contributed to anxiety and excessively long work hours. The pressure, however, to overwork and disprove stereotypes and criticism in academia is high. For example, Kim et al. (2014) study talks about Asian women faculty feeling pressure to be strong, know everything, and that way prove themselves. Proving “others wrong” can also have positive connotations. For example, Wilkins (2017) found that for WOC in STEM proving someone wrong means affirming their own abilities, and the confidence they have in their skills. Succeeding for these women means that prejudice cannot disrupt their strength.

Creating Allies

Creating allies emerged as a code based on four studies. Boyd (2012) talks about the importance of finding colleagues who would be willing to listen to experiences of struggle with gender and race biases, and who would offer advice. Creating a supportive environment around oneself is crucial for career growth and for surviving in academia. Moreover, Boyd (2012) discusses the importance of asking for help and not succumb to

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the mantra of doing work alone for fear of being deemed incompetent. Williams and Walker (2021) also talk about the importance of creating allies. And while, the help that is being extended to women of color faculty might not be groundbreaking for solving sexism and racism, it could still be useful when navigating academia. Vo (2012) and Wilkins (2017) explain that having allies, including White male allies, can be especially helpful in times of conflict when there are colleagues trying to “undermine your promotion.”

Navigating the Work Culture and Redefining Cultural Expectations

The ability to navigate the academic culture can mean the difference between persisting in academia, being successful, and turnover. US academia, especially STEM fields, have cultural characteristics that are designed around White, and masculinized norms and values (Johnsrud and Sadao 1998; Bird 2011; Arnold et al. 2016). This means that women of color faculty need to adapt to an academic culture that has historically excluded and marginalized them.

Foreign Asian women faculty find it difficult to adapt to the US academic culture of self-promotion, because it comes into stark contrast with many Asian cultures that value modesty (Kim et al. 2014). Native American women faculty also find it difficult adapting to academia because the “Western, White/European individualistic, Cartesian worldview stands in stark contrast to the collectivistic, holistic and interrelated worldviews” of Indigenous populations (Walters et al. 2019). Galloway (2012) describes the male culture and its double standards in STEM fields. For example, assertiveness is valued when men express it, and it is viewed as aggression when women embody it. On the other hand, when women are non-assertive, they are ignored. Collegiality norms, promotion decisions, performance standards and evaluation criteria are also constructed around White men’s experiences (Pololi and Jones 2010). STEM fields are characterized by a “highly competitive, individualistic culture which undermines collaborative teamwork and their sense of belonging and contributed to distrust among faculty” (Pololi and Jones 2010).

In the context of White and masculinized academic cultures women of color develop strategies of persistence that help them survive. The strategies identified in this meta-ethnography include cultural adjustments, cultural expression, and redefining success.

Cultural Adjustments

Cultural adjustments code is based on findings from seven studies. Black women STEM faculty in Galloway (2012) study talk about making cultural adjustments that White faculty do not have to think about. Black women in STEM view these adjustments as necessary for career advancement, however, they come at the cost of feelings of anxiety and depression (Williams and Walker 2021). Vo (2012) describes the experiences Asian women faculty in academia go through and mentions that “being nurturing and humble does not translate well into the competitive academic cultural environment, so adapting mandates some cultural retooling.” Foreign born Asian women faculty in Kim et al. (2014) study talk about feeling conscious about how they are perceived at work, and therefore, they try to survive by fitting into the US academic culture. They do that by wearing professional Western dress, “purposefully speak with great volume and confidence in faculty meetings so that they would not be perceived as lacking confidence.”

Women of color faculty in Pololi and Jones (2010) study developed dual identities to survive in STEM fields. While they learned the behavioral norms to succeed in medical school, they at the same time valued and nurtured their own perspectives. Because of their status as outsiders within, women of color faculty are well positioned to recognize the biases and marginalization that occur in academic medicine. Women of color in

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Moffit et al. (2012) study also talk about the fact that the “academy was willing to accept only those aspects of their identity that the institution deemed palatable.” Therefore, they need to make cultural adjustments, and code switch to survive and fit into the academic culture. For example, one participant explains: “I have to speak their language, it’s like they don’t hear me if I am the way I am.” Another participant further explains that student miss learning opportunities when faculty’s cultural identities are censored by the academic structure (Moffit et al. 2012).

Cultural Expression

While academia discourages cultural expressions for faculty outside the Western, White, male norm, research (two studies) in this meta-ethnography reveals that cultural expressions are beneficial for women of color faculty. For example, Kosobuski (2013) emphasizes that cultural expression for Native American women faculty is associated with their academic success. For Native American women faculty mentoring is an academic role through which they can honor their responsibility of becoming an elder and caring about someone junior. Kosobuski (2013) further explains that NA women faculty “need opportunities for cultural expression in their teaching and research, as well as options and ability to access Native American mentors, whether they are other professionals or community members. Ensuring opportunities for cultural expression in professional activities could boost retention.”

Elliot et al. (2010) describes Native American women’s ingenuity of finding venues for cultural expression (e.g., connection to the community, giving back to the community, and belonging), by taking their research work into Native American spaces. In fact, the Native American women in Elliot et al. (2010) study emphasize that in times of conflict between academic norms and community values, the cultural values of belonging and connectedness take precedence. It is clear that for Native American women faculty their culture is a core part of their identity, and also a core part of their academic success (Elliot et al. 2010).

Redefining Success

While cultural adjustments and trying to fit in are strategies that could support a successful academic career, women of color also work on redefining cultural expectations within the academy. Specifically, Boyd (2012) explains that *“to many of us, success, never had anything to do with things like rich, famous, published or funded. Success means helping our people, connecting to others, being real, and making things better four our families and communities. It is essential to find a way to integrate that definition into the work that we do – otherwise we do run the risk of losing ourselves in the work for reasons we do not fully understand.”*

When faced with discrimination in their performance evaluations, women of color faculty also engage in redefining which feedback is constructive and meaningful, and which feedback should be ignored. Therefore, they reach out to people who are willing to support them and provide meaningful feedback (Wilkins 2017).

Professional Support Systems

Research (Hardcastle et al. 2019; Acker 2012) suggests that women of color are excluded from professional networks and mentoring which limits their access to crucial knowledge for academic success. Studies in this meta-ethnography found that women of color have difficulties finding mentors who can fully understand their experiences (Kim et al. 2014; Zambrana et al. 2017) or they have difficulties finding mentors who would support them on an ongoing basis (Walters et al. 2019).

The identified codes about mentoring, networking, collegial work environment, and professional collaboration focus mostly on the benefits of these support systems for persistence, while also explaining what happens when women of color do not have access to them.

Mentoring

Mentoring is mentioned in eleven studies as an important factor that contributes to women of color faculty success in academia. Mentoring is important for navigating promotion requirements (Walters et al. 2019), navigating academic politics (Vo, 2012), networking (Zambrana et al. 2017), dealing with bias and discrimination (McGee et al. 2021), and learning what to say “yes” and “no” to (Galloway 2012). Elliot et al. (2010) explain that for Native American women faculty in academic medicine having mentors is crucial for their success. Mentoring relationships include “emotional support, role modeling, problem-solving, help negotiating the system when needed, and even referrals for personal matters (Elliot et al. (2010).”

Galloway (2012) and Kosobuski (2013) studies also suggest that women of color faculty have more successful mentoring relationships with female mentors who are more likely than male mentors to anticipate the mentees’ needs and questions. Senior faculty seem to be the most helpful mentors for women of color faculty (McGee et al. 2021, Soto 2014). Women of color are intentional in seeking out senior faculty from their department to be their mentors, because these are the people who can be most successful in advocating for their mentees during important promotion decisions (Soto 2014).

Walters et al. (2019) study emphasizes that for Native American women faculty having access to a mentor is important for the development of their scholarship, and for navigating research and other academic opportunities. Although important for their success, participants in Walters et al. (2019) had limited access to mentors, with only a small portion “having a mentor on an ongoing basis.”

Networking

Nine studies mention professional peer networks and support groups as being important for women of color faculty persistence in academia. Being involved in professional organizations, in particular, minority-serving organizations is conducive for their career success (Boyd 2021; McGee et al. 2021; Soto 2014; Wilkins 2017). When it is difficult to find supportive communities within their institutions, women of color find motivation and support within minority-serving professional organizations (McGee 2021; Wilkins 2017). The support they receive from these organizations helps them overcome stress caused by institutional gender and racial biases (McGee 2021; Wilkins 2017) and provides them a safe environment where they can express their authentic selves (Wilkins 2017). Furthermore, these professional networks provide opportunities for research collaborations, and other professional development activities (Wilkins 2017). Overall, these professional networks “equipped them with the tools to withstand chilly working conditions by minimizing perceptions of isolation and linking them to those with similar experiences” (Wilkins 2017).

Another important source of support for women of color faculty are graduate school peers and advisors who provide support in a range of areas like teaching strategies, research guidance, work-life balance (McGee et al. 2021), and issues related to gender and race biases (Soto 2014).

Within the institution, ethnic groups are also an important source of support for women of color faculty. Vo (2012) describes the importance of creating communities of belonging. Cerecer et al. (2011) describe a Chicana/Latina community of scholars that focused on creating research opportunities for Chicana/Latina

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faculty. This community of scholars also challenged the institutional “norms of competition and individualism and created patterns of collaboration and collective efforts,” which help Latina faculty persist in academia.

Collegial Work Environment

Four studies in this meta-ethnography mention supportive colleagues as contributors to women of color faculty persistence in academia. For example, McGee et al. (2021) found that “seventy percent of the women described supportive colleagues within their departments and institutions who enabled them to persist as engineering faculty members.” Participants in Soto (2014) study also express that collegial support was crucial for them getting promotion. Supportive colleagues are willing to assist women of color with their research and teaching activities. They also provide advice about navigating work requirements, and academic norms (McGee et al. 2021; Soto 2014). Vo (2012) explains that *“there is often a steep learning curve for new faculty members. The anxiety is reduced if you have supportive colleagues who protect you from burdensome committee work, present you with suitable teaching assignments, and genuinely support your research agenda.”*

When collegial support does not exist, there can be negative career repercussions for women of color (McGee et al. 2021).

Professional Collaborations

Participants in the Kim et al. (2014) study engage in collaboration with other racially underrepresented faculty as a way to increase their research productivity and to persist in academia. For one participant in the Soto (2014) study professional collaboration is also crucial for their successful scholarship activities. Women of color faculty in Wilkins (2017) study discuss the value of collaboration with colleagues who share similar struggles with gender and racial biases in academia.

Personal Strengths and Support Systems

Women of color faculty have personal strengths and resources which they rely on to persist in academia. Several codes related to this theme emerged: spirituality, confidence, agency, and personal support systems.

Spirituality

Spirituality and faith-based communities are a source of support for WOC. Four studies mention spirituality as contributing to women of color persistence in academia (Elliot et al. 2010; Galloway 2012; McGee et al. 2021; Walters et al. 2019). Native American women conceptualize their spirituality in terms of connections they have with their cultural, social, and personal worlds and the multiple intersections between these. For example, one participant in the Elliot et al. (2010) study explains that spiritual connections are *“the base of our happiness, because no matter what the turmoil or the challenges and the things that have gone around me through the years, I’ve had that connectedness with God with my friends and my loved ones. I’ve been grounded enough to deal with whatever came.”*

Black women faculty in Galloway (2012) and McGee et al. (2021) studies also mention the importance of spirituality in giving them the strength to persist, succeed and continue their work even when things are difficult. Black women faculty “found purpose and discernment within their current positions and situations” through spirituality (McGee 2021). Faith-based communities are important for Black women’s persistence in academia because the support groups care about their career success and about their overall well-being: “This unique group of Black women prayed for the participants’ success, which enabled persistence because of their faith-driven practices and ideologies (McGee et al. 2021).”

Confidence

Confidence is mentioned in three studies as being important for women's success (Galloway 2012; Soto 2014; Wilkins 2017). Participants in Soto (2014) study talk about the importance of being confident for surviving in a masculinized STEM environment and for handling difficult students in the classroom. Confidence for women of color is about keeping calm during an uncertain tenure process, having a sense of options (ability to consider different options when things are difficult), and having the ability to ask questions and to negotiate with anyone. One participant's answer is particularly reflective of what confidence means: "so for me, it's never been a question of whether or not I can do this. It's just a matter of figuring out how to get it done, how to go forward in order to be successful (Soto 2014)." Wilkins (2017) found that women of color stay confident and believe in their competence when questioned and faced with discrimination, qualities that contribute to their persistence in academia.

Agency

One study explored agency as an important strategy women of color use to persist in academia. Although only one study talks about it, agency is central enough to this meta-ethnography to describe the examples of agency. All participants in Soto (2014) demonstrate personal agency in the way they prioritize their work, the plans they design for their careers, and how they handle challenges. For example, participants learned to adjust their workloads and say no to service requests that deflected time from research. They learned to create action plans around unclear work requirements, and this way "soften this obstacle." Women also learned to adjust their schedules in order to accommodate responsibilities related to family expansion and events. Agency for women of color is also about "having an underlying drive to succeed in the professoriate." For example, one participant asserts: "I can't be "Black and not make it. It would ruin it for so many other people. You know, I have to make it. It was not, it was beyond me. And then, you know, there were the students that I taught and, well, what message would that send if I failed?"

Personal Support System

Personal support systems provide motivation for women of color to persist in academia. Personal support systems consist of relationships with partners/husbands, parents, siblings, colleagues, and professional therapists (Soto 2014). Three studies mention personal support systems (Galloway 2012; Soto 2014; Wilkins 2017) as important for women's careers. Soto (2014) explains that "participants relied on their personal support systems to cope with issues such as job stress, bicultural stress, work-life balance, gendered/racialized experiences, and with handling work-induced personal issues such as relationship strain." Participants assert that having a personal support system is crucial for their persistence in academia because it helps them express thoughts and emotions and find solutions to career related issues (Soto 2014). Family members help women of color achieve better work-family responsibilities balance and provide them with the necessary mental resources to perform well in their jobs (Wilkins 2017).

Interethnic Differences

In this section I answer the third research question about interethnic differences in persistence strategies: Are there intersectional ethnic differences in the types of strategies Black, Asian, Indigenous, and Latina women faculty employ? I organized this section by ethnicity.

Native American Women Faculty

An emerging finding regarding interethnic differences is the way Native American women faculty speak about Spirituality and its role in their academic careers, which is different from how other women of color talk about

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Spirituality. They speak about an interconnection between the professional and the personal which is not envisioned similarly by other women of color. For example, one participant in the Elliot et al. (2010) study says the following: *“life is all about relationships, so whether it’s me as an individual person or me as a physician connecting with my patient in a way that they really want to work to help themselves because I can motivate them. Me as a parent, me as a wife, as a daughter, whatever. So, I think since relationship is a bottom line, then there’s got to be connectedness and I think that beyond, there’s also connectedness as far as I’m concerned with me and my creator, because without that connection, none of the others are going to work.”*

Spirituality shapes their cultural values, and their cultural values in turn inform their approach towards their professional roles and activities which include networking, mentoring, community service, research activities and others. All of these factors in turn help Native American women faculty persist in academia.

Mentoring means taking on the responsibility to carry on the culture by mentoring the next generation. Native American women faculty view their mentors as elders from whom they learn how to be a successful academic (Kosobuski 2013). When asked about how they achieved career success, they most often talk about the support they received from their mentors, rather than about their individual effort. Success is defined in terms of embracing the Native American cultural values of giving back through service to the community. While for other ethnic groups giving back to their communities is an important goal that motivates them, for Native American women faculty, serving the community is a cultural responsibility that helps them maintain their “cultural connectedness and identity” (Elliot et al. 2010).

Hence, for Native American women scientists, there is a strong interconnection between their identity as scientists and their identity as members of their community. This interconnection contributes to their success as academics. Other ethnic groups do not emphasize a connection between their cultural heritage and their identity as scientists. For example, (Elliott et al. 2010) writes the following:

“Native American culture and its expectations are primary to these women’s identity. For these American Indian women to pursue success in academic medicine, they acknowledged that they first needed to be able to participate in life as Native American women. For them, success can be achieved only when they meet the expectations of success as established in their primary culture (Elliott et al. 2010).”

While other ethnic groups seek opportunities for cultural expression within the academic environment, the literature shows that is more so for Native American women scientists. Cultural expression for Native American women is associated with their academic success. This is illustrated in the following quote:

“The most immediate possibility is based in these women’s’ observation that they need opportunities for cultural expression in their teaching and research, as well as options and ability to access Native American mentors, whether they are other professionals or community members. Ensuring opportunities for cultural expression in professional activities could boost retention (Wirta Kosobuski 2013).”

Asian Women faculty

Professional organizations outside the university are an important source of support for Black women, and Latina faculty in STEM (Soto 2014; Wilkins 2017). Asian women faculty in engineering report barriers building social networks within professional organizations in their field. This is illustrated in the following quote:

“Dr. Susan’s positioning as an American-born-Chinese woman provided insight about her feelings of being excluded from race-based STEM programming and organizations. She observed the strong affinity and support

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that Latina and Black women engineering faculty members experience within race-based STEM programming and organizations. She commented that being a Chinese-born faculty member had affected her experience and relationships within the international faculty. Since her experience drew on growing up in the United States and visiting China, she did not feel she inherently belonged in either place. She was left wondering if Asian American students needed such support. Without this intersectional analysis, the exclusion of Asian women and the importance of race-specific networking spaces could be lost (McGee et al. 2021)."

While they have limited access to professional networks outside their institutions, Asian women faculty seek and receive support within their departments, and broader institution. For example, McGee et al. (2021) found that Asian women faculty in STEM seek support from leaders (e.g., department chair, dean). They are satisfied with the support their leaders offer regarding obtaining grants, professional development and training, and advocacy for women engineering faculty. Leadership support is considered by Asian women faculty a crucial factor for their persistence in engineering. Compared to Black, Latina, and Native American women faculty, Asian women faculty "appear to have strong support from departmental and institutional leaders" (McGee et al. 2021).

Black Women Faculty

Black women are the only ethnic group who emphasize the importance of the church community for their career success. Participants in McGee et al. (2021) study talk about faith-based communities, comprising of non-academic Black women who fulfill mentoring and friend roles, that have provided emotional and psychological support when going through difficult times at work. For example, one participant says the following: "*they prayed me through tenure. They prayed through my NSF CAREER grant. They're not academics, but they understand these things are important and they'll be praying me through a lot of things that I wouldn't necessarily go to a mentor to say, 'Can you pray?'*" (McGee et al. 2021)."

One barrier to persistence for Black women faculty in STEM is the trauma from witnessing violence against Black lives. One participant in Williams and Walker (2021) says the following: "there is no identity we can take on that protects us from the realities of living as a Black person in the United States. Despite this, we audaciously dare to hope for and demand better for those we nurture and love." Furthermore, Black women faculty work in environments where White colleagues do not express outrage about injustice, and do not express concerns about their Black colleagues' well-being. It is difficult to work and persist in such circumstances (Erete, Rankin, and Thomas 2021).

Latina Faculty

Latina STEM faculty are more likely than any other ethnic group to experience work-life conflict which impedes their ability to persist in academia. This conflict is related to cultural expectations about having children, prioritizing family, and "traditional domestic gender roles" (Soto 2014). Latina women are expected to get married, have children and be the primary caregivers for children and other family members. Some participants in Soto (2014) were pressured by their partners, and parents to leave their tenure-track careers in favor of expanding the family and attending to household chores.

Latina mothers face the double pressure of academic excellence as well the cultural pressure to be excellent mothers. These extreme standards cause stress, especially in the absence of quality work-family policies. Soto (2014) explains that Latina faculty are compelled "to persist at the intersection of cultural life, motherhood and

STEM tenure-track demands.” The workload becomes overwhelming, and women might be forced to leave academia.

Discussion

The research questions I asked in this meta-ethnography are: 1. what strategies do women of color in STEM employ to navigate the tenure/promotion processes in the context of exclusionary departmental culture and practices? 2. Are these strategies successful in supporting women’s work-life balance and well-being? 3. Are there intersectional ethnic differences in the types of strategies Black, Asian, Indigenous, and Latina women faculty employ?

I identified five themes regarding the persistence strategies women of color use. The first theme about *Purposeful Life* offers insights into the passion women of color have for their professions, and their views about community service as an outlet for expressing their passion, and for further cultivating their cultural identities. Their socio-economic, family, and broader cultural backgrounds are crucial connectors between their pursuit of a science career and their motivation to give back to their communities. Overall, what this theme emphasizes is the fact that women’s reasons for doing academic work, and for persisting in an academic environment that can be hostile to their identities, is the believe that they are doing something meaningful, something that will help enrich the communities they come from. There is a mutually beneficial relationship between communities/families of origin and women faculty. While giving back to their communities is an important motivation to persist, being raised in a particular community also equips women with cultural values that help them survive in academia. For example, Vo (2012) talks about how growing up in a multicultural family equipped her with the qualities to be a good scholar and teacher, and also provided her with tools for surviving in a challenging academic environment.

While women find creative ways to connect their research activities with community service, such activities are not adequately rewarded or valued by academic standards. Even so, women report that engaging in community service can be motivating, and they do not express that such activities detract from the more rewarded academic activities. On the contrary, they view community service as the “lifeblood” that keeps them going in their academic work (Boyd 2012). Based on the literature related to the Purposeful Life theme, devotion to profession and community service as persistence strategies energize women to achieve what they consider success and contribute to their overall well-being.

The second theme identified in this meta-ethnography is *Navigating Workplace Hostility*. This theme provides a picture of what women of color do to persist despite the hostility in their work environments. To avoid hostility and having their experiences invalidated and questioned, women of color prefer to keep silent about their experiences with sexism and racism when interacting with colleagues, especially White colleagues. To protect themselves from hostility, rather than share their experiences with colleagues directly, women of color prefer to talk about gender, race, and inclusion in the context of quoting data, and through their own research projects (Galloway 2012; Williams and Walker 2021). That way their own experiences with sexism and racism seem more valid in the eyes of White colleagues. Avoiding bringing up matters related to race and gender does not mean women of color are not subjected to instances of prejudice and bias. So, when they do encounter such instances, another strategy, as suggested by the literature, is to focus on the positives and ignore incidents of racism and sexism, unless fighting back is absolutely necessary. Studies in this meta-ethnography suggest that women who pick their battles, and who do not engage in negative feelings related to incidents of racism and sexism, are successful in protecting their mental health, and their persistence (Vo 2012; Zambrana et al. 2017).

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To further safeguard themselves against the effects of gendered and racialized biases, women also learn to navigate around institutional norms, and performance standards that are laden with gendered and racialized biases (Walters et al. 2019); and they also work on creating allies within or outside the department who would support them, especially in situations when there are colleagues who seek to challenge them (Wilkins 2017).

Another response to prejudice and bias is working harder. Women work harder in order to raise up to the academic standards of “excellence” so that their colleagues do not question their position in academia (Williams and Walker 2021). Although this strategy helps women persist in academia, it hurts their mental health and overall well-being (Vo 2012).

The third theme identified in this meta-ethnography is *Navigating the Work Culture and Redefining Cultural Expectations*. This theme provides a broad picture of the persistence strategies women employ when adapting to a cultural environment that is designed around White and masculinized norms and values, and that comes in contrast to their own cultures. To navigate such a culture and to persist, women learn to make cultural adjustments. As Audre Lourde (1984) explains: to survive, people who are confronted with systematic oppression learn to be “watchers, to become familiar with the language and manners of the oppressor.” In this process women of color learn to behave in line with the cultural norms of their work environment. This involves developing dual identities (Pololi and Jones 2010), and code switching between the institutional culture and their own cultures (Moffit et al. 2012). Women have to “check their identities at the door” and engage only those parts of their cultural identities that are considered acceptable by the institutional culture (Moffit et al. 2012; Williams and Walker 2021). While learning the cultural norms of surviving in academia, women try to align the way they speak and dress with the Western, masculinized norms of academia. For example, Kim et al. (2014) explain that speaking with great volume signifies confidence in Western cultures. Treading between multiple worlds, however, “places subtle pressure on ethnic and racial minority faculty who attempt to gauge appropriate responses and to shift between value structures” (Johnsrud and Sadao 1998:9). There is a “constant drain of energy” in the process of adapting to the dominant culture, energy which could be better used for more fruitful pursuits (Lorde 1984; Hodari et al. 2016; Ong 2005). While not expressing their authentic cultural identities shields women of color from potential retaliation and helps them persist in academia, it at the same time contributes to stress build up which hinders their well-being.

Although discouraged in academia, cultural expressions are important for women’s academic success. The literature in this meta-ethnography shows that research, teaching, and mentoring opportunities that help women cultivate and express their culture is beneficial for their persistence (Kosobuski 2013). Native American women in particular value research projects related to their tribal communities, projects which help them stay connected to their culture (Elliot 2010). Women of color use their agency to redefine what success means. Their definition of being connected to the community, helping people, and improving lives (Boyd 2012) comes into stark contrast to the individualistic, masculinized notions of famous, published and funded that dominate academic definitions of success.

The fourth theme in this meta-ethnography is *Professional Support Systems*. This theme emphasizes the successes women of color achieve when they have access to quality mentoring, networking, a supportive work environment, and professional collaborations. The literature in this meta-ethnography shows that these factors help women persist, and in their absence, there are negative career repercussions (McGee et al. 2021). Women of color prefer women faculty as mentors because they are more likely to anticipate and understand their

mentees' needs. Senior faculty are also preferred as mentors because they have more seniority which they can use to advocate for their mentees.

Mentoring and networking are important for all women faculty regardless of ethnic background. Native American women faculty distinguish themselves in the way they view mentors and networking as these views are very much influenced by their culture. They embrace the value of humility and frequently credit their mentors for their academic success, rather than highlight their own efforts (Kosobuski 2013). This cultural humility reflects Native American women's view of the world as a collective, and comes into stark contrast with academia's White, masculinized perspective of the world as a competition.

Women of color seek support outside their universities in the context of not receiving the needed support from their departmental colleagues and broader institution. Race-based professional organizations help Black and Latina women faculty in STEM fields build their networks, support them in their academic pursuits, and motivate them to overcome workplace difficulties (Soto 2014; Wilkins 2017). Asian women faculty, on the other hand, find it difficult to perceive a sense of belonging in such organizations as they encounter barriers and hindrances towards making connections (McGee et al. 2021).

Supportive departmental colleagues, and a collegial work environment are crucial for women's persistence and success. That is because performance evaluations, and promotion decisions are made at the department level, and hence, success also hinges upon support from departmental colleagues.

The fifth theme in this meta-ethnography is *Personal Strengths and Support Systems*. This theme shapes a picture of the acquired personal strengths that support women's persistence in academia. Spirituality helps women stay strong and overcome barriers. While all women talk about the importance of spirituality for persistence, and career success, Native American women faculty have a unique perspective about the relationship between their spiritual beliefs and career success. Through their cultural values, spirituality permeates all aspects of their life, including their identity as scientists, and the work they do in academia. Spirituality and cultural values suggest that success is about connections to the community and uplifting the community. Hence, Native American women view their science identities as intertwined with their efforts to contribute to their communities. This definition of a successful scientist as one who has the collective's interest in mind, and who contributes to the community, comes into contrast with the academic White, masculinized construction of the individual success driven scientist.

Related to spirituality, another unique experience is Black women's relationship with faith-based communities. No other ethnic group expresses such deep ties to church-based communities. These communities provide emotional and psychological support, especially when women are going through difficult times at work (McGee et al. 2021).

Confidence and agency are personal qualities that are very important for persisting in academia. It takes confidence and ingenuity to navigate complex work requirements, and a work environment that is gendered and racialized. Confidence and agency help women keep calm and focused on what is important, even when faced with biases and discrimination.

Personal support systems like family and friends are also very important for women's persistence in academia. Among the ethnic groups, most women benefit from partners and other family members who help women

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overcome stress, find a balance between work and family responsibilities, and find solutions to work related issues (Soto 2014). Latina faculty, however, experience work-family conflict stemming from cultural expectations of prioritizing family responsibilities, having children, and being primary caregivers. In the context of a gendered academia where workload is designed around the family-encumbered man, raising up to the standards of both academic excellence and excellent homemakers, puts a lot of pressure on Latina faculty.

Policy Implications

The takeaways from the *Purposeful Life* theme are that higher education institutions that have as their goal the increase in representation and the retention of women of color among faculty, need to consider changing the standards of what constitutes valuable academic work. Emphasis needs to be placed on the value and importance of community related research and teaching projects. If academia is to embrace multiple faculty identities, it needs to recognize that a life of purpose through serving the community is what drives success for women of color faculty.

Several policy recommendations emerge based on the *Navigating the Workplace Environment and Hostility* theme. The findings in this theme encourage academic institutions/departments to address issues of microaggressions, and biases in performance evaluations. Climate workshops for faculty are one way to address the hostility that women of color experience. The goal is to create a workplace environment where women of color can freely talk about issues related to sexism and racism. This would be an environment where women can express their authentic selves without fear of retaliation, a workplace environment where women are not compelled to work harder in order to prove their competency and are not forced to engage complex mental exercises to prevent the effects of biases and discrimination and persist in academia.

The *Navigating the Work Culture and Redefining Cultural Expectations* theme contributes to several policy recommendations. Understanding, acceptance and celebration of multiple cultures and identities stemming from those cultures is important for an inclusive, multicultural university. In this sense, cultural sensitivity workshops for faculty are likely to contribute to a work environment where women of color do not have to “leave part of their identities at the door.” Another recommendation would be creating teaching and research venues for faculty to express their cultural identities, because that helps women persist. As Moffit et al. (2012) explain students miss learning opportunities when faculty cultural identities are censored by the academic structure.

The *Professional Support Systems* theme helps formulate several policy recommendations. First, this theme highlights the importance of culturally sensitive mentoring. As seen in the example of Native American women faculty, it is important for them to have mentors who understand and respect their world views, and do not mistake their cultural humility for lack of confidence. Second, the literature indicates that women of color prefer women faculty as mentors, and hence, it is important to nurture women’s mentoring skills through professional development workshops. Third, the literature shows there are barriers for Asian women faculty to find support within race-based STEM professional organizations. Therefore, these organizations need to prioritize efforts to create a more inclusive environment.

The theme of *Personal Strengths and Support Systems* provides reasoning for formulating several policy recommendations. Given in particular the pressure that Latina faculty encounter due to conflict between family related cultural expectations and work expectations, it is important for universities to have family-friendly policies that would support care givers. Flexibility in work schedules and a departmental environment that



supports parents, especially new parents, would provide the necessary respite for all faculty, and especially for Latina faculty. Another evolving recommendation is creating spaces for spiritual practices.

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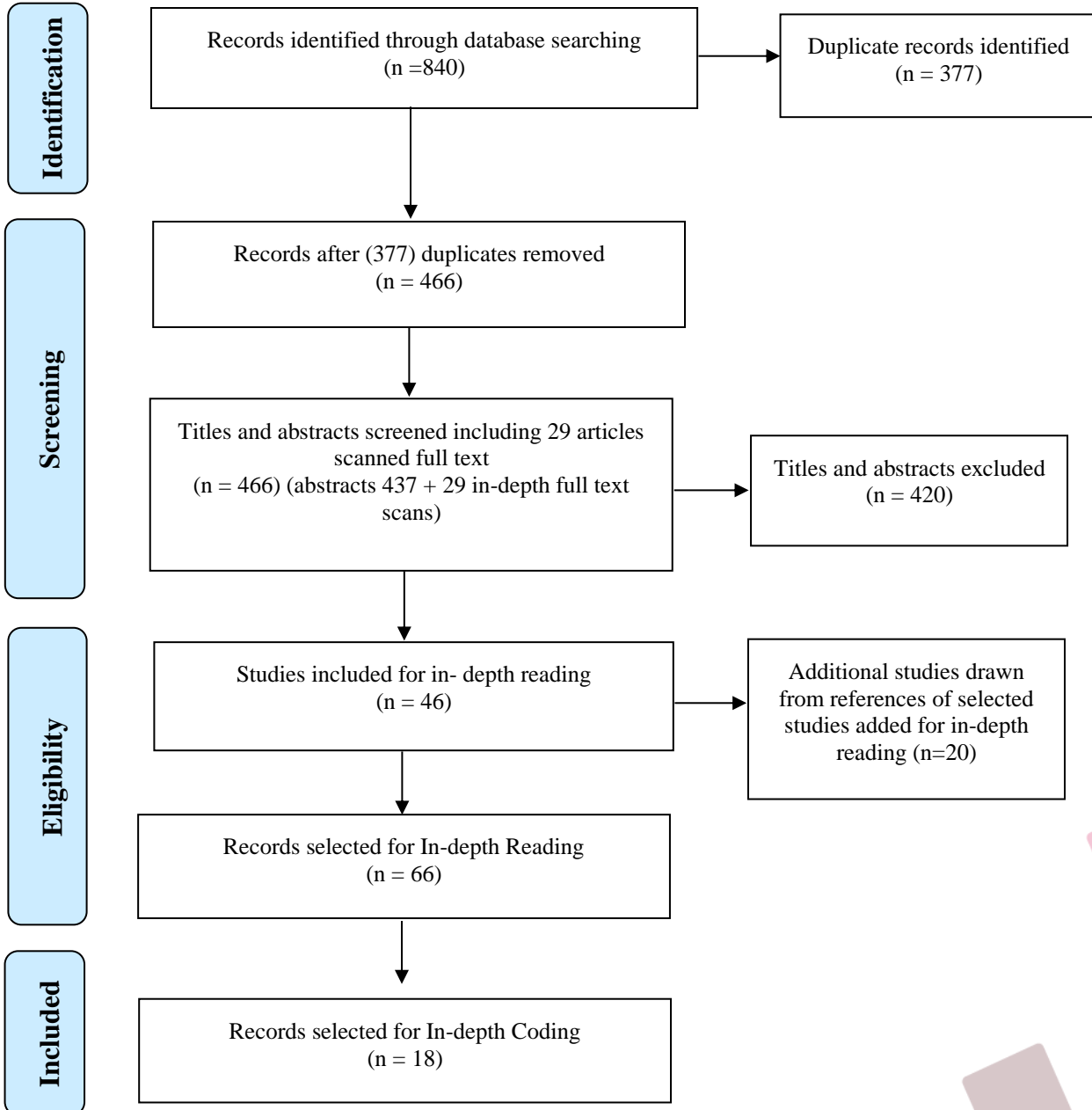


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Appendix A – PRISMA Flow Diagram



Appendix B – List of Coded Studies

Author	Year	Population	Discipline	Article Title
Boyd, Beth A. Cerecer, Patricia D Quijada; Ek, Lucila D; Alanis, Iliana; Murakami- Ramalho, Elizabeth	2012	Native American Woman	Psychology	Sharing Our Gifts
	2011	Latinas	Education	Transformative Resistance as Agency: Chicanas/Latinas (Re)Creating Academic Spaces
Crawford, Doris L. Elliott, Barbara A.; Dorscher, Joy; Wirta, Anna; Hill, Doris Leal Erete, Sheena; Rankin, Yol; a A.; Thomas, Jakita O.	2017	Black woman	Mathematics	An African American Female Faculty Member Dealing with De- professionalism, Inequalities, and Prejudice at One Appalachian Regional University
	2010	Native American Women	Academic Medicine	Staying Connected: Native American Women Faculty Members on Experiencing Success
	2021	Black Women	Computing	I Can't Breathe: Reflections from Black Women in CSCW and HCI
Galloway, Stephanie Nicole Kim, Eunha; Hogge, Ingrid; Mok, Geoffrey; Nishida, Harumi McGee, Ebony O.; Main, Joyce B.; Miles, Monica L.; Cox, Monica F.	2012	African American Women	STEM	African American Women Making Race Work In Science, Technology, Engineering, And Math (Stem)
	2014	Foreign born Asian Women	Psychology	Work Experiences Of Foreign- Born Asian Women Counseling And Psychology Faculty
	2021	Women of Color	Engineering	An intersectional approach to investigating persistence among women of color tenure-track engineering faculty

Author	Year	Population	Discipline	Article Title
Moffit, Kimberly R.; Harris, Heather E.; Berthoud, Diane A. Forbes	2012	Latinas and Black Women	Chemistry	Present and unequal: A third-wave approach to voice parallel experiences in managing oppression and bias in the academy Women faculty: An analysis of their experiences in academic medicine and their coping strategies
Pololi, Linda H.; Jones, Sandra J.	2010	Women of Color	Academic Medicine	Women of color faculty in STEM: Successfully navigating the promotion and tenure process
Soto, Melissa	2015	Women of Color	STEM	Navigating the Academic Terrain: The Racial and Gender Politics of Elusive Belonging
Võ, Linda Trinh Walters, Karina L; Maliszewski Lukszo, Casey; Evans-Campbell, Teresa; Burciaga Valdez, R; Zambrana, Ruth E	2012	Asian Woman	Not mentioned	'Before they kill my spirit entirely': insights into the lived experiences of American Indian Alaska Native faculty at research universities
Wilkins, Ashlee Nichole	2017	American Indian, Alaska Native Women	Both STEM and non-STEM	The Ties That Bind: The Experiences of Women of Color Faculty in STEM
Williams, Dominique R.; Walker, Valencia P.	2021	Women of Color	STEM	Curating Anger and Anguish Into Determination and Devotion: Black Women Faculty as Mentors in Medicine
Wirta Kosobuski, Anna	2013	Black Women	Academic Medicine	The Experiences of Native American Women Physician Faculty in U.S. Medical Schools: Culture, Diversity, and Retention
		Native American Women	Academic Medicine	

Author	Year	Population	Discipline	Article Title
Zambrana, Ruth Enid; Dávila, Brianne A; Espino, Michelle M; Lapeyrouse, Lisa M; Valdez, R Burciaga; Segura, Denise A	2017	Mexican American Women	Both STEM and non-STEM	Mexican American Faculty in Research Universities: Can the Next Generation Beat the Odds?

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